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AN ANALYTICAL STUDY OF LIVELIHOOD DIVERSIFICATION AT FARM HOUSEHOLDS OF DIFFERENT ALTITUDE OF KUMAUN HILLS

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Abstract

Agriculture serves as predominant activity for most rural farm households which offers a strong option for spurring growth, overcoming poverty, and enhancing food security. Livelihood diversification has generally occurred as a result of an increased importance of non-farm wage labour in household livelihood portfolio or through the development of new forms of on-farm/on-site production of non-conventional marketable commodities. Thus, the investigation was aimed to identify the livelihood diversification in different altitude of Kumaun Hills, Uttarakhand. The study is based on the findings from the data of 90 sample farm households consist of 30 low hill, 30 mid hill and 30 high hill farm households, selected through stratified random sampling for the agriculture year 2013-14. Simpson Index was utilized to examine livelihood diversification. In the study area, high hills livelihood diversification is found to be highest followed by mid hills and low hills. Findings of the study has suggested the need to develop education and skill development trainings to poor farm households in the hilly areas, it surely provide a positive impact on the ability to diversify their livelihood options.

Keywords: Livelihood, Livelihood Diversification, Income Categories, Hill Altitudes

INTRODUCTION

Uttarakhand is one of the hilly states in the Indian Himalayas. Formerly a part of Uttar Pradesh, Uttarakhand (formerly called Uttaranchal) was created as the 27th state of the Indian Union on November 9th, 2000 by carving out the 13 hill-districts of Uttar Pradesh. It lies in the Northern part of India between the latitudes 28°43'-31°27'N and longitudes 77°34'- 81°02'E having a maximum dimension of east - west 310 km and 255 km north - south covering an area of 53,484 km^2 with the elevation ranging from 210 to 7817 amsl. The state shares border with China (Tibet) in the North and Nepal in the East and interstate boundaries with Himachal Pradesh in the West, Northwest and Uttar Pradesh in the South. Uttarakhand state falling in two major administrative units viz., Garhwal (northwest portion) and Kumaun (southeast portion). Garhwal Division consists of 7 districts, i.e. Dehradun, Haridwar, Uttarkashi, Tehri, Pauri, RudraPrayag and Chamoli while remaining 6 districts viz., Pithoragarh,

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Bageshwar, Almora, Nainital, Champawat and Udham Singh Nagar fall in Kumaon division.

Livelihoods are the ways in which people satisfy their needs, or gain a living (Chambers and Conway, 1992). How rural people make a living and whether their livelihood is secure or vulnerable over time are issues covered in livelihood literature. Livelihoods turn up from a variety of sources and activities, which vary over time. They comprise several different activities for each given household - more often than not even for each working member, which may change even within a year. Flexibility of households' livelihoods determines the type of strategies that rural households adopt to make it secure and how they respond to changes. Livelihood diversification is a process by which rural households construct a diverse portfolio of activities and social support capabilities in their struggle for survival and improvement in their standards of living (Ellis, 1998).

Diversification assists to reduce vulnerability, to generate financial resources in the absence of credit markets, and confers a host of other advantages in the presence of widespread market failures and uncertainties. Broadly, the rationale for diversification emanates from the opportunities for more employment and generation of higher incomes through more efficient use of resources and through exploitation of comparative advantage (World Bank, 1990). Diversification is a core strategy of contemporary rural livelihood systems in developing countries (Ellis, 2000). In reality, rural household's resource allocation

Farming Situation in Uttarakhand

Sl. No.	Farming situation	Soil	Principal crops grown
1	Irrigation lower hills (600-1200m)	Alluvial sandy soil	Rice, wheat & vegetables
2	Rainfed lower hills (600-1200m)	Residual sandy soil	Finger millet, maize, rice, wheat
3	Mid hills south aspect(1200-700m)	Sandy soil	Rice, finger millet, wheat, potato, tomato
4	Mid hills north aspect (1200-1700m)	Brown forest soil	Rice, finger millet, wheat, potato, tomato peas, cole crops
5	High hills (1700-2500m)	Red to dark	Amaranthus, finger millet, French bean, cole crops, potato, peas
6	Very high hills (2500-3500m)	Red to dark black clay	Amaranth, buckwheat, peas, cole crops, potato, peas

Source: Uttarakhand State Action Plan for Climate Change, 2013

decisions are fundamentally constrained by conditions of livelihood asset endowments and related socio-political and institutional factors. Households may choose to adopt various strategies to secure their livelihood.

The present study has been conducted on Kumaun hills of Uttarakhand. Agriculture in Uttarakhand is broadly defined to cover all land-based activities such as cropping, animal husbandry, horticulture, forestry, and their linkages and support system, and is a prime source of sustenance for most mountain communities. Five major farming systems are prevalent, namely; (i) cereal based production system (ii) horticulture or agri-horti production system, (iii) vegetables, floriculture based production system, (iv) livestock based production system and (v) agri-horti- silvi-pastoral production system. In table 1 depicts farming situation in Uttarakhand. The economy of Uttarakhand is predominantly agrarian, Uttarakhand has only 14 percent of the total land under cultivation and about 65 percent of population depends on agriculture for their livelihood. Being a state with diverse agro-climatic endowments, conditions under which agriculture is carried out differ remarkably across areas (Uttarakhand: PHD chamber, 2013). The hilly regions are lacking behind in terms of infrastructure, i.e. electricity, roads and irrigation facilities. The inter-regions inequality in infrastructure leads to increasing disparity in terms of income and livelihood. It is in this background that this paper is making a modest attempt to understand broadly the dynamics of rural livelihood diversification of Kumau hill, Uttrakhand.

RESEARCH METHODS & MATERIAL:

The study was conducted in the state of Uttarakhand Kumaun hill during the period 2013-2014. One district was selected randomly; then, two blocks from the district had been selected randomly. On this basis Hawalbagh block and Takula block were selected for further selection of the villages. For the selection of the villages a list of villages falling under both the blocks were prepared according to hill altitude in consultation with the respective Block Development Officers. From the list of the villages under the blocks, six villages were selected randomly; two villages from each stratum viz., low hill (600-1200 meter), mid hills (1200-1700 meter) and high hills (1700-2500 meter) by simple random sampling, thus two villages were selected from each altitude as; Pali and Bhesodi from low hill, Udyari and Bina from Mid hills, and Ghursu and Amkholi from high hills. Fifteen farmers from each village were selected randomly. Thus 45 farmers from each block were selected to make total sample size of 90 farmers. Simpson Index was utilized to examine livelihood diversification in different altitudes because of its computational simplicity.

$$DI = 1 - \sum_{i=1}^{N} Pi^2$$

Where,

DI =Livelihood diversification index,
N =Total number of income sources.
Pi = Income proportion of the ith source.

Livelihood Diversification class

In order to have an idea about extent of livelihood diversification, Households were also classified into different range of diversification on the basis of the constructed livelihood index of each farm household. In this regard the Simpson Diversification index has been categorized into four categories as follows,

Livelihood Diversification Class
Index value

I. Low
index value less than 0.25

II. Moderate
index value from 0.25 to 0.50

III. High
index value from 0.50 to 0.75

IV. Very high
index value more than 0.75

RESULTS AND DISCUSSION

Fig. 1: Livelihood diversification index of farm households at different hill altitudes

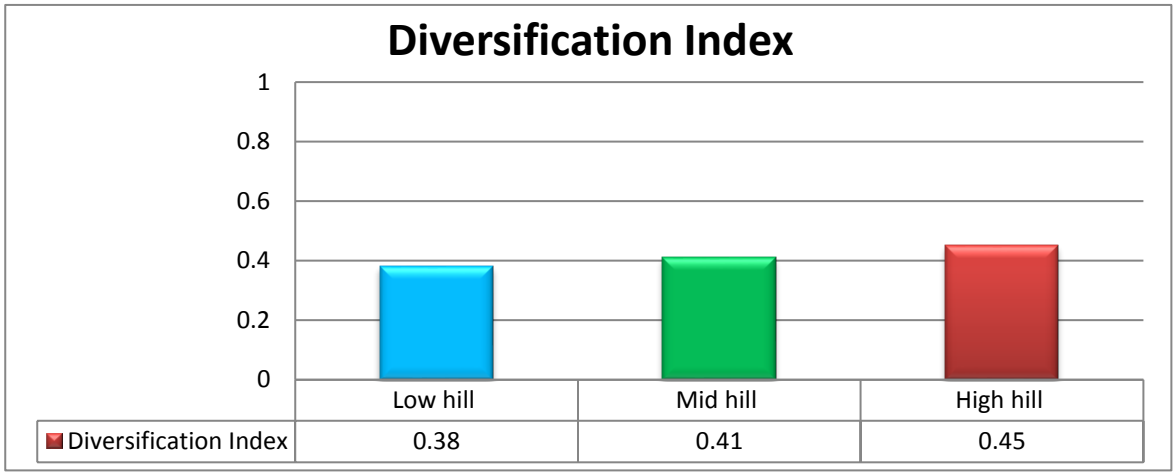

Figure 1: Livelihood diversification index of farm households at different hill altitudes

It could be deduced from the table that the livelihood diversification indices varied from 0.38 to 0.45 across the altitudes with the lowest diversification in the farm households at low hills and highest at high hills. Here it can be concluded that livelihood diversification among farm households was found to be directly related with the hill altitudes (fig. 1).

Table 2: Distribution of farm households as per diversification categories

Livelihood diversification category	Diversification Range	Hill Altitude			
		Low hill	Mid hill	High hill	Overall
Low	0 to 0.25	4(13.33)	9(30)	7(23.33)	20(22.22)
Moderate	0.25-0.50	19(63.33)	6(20)	7(23.33)	32(35.56)
High	0.50-0.75	7(23.34)	15(50)	16(53.34)	38(42.22)
Very high	0.75- 1.0	0(0)	0(0)	0(0)	0(0)
Total households		30(100)	30(100)	30(100)	90(100)

Note: 1. Figures in parentheses indicate per cent to total sample size.

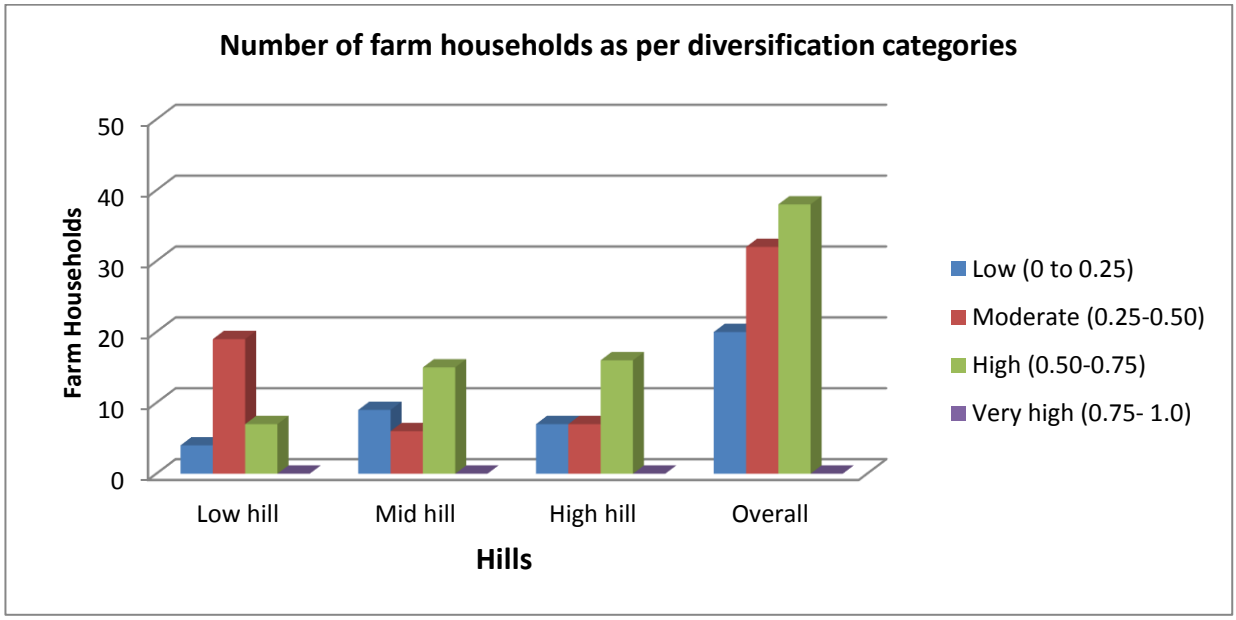

Fig 2: Distribution of number of farm households as per diversification categories

Livelihood diversification is one of the most remarkable characteristics of rural livelihoods. It is defined as "the process by which rural families construct a diverse portfolio of activities and social support capabilities in order to survive and to improve their standards of living" (Ellis, 1998)

The table 2 reveals that in low hills the highest percentages of households were belonging to the moderate livelihood diversification class and the percentage of high class (about 63.33) whereas, mid hills and high hills the highest percentage of farm households was in the high diversification category. And low class was 13.33 and 23.34 respectively. None of the households was found in very high category of livelihood diversification.The table further reveals that in the entire study area maximum number of the farm households (42.22) belonged to the high level of livelihood diversification. It was found that in low hills the highest percentages of households were belonging to the moderate livelihood diversification category, whereas, mid hills and high hills the highest percentage of farm households was in the high diversification category while in low hills the highest number of farm households belonged to moderate category. None of the households was found in very high category of livelihood diversification whereas similar proportions of the households were in low level of diversification. Like in low hills none of the farm households had found in the very high level of his livelihood diversification. Like in low and mid hills none of households was found in the category of very high level of livelihood diversification. Lama and Kumar (2015) also reported in their study that geographical structure, climatic condition and level of economic development, other socio-economic features and infrastructural facilities in the region have a strong influence on the livelihood diversification.

It is also observed that rural people are looking forward to diverse opportunities to increase

and stabilize their income as determined by their portfolio of assets - social, human, financial, natural and physical capital (Ellis, 1998; Sudan, 2007). The availability of key-assets (such as savings, land, labour, education and/or access to market or employment opportunities, access to Common Property Resources [CPRs] and other public goods) is an evident requisite for making rural households and individuals capable of diversification (Dercon and Krishnan, 1996; Sudan, 2007). Additionally, the decreased availability of arable land, 8 increased producer/consumer ratio in agriculture, credit delinquency and environmental deterioration can indeed be important drivers towards diversification. However, the ownership of assets, such as land and livestock, helps reduce vulnerability of households and allows them to exploit income-generating opportunities. Indeed, a diverse body of literature provides evidence that poor people in developing countries use social networks and connections as insurance to manage risk (Fafchamps and Lund 2003; Fafchamps and Gubert 2006).

CONCLUSION:

The investigation reveals that livelihood diversification highly varies across the hill regions and the extent of livelihood diversification among farm households was directly related and varied with the hill altitudes. The foregoing analysis reveals that although remoteness is typically associated with fewer livelihood options, diversification in livelihoods in the rural areas has become a common phenomenon. The government should formulate strategies, especially for the rural poor that may facilitate successful livelihood diversification.

REFERENCES

Agarwal, V. K., 2013. "A Study of Sustainable Livelihood Security and Agriculture Diversification in Rajasthan."Thesis, M. Sc. G B P U A T, Pantnagar, Uttarakhand.

Chambers, R., and Conway, G.R., 1991. "Sustainable Rural Livelihoods: Practical Concepts for the 21st Century." *Institute of Development Studies* DP 296.

Chambers, R., and Gordon, R.C. (1992). 'Sustainable Rural Livelihoods: Practical Concepts for the 21st Century, *Institute of Development Studies,* Discussion Papers, 296, Cambridge

Dercon, S., and Krishnan, P. (1996). 'Income portfolios in rural Ethiopia and Tanzania: Choices and constraints', *Journal of Development Studies*, 32 (6): 850–75.

Ellis, F. (2000). 'Rural Livelihoods and Diversity in Developing Countries', Oxford University Press

Ellis, F., 1998. Survey article: "Household strategies and rural livelihood diversification."*Journal of Development Studies*, 35(1): 1-38.

Fafchamps, M., and Gubert, F. (2006). 'The Formation of Risk Sharing Networks,' *Journal of Development Economics*, 83(2): 326–50.

Fafchamps, M., and Lund, S. (2003). 'Risk-Sharing Networks in Rural Philippines,' *Journal of Development Economics*, 71: 261–87.

Franklin, P. S., 2010. "Livelihoods diversification and gender in Malawi" *African journal of agricultural research*, 5 (3):204-216.

Freeman, H. Ade., Ellis., Frank. and Allison, E. 2004. "Livelihoods and Rural Poverty Reduction in Kenya*." Development Policy Review*, 22: 147-171.

Goswami, S., 2013. "Crop Diversification InUttarakhand: An Economic Analysis." Thesis, M. Sc. G B P U A T, Pantnagar, Uttarakhand.

Hiremath, B.N. 2007. Institute of Rural Management, Anand, 4-6 December 2007. The changing faces of rural livelihood in India, In: National Civil Society Conference on What it Takes to Eradicate Poverty.

Khatun, D., and Roy, B. C., 2012. "Rural Livelihood Diversification in West Bengal: Determinants and Constraints." *Agriculture Economics research Review*, 25 (1): 115-124.

Kumar, P., Singh, N.P., and Mathur, V.C. 2006. Sustainable Agriculture and Rural Livelihoods: A Synthesis. *Agricultural Economics Research Review*, 19: 1-22.

Lama, S. and Kumar, P. (2015), Livelihood diversification, rural poverty and income inequality: a study in the hill regions of darjeeling district in west bengal * Kuri, International Journal of Current Research

Vol. 7, Issue, 04, pp.15425-15435, ISSN: 0975-833X

Rahut, Dil. Bahadur 2012."Rural Livelihood Diversification Strategies in Nepal".*Australian Journal of Agricultural and Resource Economics.*, 56 (4):75-82.

Sudan, F. K. (2007), 'Livelihood Diversification and Women Empowerment through Self-Help Micro Credit Programme: Evidence from Jammu and Kashmir', *Indus Journal of Management & Social Sciences,* Vol. 1, No. 2:90-106.