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A Study of Sustainable Development Through Livelihood Generating Activity (LGA) in Chamoli District of Uttarakhand (India) After 2013 Flood Disaster

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Abstract-

The concept of sustainability is directly connected with the economic activity of people: economic activity profits from the natural environment at the same time, nature has a function as a sink for "excretions" of the economic system in the form of emissions and waste. Since both resources and the environment's absorption capacity are limited, economic processes must be sustainable if long-term development goals shall not be sacrificed to short-term prosperity (FMER, 2009) [1]. This paper focuses on the sustainable development through livelihood generating activity in Uttarakhand after the cloud bursting in June, 2013. This calamity swept away thousands of homes, schools, hotels and other buildings built too close to collapsing river banks, while landslides sent mud and boulders hurtling down steep mountainsides, burying buildings and breaking up roads. Around 200 bridges have been washed away, nearly 5,000 roads damaged, connectivity to 4,300 villages snapped - electricity and water supplies disrupted, telephone lines collapsed.

Key words- Sustainable development, ecologically, development and employment, environmental

I. INTRODUCTION

Sustainability (sustainable development), is not only related to the environment, but also to the entire human system and it basic assets (i.e. public assets) on which the human lives are dependent. Basic human system assets are human lives, health and security; environment; property and public welfare; infrastructures and technologies, in particular those that belong to the critical ones (PROCHÁZKOVÁ, D. 2011) [2].

Uttarakhand is a state in the Northern Himalayan Region in India and it has been a hot spot of agriculture, livestock and tourism due to its magnificently diverse landscapes, high biodiversity enough religious tourist potential and rich cultural heritage, which has also generated a good source of income and employment to youths and rural masses. Tourism is one of the biggest and fastest-growing economic sectors in the global economy and has significant environmental, cultural, social, and economic effects, both positive and negative but due to destruction caused by the flash floods the year 2013-14 state's tourism industry has estimate a loss of Rs 12,000 crore [3]. The survey form PHD Chamber of Commerce and Industry, (2013) [4] Delhi has also estimates that around 11% of Uttarakhand's Gross State Domestic Product (GSDP) for this fiscal has been ruined in terms of prospective tourism earnings on account of the flood. What is most worrisome is that given the nature of the calamity, tourism is likely to remain affected over at least the next 2-3 years as well (IMD, 2013) [5].The most vulnerable segments of the population have not only lost their meagre crops which contributed to their food security, but also their livelihoods leaving them with a bleak future full of worries about how they will meet even their basic needs of feeding, clothing and educating their children after the reconstruction of their shelters.

II. OBJECTIVES

The main objective of the study is to identify what ails in this region, few are detailed below:

- ✓ To evaluate socio-economic status of the region
- ✓ Identify disaster affected household & their short, mid and long term needs for sustainable livelihood;
- ✓ Find out the problems and suggest a suitable plan for sustainable development in the region.

To fulfil the above objectives, a field based systematic study was carried out on the basis of questionnaire in most flood affected destinations to find out the problems and the data has been calculated on the basis of simple

percentage methods. It includes the farmers, producing traditionally growing crops, major cash crops, production, market and the role of the institution/ organizations. The support institutions are the government bodies and social organization.

III. MATERIAL AND MATHODE

The study was conducted in the garhwal region of Uttarakhand. In order to get information about the sustainable livelihood as this is one of major requisites of achieving sustainable development in this region. The primarily data was collected through household survey. The study was conducted in 7 villages of three major flood affected blocks i.e. Joshimath, Tharali and Ghat in Chamoli district as it had worst affected area under flood calamity. A sample size of 100 flood affected household were selected randomly.

Table 1. Flood affected HH in the area and sample collected

SN	*Name of Village*	*Name of block*	*Nos of HH (SC/ST/OBC)*	*Nos of HH (General)*	*M*	*F*	*Interview with HH*
1.	Devgram	Joshimath	02	11	32	26	13
2.	Bansa		03	10	26	24	13
3.	Barginda		05	09	34	38	14
4.	Bainoli	Tharali	01	12	34	29	13
5.	Baitha Tharali		01	14	42	38	15
6.	Baswara	Ghat	02	12	38	32	14
7.	kundbagar		03	15	42	38	18
	Total		**17**	**83**	**248**	**225**	**100**

IV. THE OUTCOME OF THE STUDY

The study was conducted in 7 villages in three major flood affected blocks i.e. Joshimath, Tharali and Ghat in Chamoli district of Uttrakhand state. The study covered 100 flood affected house hold include those are marginal farmers and just above or below poverty line.

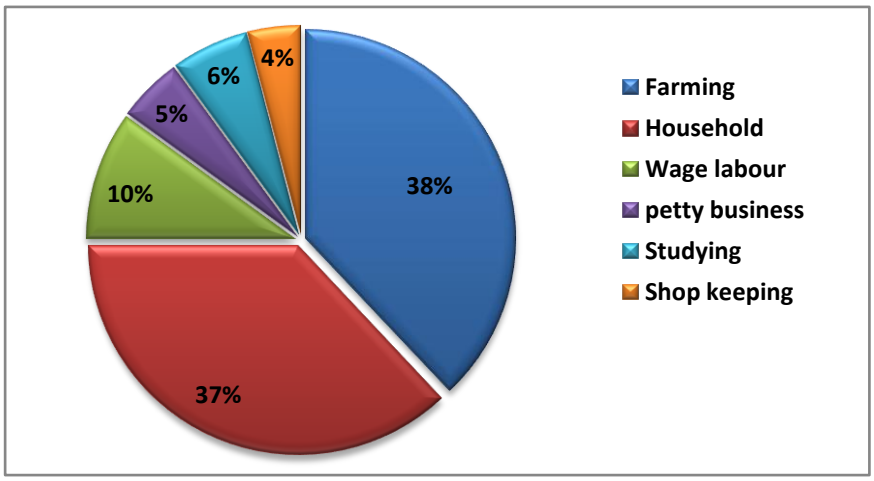

Fig 1. Occupation of household in the study area

1) SOCIO ECONOMIC PROFILE

The socio- economic profile reveals the social status and economic condition of the flood affected household families. Assessing the socio-economic profile of the affected household is crucial for prioritizing the needs of the people which is linked with the successes of any developmental programme. Most of the household around 75% (i.e. 38% & 37%) are engaged in farming and household activities and rest of them are 10%, 5% and 4% are in wage labour, petty business, shop keeping and just 6% are studying. The literacy level is low among women than men in the families. As far as young generation is concerned almost all children are attending the school.

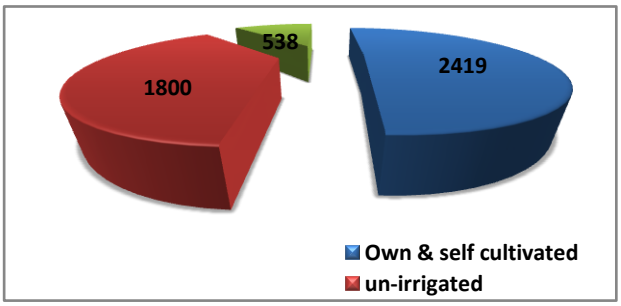

Fig 2: Land ownership & type (in Nali)

2) LAND OWNERSHIP & TYPE (IN NALI)

Land is the most valued productive resources which is wealth creating and livelihood sustaining assets for a significant majority of the interview household. Unfortunately lots of agriculture land of the region has been destroyed in this natural calamity occurred in June 2013.The size of land holding and its productivity determine the social and economic status of a farming family. (50 Nali =1 Ha)

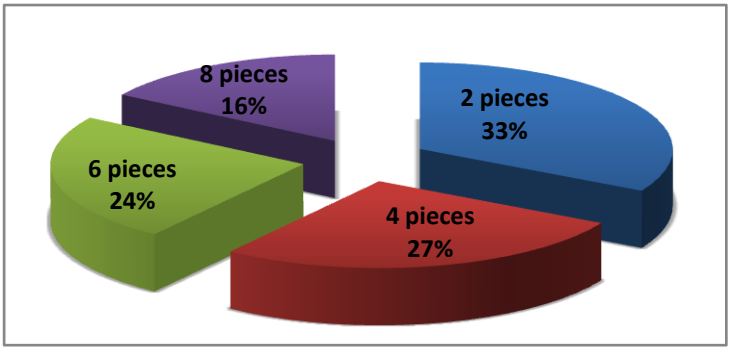

Fig 3: Scatted land holding in the study area

3) LAND HOLDING SCATTERED

Agricultural land are scattered in the region and divided into 4 types. The analysis of data regarding the land holding reveals that the average size of land holding per family is less than one hectare. As per the following 33% land are divided in two pieces, 27% in four, 24% in 6 and 16% in more than eight pieces. When, we ask about the time take to reach each of the cluster plots household takes minimum 20 minutes and maximum 1 hour to reach their field. The entire affected household not only lost approx 5 to 12 Nali their agriculture land but some have lost their own home also.

4) TRADITIONAL CROP PRODUCTION

The data reveals that most of the farmers are still producing traditional crops and very few farmers having annual family income Rs. 10000 to Rs.100000.

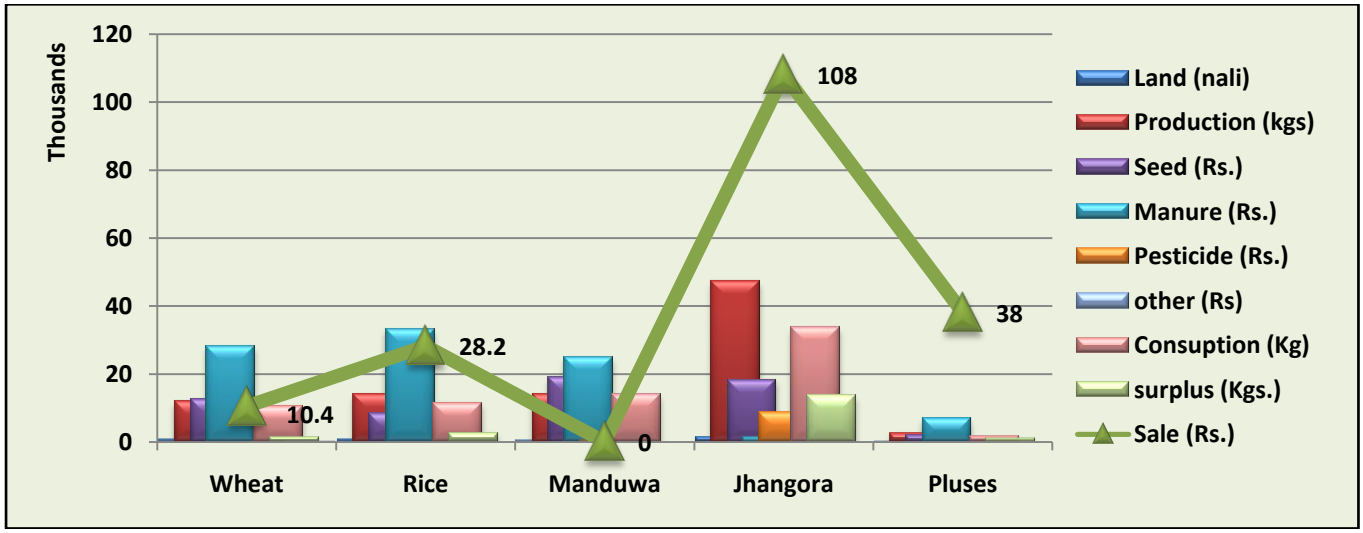

Fig 4: Traditional crop production

5) CASH CROPS PRODUCTION

After collection and compilation of assessment data it has found that agriculture, livestock rearing and non-farming are the main source of income. So earning from these sources will be the family income. More than 67 household out of 100 interviewed and has given their positive views in growing seasonal and off seasonal vegetables (pea, radish, cabbage, onion, potatoes etc), livestock rearing (cow, goatry and poultry), non-farming (sewing, knitting and flour machine,) and spices (turmeric, garlic, ginger, basil) cultivation as major income generating activity. During the village survey it has also found that the cooperatives are also engaged in marketing of vegetable, spices and fruits. The member sells their produce to the cooperative especially in vegetables, fruits and spices. The cooperative fixes a rate for these produce, which are much better than the rate given by the middlemen, and buy it from the member on cash basis. It is very clear through the observation and interaction with the flood household that farmers were showing more interest in vegetables, spices, livestock and non-farming. The HH will get better productivity as well as higher prices for their crops in less time and without damaging their crop by the wild animals and also form non-farming activity.

6) CONSTRAINTS IN THE STUDY AREA

As per the data reveals that most of the household about 31% says irrigation is the most constraint for them, without that how can increase the productivity. It is highly concerned with use of barren land and productivity and market. 29% household says that it is very difficult for them to approach banks and apply for the loan.

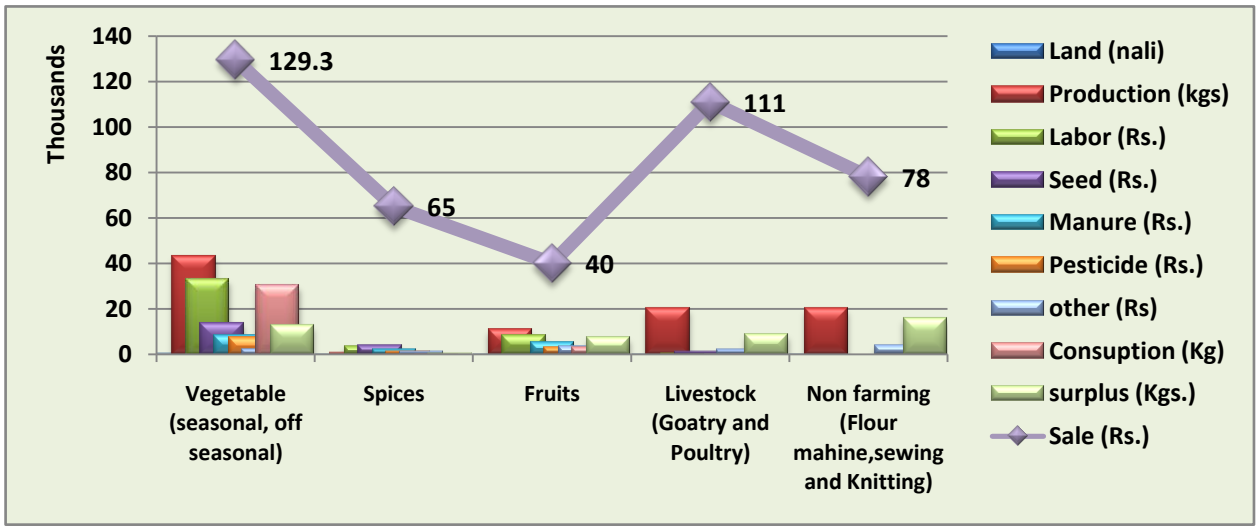

Fig 5: Cash crops production

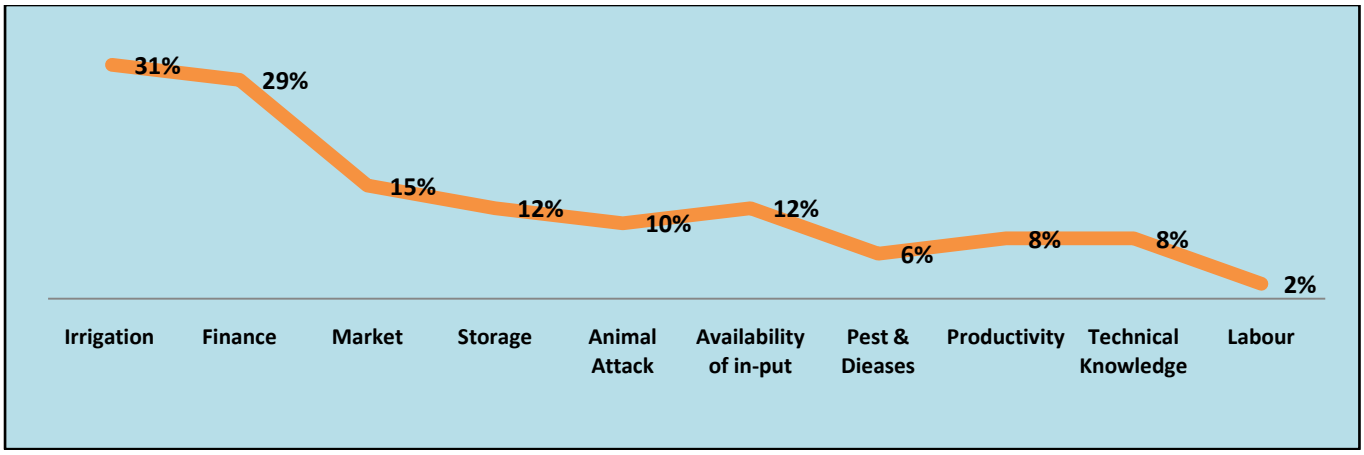

Fig 7: Constraints in the study area

7) TAKEN UP NEW HIGH INCOME GENERATING ACTIVITY

As per the data reveal that 67 of 100 household has taking their interest to producing new high value income generating activity vegetables (pea, radish, cabbage, onion, potatoes etc), spices (turmeric, garlic, ginger, basil), livestock (goatry, cow, poultry, sheep rearing etc.) and non-farming (flour, knitting and sewing machine etc). We ask who decides which crops to produce to the household, 60% from them answered women. It was obvious; women in this region play a very significant role in subsistence economy. Though women are engaged in agriculture activities but when the time comes for marketing the produce, it is the man who handles all the monetary matters and transaction.

V. CONCLUSION AND POLICY IMPLICATION

It has discovered from the study that sustainable development of disaster affected household of Chamoli district of Uttarakhand can be obtained from three different interpretations that include economic sustainability, the ecologically sustainable and sustainable livelihood development focus of environment as well as long term feasibility of the enterprise and finally income generation as a part of a strategy for sustainable development.

The study reveals three major types of livelihood generation activities (LGAs) that have potential to enhance the livelihood of the disaster affected community of district Chamoli.

Table 2. Livelihood generation activities (LGAs) in the area

S.N.	Type of Income Generation Activities	Reason for selection
1	**Agri- Based** ✓ Vegetable (pea, radish, cabbage, onion cultivation) ✓ Spice (turmeric, ginger, garlic cultivation)	Community has traditional knowledge of vegetable, spice and animal rearing, availability of local resources, availability of cooperative market and willingness to commence own enterprise. In Uttarakhand the knitting enterprise can be played a significant role for livelihood generating activity in a sustainable manner. While 9 districts out of 13 come under mountain districts, where winter remains 8 to 9 months in whole year.
2	**Livestock Based** ✓ Cow ✓ Poultry ✓ Goat Rearing	
3	**Non- Farming** ✓ Sewing Machine ✓ Knitting Hand Flat Machine ✓ Small Spice and flour Unit	

Scattered farms, poor irrigation, finance, animal attack and high input cost, therefore, producers are reluctant to bring their produce themselves in the market. Although the cooperatives are working in the village level but government have to play the crucial role for crops production and its marketing strengthen.
Government / Market regulatory authorities should provide loan to the farmers in a low interest rate (low interest for agriculture and agri-based machinery).Create pressure group to channelize the total government budget to rural irrigation arrangement and recently the state government has approved FDI (Foreign Direct Investment) for developing infrastructure in rural areas. So they can facilitate and support to develop storage and irrigation facility those area where vegetable and spice production are extremely high. The purpose of this research is to adopt new income generating programs in a commercial level for the sustainable development of livelihood for flood affected household in Uttarakhand, it would be an attraction for flood affected families and provide them confidence and encourage for their sustainable development and future endowment.

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CONFLICT OF INTEREST STATEMENT
The authors declare that are no conflict of interest.