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Livelihood diversification and the role of agriculture in resource scarce regions: the case of Kaghan Valley in Northwest Pakistan

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Abstract:

In rural areas where land, water and financial resources are scarce, livelihood diversification is the key strategy through which farmers try to sustain and improve their well being and gradually farming becomes less important. In this context this study is designed to explore the livelihood diversification and different livelihood strategies perused by small farmers in Kaghan Valley of Khyber Pakhtunkhwa province of Pakistan. Both qualitative and quantitative methods were used for the purpose of data collection. Results show that in past years people were dependent on the farming to sustain their livelihood but with the change of time and significantly by climatic variability their livelihood pattern were shifted from farming to labor. Unskilled wage labor is the major cash oriented livelihood activity of the households, while remittances and farming is the secondary and tertiary source of income. It is recommended that state machinery have to make investment in the area, strengthen the local institutions to enhance their efficiency in their work to create more livelihood options. Awareness should be created among the people of the valley regarding sustainable agriculture and conservation of natural resources and

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agri. extension with allied departments has to play its vital role in this regard.

Key words: Livelihood diversification, strategies, climate change, Farming community, Kaghan Valley

Introduction

Livelihood diversification is an important strategy for rural community and can play a significant role in reducing food insecurity and poverty. Ellis (2000) defined livelihood diversification as "*Process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their living standards"*. Scarcity of natural and financial resources and climate change may trigger the process of livelihood diversification among farming communities, especially those who are poor and living in marginalized areas. Livelihoods of the farming community living in highland areas are generally vulnerable due to climate change (More, 2009). Many studies for example (Steimann, 2005) have revealed that in developing countries the communities who are dependent on natural resources lose their traditional livelihood activities due this climatic variability. It has been argued by previous researchers that sustainable livelihood can only be achieved if we are able to maintain our natural ecosystem, as the majority of poor and marginalized people depend on natural resources for their livelihood security (Basar, 2009). Though many rural households are engaged in a diverse set of livelihood activities, but still the reliance on agriculture is considered as the driving force of the rural economy (IFAD, 2009). In view of this dependency on agriculture and the associated level of rural poverty, investigations into the nature of livelihood diversification also

clearly reflect the desire to understand the link between diversification and livelihood security (Smith et al., 2001).

This paper presents the findings of a research project conducted in the Kaghan Valley which is situated in the Himalayan region of Khyber Pakhtunkhwa (KP) province of Pakistan. In hilly and mountainous areas increase in temperature, rainfall and flood have caused an extensive damage to the crops, livestock and infrastructure in the area and hence severely affected the livelihood of the rural community especially the small farmers become more vulnerable (Ahmad, 2011).Many studies (for example Ali et al., 2007;Shahbaz, 2009 and Martin, 2012) have reported that non-agricultural professions are more important in the livelihood strategies of the people living in these areas, however few studies are focusing on the role of agriculture in the resource scarce areas. In this context the main objectives of this paper are to explore the livelihood diversification and role of agriculture in resource scarce region of Northwest Pakistan.

Methodology

Kaghan Valley of district Mansehra of KP province was selected purposively because this is mountainous area and such areas are fragile and directly affected by climate change (Schild, 2008).The Kaghan Valley consists of four union councils i.e. Kaghan, Ghanool, Kawai and Mahandhri. Two of the four union councils (Kaghan and Kawai) were chosen through simple random sampling. Then from each union council three village were selected through simple random method. From Kaghan UC, three villages Kaghan, Lari and Batakundi were selected by using simple random sample technique. From Kawai UC three villages Kawai, Paras and Bella Balseri were selected randomly. From each selected village 20 households were selected randomly thereby making a sample size of 120 households. Mixture of qualitative and quantitative methods

was used for the data collection. Heads of households were interviewed by using structured interview schedule; while focus group discussion and key informant interviews were also conducted to obtain quantitative data.

The data were collected during 2012 and the respondents were approached at their farms and homes. Although the interview schedule was in English but interviews were carried out in local and Urdu language to make it easy for communication and the required information was obtained with maximum accuracy.

Results and Discussion

Patterns of livelihoods

Most of the population living in resource scarce mountainous areas is very poor and facing environmental degradation. So the peoples of these areas diversify their livelihood strategy by involving themselves in different on-farm and off-farm activities (Iiyama, 2006).Respondents were asked about the different livelihoods patterns adopted by them from time to time to sustain their livelihoods and data in this regard is presented in table 1.

Table1. Patterns of livelihoods of the respondents

Occupations	Present		Past 5 years		Past 10 years		Future 5 years	
	Rank	%	Rank	%	Rank	%	Rank	%
Farming	2	17.5	2	27.5	1	63.33	2	12.5
Labor	3	12.5	3	7.5	4	3.33	3	6.66
Job	5	2.5	5	2.5	5	1.66	4	4.16
Farming + Labor	1	57.5	1	55.83	2	27.5	1	74.1
Farming + Job	4	10	4	6.66	3	4.11	5	3.3

The data in table 1 reveals that majority (57.5%) of the head of household presently both doing farming and labor and only 17.5% among them is only doing farming, while in past 5 years majority of the respondents were involved in both farming and labor and about one fourth of the respondents were only doing

farming 5 years before, however 10 years before a large majority (63.33%) of the respondents (head of household) were only doing farming as their livelihood activity and about one fourth of the head of household were doing both farming and labor 10 years before. An over whelming majority of the head of household reported that in coming 5 years they will do both farming and labor to secure their livelihoods. It is evident from the table that farming was the major occupation for overwhelming majority of the respondents 10 years before; however the trend gradually shifted from farming to farming plus labor. It is also seen that majority of the respondent shifted from single to double livelihood activities.

During discussion with the respondents it was revealed that due to climate change and limited resources they don't rely on farming alone as their crop production has been considerably decreasing during last many years. This diversification allows them to cope against scarcity of resources and climate change and to sustain their livelihood and household food security. Rural economy nowadays is not solely based on agriculture but also relies on different activities besides agriculture. The involvement of people in non agricultural activities results in stabilizes their household income hence contributes a lot towards their household food security (Datta and Singh, 2011).

Land Ownership

Agriculture plays an important role to meet the challenges of global climate change and food security which need good management of natural resources. Land play a significant role in agricultural production and its improper management can negatively affect the livelihoods of people and food security (Gunnell *et al*., 2005).

FAO (2002) defined land ownership as relationship among people, societies or groups with respect to land. It refers to as the property right of land to individual within the society.

In Pakistan land tenure is categorized as tenant, owner and owner-cum-tenants. So, the data regarding tenancy status is described in Table 2.

Table 2: Land ownership of households

Land ownership	Yes	
	F	%
Tenant	33	27.5
Owner	57	47.5
Owner-cum-tenant	30	25.0

Table 2 revealed that nearly (47.5%) of the households had their own land, while 27.5% of the respondents were tenants and only 25.0% of them were owner-cum-tenants. These results are more or less similar to the Tareen, (2011) who founded that 28.33% of the respondents were owner, followed by 27.5% and 25.0% of the respondents were tenant and owner-cum-tenant.

Area under cultivation

Land under cultivation is important factor in determining the cropping pattern and agricultural situation in the area. It is generally believed that farmers having large land holding can take risks and they have better access towards agricultural information. Therefore, data regarding land holding of the households were collected which is given in Table 3.

Table 3: Distribution of households according to their area under cultivation

Area under cultivation	F	%
Up to 3 Kanals	40	33.33
3-6 Kanals	63	52.5
6-10 Kanals	11	9.16
Above 10 Kanals	6	5

The people of the mountainous area have very small landholdings and generally terrace farming is practiced in these areas and data in table 3 shows that more than half (52.5%) of the households had 3-6 kanals of landholding, 33.33% of the respondents had landholdings up to 3 kanals, while only 9.16%

and 5% of the respondents had 6-10 and above 10 kanals of landholding. These results show that the farmers in the study area have very small holding capacity which is not enough for their total dependence on agriculture.

Households were further asked about the crops which they have grown in different cropping season. The data regarding this is given in table 4

Table 4: Distribution of crops grown by households in different cropping season

Rabi Season Crops grown	**F**	**%**
Wheat	31	25.83
Vegetables	23	19.16
Both	49	40.83
No crop grown	16	13.33
Kharif Season crops grown		
Maize	16	13.33
Potato	51	42.5
Vegetables	19	15.83
All above	34	28.33
No crop grown	0	0.0

The data in table 4 reveals that majority (40.83%) of the respondents grow both wheat and vegetables in Rabi season, while 25.83% and 19.16% of the respondents grow only wheat and vegetables in Rabi season and very few (13.33%) of the respondents reported that they don't grow anything in their field during Rabi season.

On the other hand 42.5% of the households reported that they only grow potato in their field during Kharif season and 28.33% of the respondents told that they grow all the three crops (Maize, Potato and Vegetables) in their field, while 15.83% and 13.33% of the respondents reported that they grow only vegetables and maize in their field during Kharif season.

The above results reveals that in Rabi season farmers grow both vegetables and wheat in their field while few of the respondents don't grow anything in their field during Rabi season because in Rabi season there is severe winter and heavy snow which destroy their crops.

One of the respondents told that

> "We have faced severe crop loss in Rabi season due to heavy snow and rainfall"

However in kharif season majority of the farmers grow potato in their field as it is the main cash crop of the area while all the three crops maize, potato and vegetables are also grown by few respondents in their fields.

One of the respondents reported that

> "Potato is the only crop which gives a good economic return to the farmers"

The above qualitative comments revealed that changes in temperature and heavy rainfall has severely affected the livelihoods of small farmers, which results in the loss of their crops and in this situation potato is the only crop which give survive in the severe climatic extremes.

(Martin, 2012) argued that maize is the dominant pulse crop grown, while potato and cabbage are the main vegetables grown in KPK which is the main source of income and play an important role in sustaining the livelihood of the rural population in the region.

Household's Livelihood Strategies

Livelihood strategies are considered as the mixture of activities that people choose to carry out in order to achieve their livelihood goals. These may include productive activities, investment strategies and reproductive choices. Within the community livelihood strategy varies from household to household, and the basic reason for this is varied access to assets (Steimann, 2005).The data in figure 1 represents the livelihood activities of the households in the study area.

The data presented in figure revealed that about two third of the households were dependent on unskilled wage labor as their major livelihood activity among them majority of the respondents said that they earn less than Rs.5000 (50 US$) per month through this activity while about 40% of the respondents earn 5000-10000 (50-100 US$) per month through unskilled wage labor. It is also evident from the figure 1 that about 20% of the households were relying on remittances as their major livelihood activity. It was also found that more than 60% of the households were earning monthly income of Rs 5000-10000 through this activity. Only 16% of the respondents reported that food crop production (farming) is their major livelihood activity and all of them have less than Rs 5000 average monthly income. However private business, skilled labor and employment were the strategies adopted by the fewer households.

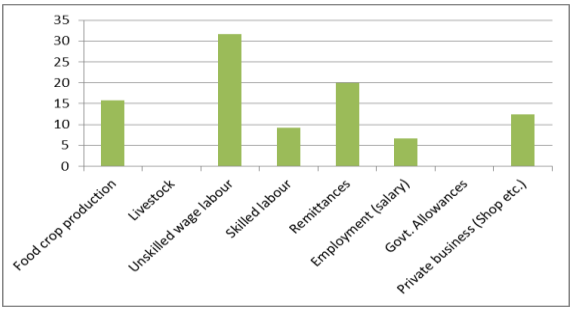

Fig.1 Major Livelihood activity of respondents in the study area

During focus group discussion with local farmer it was revealed that due to extreme weather in winter they have to move to lower areas and work as laborers to sustain their livelihoods. For example a farmer told;

> "In the winter I and my family move to lower area like Mansehra and I do labor in order to meet the dietary needs of my family. It is very hard time for us as we have no other source of income and this daily wage labor depends a lot on my health"

One of the respondents said that

> "Agriculture sector is not able to meet our needs as the prices are going up day by day and due to this economic pressure we do daily wage labor in order to meet our daily household needs."

The above comments indicate the problems faced by the farmers and thus farming becomes more difficult. It has been reported by Das gupta (2012) in many areas farmers are now doing non-farm jobs as the arable land is considerably decrease due to climate change. Majority of the people migrate to other places in order to find jobs to sustain their livelihoods.

The data in Figure 2 depicted that about 30% of the respondents had remittances as their secondary source of livelihood activity, among them most of the respondents reported that their monthly income through remittances is ranges between 5000-10000 (50-100 US$).About 20% of the respondents reported that food crop production is their secondary source of livelihood and all of them have less than Rs.5000 average income per month.

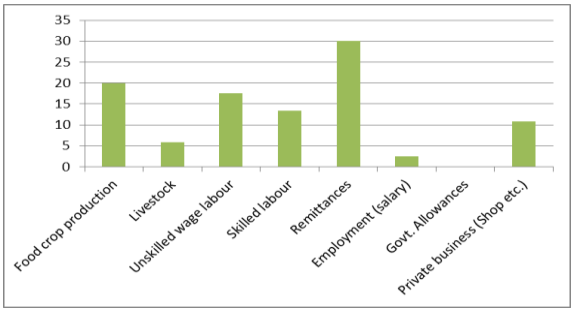

Fig.2 Secondary livelihood activity of respondents in the study area

The data in Figure 3 narrated that most of the respondents had the food crop production as their tertiary livelihood activity and all of the respondents said that they had less than Rs.5000 average income through this activity, while 30% of the respondents reported that livestock is their tertiary source of income and all of them said that they have less than Rs.5000

average income per month through this activity. Fewer respondents reported that skilled labor, private business (shops), unskilled wage labor, remittances and employment as their tertiary sources of livelihood.

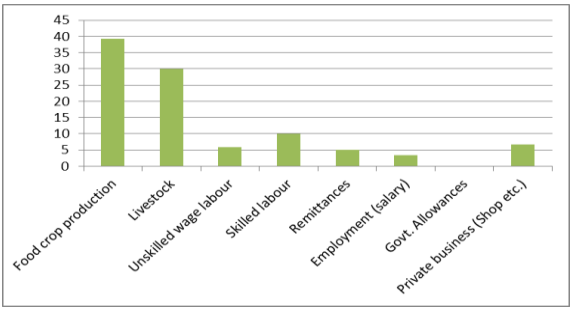

Fig.3 Tertiary livelihood activity of respondents in the study area

It can also be seen from the above data that, although dependence of the majority households is non-farm related activities, but still farming is important as it is contributing towards the household needs. Roy and Yuden (2012) found that agriculture is the major livelihood activity of the people in Bhutan. About 79% of the population is associated with farming and women play a significant role in this regard; however they have to face various problems in order to increase their production like limited land, lack of modern agricultural technology, market facilities and lack of agri. extension services. Management of the marginal lands is getting increasing priority with the increasing population pressure, poverty, soil erosion and degradation, and loss of natural resources in the hills and mountains for economic growth and environmental protection (Sah, 2002).Diversification of farm activities into high value commercial crops, processing of agricultural and other natural resource based materials, at the same time sufficiently maintaining soil, forest and other natural resources are most reasonable steps to improving livelihood of mountain people.

Life histories:

Life histories are very important to know that how multiple factors affect the individual or household time by time and how it draw a livelihood pathway. This approach is very useful as it provides insights in social process and is more useful match to quantitative survey approach (Dhunpath and Samuel, 2009).So the life stories of different respondents are presented below.

I. Interview an 83 years old person from the village Bella Balseri Paras

"My past times was very precious to me, we lived in a small house. We were 5 brothers and 2 sisters. My father was a farmer and he has 6 kanals of land. He planted maize in the field and we had apple trees in our field. We ate maize as our staple food and also sold it in the market. We had livestock in our house and we had milk and milk products from that which is quite enough for us. Climate was very moderate and we received rainfall when there is need of crop. There was very heavy snow at that time which gave us water in summer. School was very far away from our house and we had to walk hours to reach our school. As I got young I left the school and spend my time with my parents in field and take care of livestock. Then I go to Karachi and start doing labor as at that time I got married and expenses are increased and I have the responsibility of the house. I spend my 20 years in Karachi and work in different companies as laborer. Then I came back to my village and made my own house and buy some land and started farming. Climate has changed a lot and there is very irregular pattern of rainfall. I also made a grocery shop in my village. As the time passed and prices are getting high day by day it is very difficult to achieve household food security. There is no saving now a day as it was years before at my time. Now my sons are doing their job and business and my one son is living with me and he is now running the shop and takes care of agriculture."

II. Interview with a 62 years old farmer from Lari Village

"Crops and livestock was the main source of livelihood for me and my family in the past times. I start participating in agriculture activity when I was 10 years of age. We were 5 brothers and sisters. I sow wheat, maize and masoor in our field. Then I also started sowing potato in my field. Climate was very moderate in the past times. We never worried about the irrigation issue of our crops. The rainfall was in very moderate ratio and temperature was also very reasonable. There was no major household expenditure and agriculture is fulfilling our expenditure. But as the time pass we felt that temperature is getting on rise slowly and rainfall pattern is starting disturbing slowly, and our production start decreasing. That was very harsh time for me and my family then me I sold my livestock because I was not able to rare them. Then I started labor and purchased a Jeep and started driving and tried to fulfill the household expenditure. Then this routine is going on and on and by the time agricultural income had become very low because climate is no more moderate, now there is more landslides, sometime heavy rainfall and some time no rainfall, temperature increased and in this situation floods adds more."

III. Interview with a 58 years old person from Batakundi Village

"I was doing farming for a long time when I was a child as it was the only option for us. I was having a large number of livestock which was not only fulfilling our needs but we also sometimes sell it. My village was very far away from the town and it was about a 2 hours walk. I was also having agriculture land which is not only the source of income but we also have vegetables, fruits and flour from our own agriculture land. Then as the time passed our agriculture production started decreasing due to many factors. Most important among them are climatic factor and rising prices. Climate becomes very severe as we entered in the 21st century and there are

considerable changes in climate pattern. When our wheat is at germination stage and there is a desperate need of water then there is no rainfall and when it's the harvesting time then there is rainfall in very excessive amount and at the end we have nothing in hand as our yield is very low. As the agriculture is not more able to fulfill my household expenditure I start working as laborer. Now it is the main livelihood activity for me and I am keep on doing it as my health permits me."

Therefore, it is clear from the qualitative interviews that in past there is a huge dependence on farming as the weather was very favorable and moderate which results in to better crop and livestock production but as the time passes weather become not favorable and people started to depend more on livestock because due to low yield in becomes impossible to feed the livestock. People adopt diverse livelihood activities like migration to lower areas and other parts of the country to do labor and to earn money to sustain their livelihoods. Majority of them came back to their native houses after spending lot of years in doing different jobs and start farming with other livelihood activity like making a Jeep and shops. These multiple livelihood activities allow them to cope against the daunting challenge of their household food security.

Conclusion:

It is concluded that in past (10 years ago) farming was the major livelihood activity of the farming community but in present situation farming becomes less important as far as cash income is concerned, however it is still important source of food and also supplement income source from many households. With the passage of time, change in livelihood patterns of the farming community is recorded as they gradually diversify their livelihoods by shifting to labor activities and other livelihood strategies besides the farming. Currently unskilled wage labor

is the major livelihood activity of the farming community in highlands of Kaghan Valley followed by remittances as secondary and farming as their tertiary livelihood acidity. It was also found that majority of the respondents were earning less than Rs. 5000 (50 US$) from most of these livelihood activities. In future (5 years) the same livelihood strategies would be followed by the households and there will be more pressure on these three significant livelihood activities. Therefore, it is dire need of time to increase livelihood options for the people by improving the infrastructure, providing facilities especially about health and education. There is also need to focus to conserve natural resources and sustain agricultural production of the area.

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