

## **AN ANALYSIS OF LIVELIHOOD SOURCES IN HILLY AREAS OF NORTHERN PAKISTAN**

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### **ABSTRACT**

*The aim of the present study was to analyze the sources of livelihood in rural areas of Northern Pakistan. Shangla were selected as sample district for the research. Information regarding income from different sources of livelihood was collected from the sample households from 323 respondents by random sampling techniques. Data were analyzed by using descriptive statistics and chi-square test at 50:50 percent. The findings show that main sources of livelihood were agriculture and its related activities and supplemented by off farm activities in the area. Among the farm households income from crops, livestock, forest, and rental land was important, while the non-farm households were dependent on small scale businesses, public/private sector services, to some extent on remittances, and working as daily wage laborers. The average income of the households was R.s: 252578 per annum. The contribution of the farm sector was 40.63%, while the rest of the income (59.37%) was from the off farm activities. Among the farm sources the lion share of income was contributed by growing of crops followed by income from livestock. In the income from off farm sources the people are relying on the public sector followed by small scale businesses. The ratio of agriculture to non agriculture sources was 0.684. The study concludes that off farm livelihood sources are more popular than the farm sources in the area showing that the natural resources available are under utilized. There is a need to properly exploit these resources through launching such development project that can enhance the agricultural productivity. Moreover the area under reference has a natural advantage of free/cheaper grazing facility so encouragement of dairy farming business can enhance the income of rural people and hence overall development of the area.*

**Key Words:** Livelihood Sources, Farm income, Non-farm income, Northern-Pakistan.

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### **INTRODUCTION**

Agriculture is considered the back bone of rural economies in most of the developing countries. The population of these economics depends on agriculture and its allied activities for their livelihood. But agriculture alone cannot provide livelihood to all the living population of rural areas. So they resort to other non farm income available in their vicinity. Rural population not only earning income from agriculture but also support their income from other sources as well. The main sources of livelihood in rural areas are land, water, forests, and pastures etc. The rural people utilize these resources for their survival. Beside these livestock and off farm activities are also important means of employment and sources of income for these people. The main concern of the policy makers and planners of the Third World countries is to exploit the natural resources available in rural areas for the growth and development of these areas. Their stress is on the improving of small farm efficiency. The basic tenets of this paradigm are that agriculture plays a key role in overall economic growth and that small farmers are rational economic agents who can take advantage of new technologies. Focusing on small-farm agriculture fulfils the objectives of economic growth and improved equity. In terms of rural development, the small-farm first model led to a focus on projects that provide some form of assistance, such as new technologies, inputs, credit, etc. to small farmers in order to improve their productivity. The livelihoods approach, while similar to the bottom-up approach of the small-farm first paradigm, takes as a starting point the importance of households assets and the diversity of households activities and is therefore fundamentally different from the small-farm paradigm (Ellis and Freeman, 2004).

Barrett *et al.* (2000) define assets as stocks that produce cash or kind in returns. These assets are the bases for the households' ability to participate in activities to generate income. In the literature various classifications of assets can be found. For example, Reardon (1995) differentiate natural, human, on-farm physical capital, off-farm physical capital, and community owned resources. Productive assets are inputs used in the production process and therefore generate income indirectly via the activities. In contrast, non-productive assets generate in-come directly through transfers or capital gains. Ellis (2000) distinguishes natural, physical, human, social, and financial capital.

A widely accepted tenet of the development literature is that, in the process of structural economic transformation that accompanies economic development, the farm sector as a share of the country's GDP will decline as a country's GDP grows (Bhaduri, 1997). However, in rural areas, the outcome of economic growth on the agricultural and rural nonfarm sector cannot be determined a priori. It is therefore useful, when thinking about rural development, to think of the full range of rural income generating activities, both agricultural and non agricultural, carried out by rural households. This can allow an understanding of the relationship between the various economic activities that take place in the rural space and of their implications for economic growth and poverty reduction. Recognizing the importance of agriculture, this sector has an important role to play in reducing poverty, increasing households income and improving the capacity for human development. Given the fact that rural households income mostly generates from farming activities, increasing households income by focusing on income generation activities remains an important issue to all stakeholders. One of many ways to improve households income is to be aware of the characteristics of the rural households and constrains in order to seek the best possible solutions (World Bank, 2006).

The rural households derive their income from both farm and non-farm sources. They allocate labor their labour between farm and non-farm activities. Farm income include income from crops, livestock, timber and pasture etc while non-farm income includes small scale businesses, public and private employment, overseas employment, pensions and income from property and hiring out transport to other people. Additional sources of non-farm income include pensions, annuities, unemployment allowances, Social Security, veterans' benefits, other public retirement and public assistance programs, and rental income from non-farm properties (ERS, 2000).

Agriculture and livestock are key components of the livelihoods of the rural poor. The majority (almost 70%) of the world's poorest people are located in rural areas and engaged primarily in subsistence agriculture where agriculture remains a principal source of income for the majority of the population. Livestock make a substantial contribution to households livelihoods' and food security and currently sustain the livelihoods of an estimated 700 million rural poor in developing countries. For many of these rural poor, livestock provide a source of income generation, improve households food security and nutritional status, and are often the only way of increasing assets and diversifying risks. The demand for livestock and livestock products in developing countries is predicted to double over the next 20 years due to human population growth, increasing urbanization and rising incomes (FAO, 2003). Non farm sources are equally important for rural households. These sources contribute significantly to the rural economies of developing countries. However its share varies from region to region and country to country. Islam (1997) states that the shares of the non-farm sector in rural employment in developing countries vary from 20-50%. Reardon (1997) finds non-farm income shares in Africa ranging from 22-93%. Davis et al. (2007) found that in most developing countries the greater contribution to total income comes from off-farm activities. John and Wobst (2006) showed that participation in rural non-farm activities is one of the livelihood strategies among rural poor households.

### ***Objectives of the Study***

- i. To find out the income of households from different sources of livelihood.
- ii. To find the contribution of different livelihood sources to the income of rural households in the study area.
- iii. To suggest recommendations on the basis of study findings

### **MATERIALS AND METHODS**

As the objective of the research was to analyze the livelihood sources in hilly areas of Northern Pakistan, so Shangla, one of the hilly districts was taken as universe for the research. The district comprised of twenty eight union councils. Out of 28, four union councils were selected purposively. The criteria for selection were on the bases of economic activities performed by rural households in these union councils. Preliminary information were collected from different district level officials record and verbal discussion with the officials in district Shangla. According to the district report 2008, in the four samples union councils there were 9,999 households. The following formula of Cochran (1963) was used for calculating the appropriate sample size:

$$n_o = \frac{Z^2 pq}{e^2}$$

Where:

$n_0$  = Sample size,

$Z$  = Distance between the normal curves that cuts off an area at the tail. Its Value is constant, and different for different percentages.

$p$  = Variability,

$q$  = Precision,

$e$  = Error

The study area is heterogeneous in the socio economic characteristics so the level of variability and precision were taken. Taking the constant value of z at 5% i.e. 1.96, variability p (0.7), precision q (0.3) and error e 0.05, the resulted sample size was 323. Proportionate distribution was done in the selected sample size in the four union councils i.e. 106, 45, 81 and 91 Lilownai, Kuzkana, Shahpur and Pirkhana respectively. The data from the respondents were collected through questionnaire through face to face interview. Analysis was performed by using descriptive statistics and chi-square test. The hypothesis was that fifty percent of the households derive income from livelihood sources and fifty percent do not have. To check the significant of the households reported for income from a given source a chi-square of 50: 50 percent was used by the formula of Lind *et al.* (2006).

$$x^2 = \sum \left[ \frac{(fo - fe)^2}{fe} \right]$$

Where:  $x^2$  Chi-square,

$fo$  is an observed frequency in a particular category

$fe$  is an expected frequency in particular category

## RESULTS AND DISCUSSION

Livelihood sources in the area are divided in to two categories i.e. farm sources and non- farm sources. The farm sources of income includes crop, livestock, forest, rented land, daily wage labor in farm, hiring out of tractor services, and sale of fruits, vegetable and fodder. While the non-farm sources of income includes income from small scale business, public and private sector services, foreign and home remittances, daily wage labour, pension and others sources. What follows next is the discussion on income from farm sources reported by sample households.

### *Income from Farm Sources*

The response of the respondents in this regard is given in table-I. The data show that 82.35% of the sample households reported crop income, while 17.65% had no crop income. Income from livestock was reported by 42.24 percent of the households. Being mountainous area forests were significantly contributed to the livelihood of the poor households by one way or the other. A very significant number of the respondents reported income from forests. More than 60 percent reported income from forest. Similarly those having more land or located far away from their house rented out that land to the tenants and earn income. The data depicts that 25.08 percent of the sample households reported for having income from rented out land. Agriculture wage labor is also the important sources of income for rural households and play important role in the livelihood of the poor households. It was reported by 20.74 percent of the respondents for having income from agriculture wage labor in the area. Some of the landowners reported owning of tractors. In addition to the use of tractors on their own farms they were hiring out tractor services to other farmers in the area. About 10 percent of the respondents reported income from hiring out of

tractor services. Income from the sale of fruits was common in the area. These fruits include apple, walnut, plum, pear, apricot and persimmon. Possession of orchard and income from the sale of fruits was reported by 39.32 percent of the respondents. Fodder as a source of income was also found in these areas. It was reported by 21.36 percent of the sample households.

The response was tested through chi-square by 50:50 and it was found that the households reported income from crop were more than the households who reported no income from crop. while the income from livestock, rented out land, daily wage in agriculture, hiring out tractor, sale of fruits, sale of vegetable and fodder was reported by less than 50 percent of the households.

### **Income from Non-Farm Sources**

Most of the sample respondents were busy in subsistence farming and they were supporting their income through non farm livelihood sources. They usually spare some of the family labour for non farm activities to contribute to family income. Some of the households had family members abroad while there were others who were working in other parts of the province/country. Information regarding involvement of households in different non-farm activities is given Table-I. The findings show that most of the households were supporting their family income through non farm sources. These sources were mainly small scale businesses, public/private employment, home/foreign remittances, daily wage, income from pension etc. The most popular source of non-farm livelihood was employment in public/private sector. About 48 percent of the households reported income from this source, followed by 25.51 percent households who resorted to working as daily wage laborers. Similarly 42 percent households reported home/foreign remittances as livelihood source. About 39 percent of the sample respondents were engaged in small scale business. A very small percentage i.e. 2.79 percent also reported receiving pension income. In addition to these sources some other sources were also reported by sample respondents but that were not contributing to family income on regular bases.

The percent chi-square value at 50: 50 percent of the sample households suggest that the class of households reported income from livelihood sources having no income from crop, foreign remittances, home remittances, rented land, pension and other sources having significantly more households then the reported income class of households. While in case of public/private services and non-agriculture wage the percent chi-square value is not significant at 1:1 ratio.

**Table I** *Livelihood Sources of sample Households*

Livelihood sources	Respondents reporting income from		Chi square valve
	Yes	No	
<b>Households reporting income from farm sources of livelihood</b>			
Crop	262 (81.11)	61(18.89)	125.08***
Livestock	137 (42.41)	186 (57.59)	7.46***
Forest	201 (62.23)	122 (37.77)	19.32***
Rented out land	78 (24.15)	245 (75.85)	86.34***
Agriculture wages	66 (20.43)	257 (79.57)	112.94***
Farm machinery	32 (9.91)	291 (90.09)	207.68***
Sale of fruits	125 (38.70)	198 (61.30)	16.50***
Sale of vegetable	11 (3.41)	312 (96.59)	280.50***
Sale of Fodder	64 (19.81)	259 (80.19)	117.72***
<b>Households reporting income from non-farm sources of livelihood</b>			
Small scale business	122 (37.77)	201 (62.23)	19.32***
Public/private Services	157 (48.61)	166 (51.39)	0.25 <sup>ns</sup>
Foreign remittances	49 (15.17)	274 (84.83)	156.73***
Home remittance	149 (46.13)	174 (53.87)	1.93 <sup>ns</sup>
Non agric. Wages	122 (37.77)	201 (62.23)	19.32***
Pension	9 (2.79)	314 (97.21)	288.00***
Other sources	190 (58.82)	133 (41.18)	10.06***

**Source:** Field Survey, 2009.

Note: Values in parenthesis presents the percentages

### **Householdss' Income from Livelihood Sources**

It has already been mentioned that the livelihood sources are classified as farm and non-farm of the rural households. The data presented in Table-II show the contribution of these sources to total households income. Average annual income of households from all sources in the area was found to R.s: 2, 52,578. The agriculture to

non-agriculture ratio of income in the area was 0.68. This implies that most of the households in the rural areas derived livelihood from non-farm income sources. These are discussed in detailed as follow.

#### ***Farm Livelihood Sources Contribution to Total Income***

The findings show that the average annual income per households from farm related activities was R.s: 102634. In percentage terms it was 37.54 percent. These farm livelihood sources include income from crop, fruits and vegetables, livestock, forests, farm machinery and rented out land.

#### ***Cereal Crops Income***

Cereal crops of the households in the area were maize, wheat and rice. Majority of the respondents (81.11%) reported income from this source. However in terms of quantity its contribution was less than the non farm sources. The average annual income from crops in the project area was R.s: 50104. While the average income of crops reported by households; who had grown cereal crops was R.s: 61770 per annum.

#### ***Fodder Income***

The area under reference is mostly hilly in nature. Majority of the people keep livestock for their own households consumption irrespective of land ownership. Those having agriculture/forest land grow fodder for their own requirement. After fulfilling their fodder need for livestock they sell out the remaining to the fellow farmers in the local area. The data show that in the study area 19.81% households reported this practice of fodder cultivation. Its contribution to the total households income was 0.73%. The fodder in the area is barley, wheat straw, posture grasses and maize crop residue. The average annual income from fodder in the project area was R.s: 1853. Average income from fodder of those households who reported this income was R.s: 9266 per households.

#### ***Income from Sale of Vegetable***

The area is most suitable for the cultivation of off-season vegetable. One would expect the growing of off-season vegetables. But our findings do not support this statement. The reason could be lack of off-season cultivation techniques and awareness of benefits of cultivation of these vegetables. Moreover lack of finance could be another obstacle for this response. The results show that only 3.41% of the households reported income from vegetable. It is important to mention here that only seasonal vegetables were grown by the sample households. Average annual income of households from vegetable was R.s: 786. While average income from the vegetable based on the number of households reported income from was R.s: 23091 per annum. The overall contribution of vegetable to the total income was 0.31 percent.

#### ***Income from the Sale of Fruits***

Though the area is famous for fruit growing but due to lack of marketing facilities and technical know-how the people of the area is not taking interest in this business. However 38.70% of the farmers reported having inherited orchards of apple, walnut, plum, pear, amlook, apricot and persimmon. The contribution of income from the sale of fruit orchard to households income was 2.16%. The average income from this source was calculated as R.s: 5461 per annum while taking as a whole. This figure was Rs: 14111 for the reported households.

#### ***Livestock Income Contribution to Total Households Income***

Livestock is also one of the important sources of income for supporting the livelihood of the rural households. It supports the livelihood of the rural households through one way or the others. In the area buffalos, cattle, sheep and goat are reared for the livelihood activities. The data table-II show that 42.21% of the respondents reported having income from livestock. The average income of households was R.s: 12716 per year while the reported households income from livestock was R.s: 29,980 per year. Livestock contribution to total income was 5.03% percent in the area.

#### ***Farm Daily Wage Income***

It is common practice in rural areas that people work with each other on reciprocal basis in peak seasons of farm operation. The culture of working as daily wage laborer is rear. But still some households spare some members of their family for daily wage to supplement the households income. Some of the households hire out the services of their animals for transporting different goods from one place to other. Income from these services is also included to the daily wage income of the households. The data show that 20.12% of the sample households reporting income from daily wage activities in agriculture. Average households income from daily wage activities in the area was R.s:

3,610, while for the households reported income from this source was R.s: 17938 per annum. The percentage contribution of the daily wage income to total households income was 1.43% per year.

### ***Contribution of Forest Income***

Being a hilly area income from the sale of timber is one of the important sources of livelihood in the area. The results show that majority of the householdss (62.23%) reported income from the sale of forest trees for fuel/construction purposes. This source was contributing 8.03% to the householdss' income. On the average income from forest was R.s: 20293 per annum. If we take only those householdss who have reported from this source then the average income becomes R.s: 32609 per year.

### ***Income from Rented out Land***

During the field survey some of the landlords who had comparatively more land or due to shortage of family labor had rented out their land on lease to other households. This was reported by 19.50% of the householdss. The contribution of the rented land income to the total households income in the area was 2.46% per year. On the average annual income from rented out land was found R.s: 6217 per households. This figure of income was Rs.31873 for those who actually reported income from this source.

### ***Income from Farm Machinery***

The data in table-II show the income of the sample households from farm machinery. The results show that only 1.55% possessed tractor and its related farm implements. Farm machinery was owned by those who had some of the family members in the Middle Eastern countries and sent foreign remittances in sufficient amount to their homes. They hired out services of this machinery in the village and out side the village and earn income. The overall contribution of farm machinery to the total households income was 0.63%. Taken project area as a whole the average income from this source of livelihood was R.s: 1594 per year. While those has farm machinery were earning R.s: 1, 03,000 per year.

### ***Income from Non-Farm Livelihood Sources***

These sources of livelihood were more popular among the sample households. Majority of the householdss were diversified their livelihood to the non-farm income sources. The contribution of non-farm sources to the income of the sample householdss was more than the income from farm sources. The contribution of the non-agriculture related activates to total households income was 59.37 percent. The data in the Table-II show that on the average the income from these sources R.s: 149980 per year of the sample households. The non-agriculture related activities income of the households was further subdivided in to self-employment/business, non-agriculture wages income, remittances both domestic and foreign, services, pension and other sources of income.

### ***Small Scale Business Income***

The overall contribution of small scale business total income was 11.67%. This economic activity was run by 19.81 percent of the householdss in the study area. Project area taken as a whole the average income from this source was R.s: 29,467 per year. By taking only those households who reported running small scale businesses were earning R.s: 1, 48,719 per year.

### ***Daily Wages Income (Non-farm source only)***

Income from daily wage in the non farm sector was its own importance for the rural householdss. In the off season people resort to this source for supporting their income from this source. In this regard 22.60 percent of the householdss reported income from non-farm daily wages. The contribution of non-farm income to the total income was 2.38%. The average households income from this source of livelihood was R.s: 6,022 per year. While the average income of the reported households from the non-farm daily wage income was R.s: 26,562 per households per year.

### ***Remittances Income***

Like other non farm sources of livelihood remittances were equally popular among the sample householdss. In rural areas the people live in joint family systems where they can spare extra family labor for sending in search of employment to other parts of the country or abroad from where they send money to back home. The contribution of the remittances to the total households income was 3.99 percent. The average income of the households from both foreign and domestic remittances was R.s: 10071 per year before the diversification of income. Among the remittance the contribution of the domestic remittances was more than the foreign remittances. This was because of

the fact that most of the householdss were poor in the area and can not afford expenses of going abroad. The home remittance per households in the area as whole was R.s: 9793 per year. While the income for those households reported income from domestic remittances was R.s: 59679 per households per year.

#### *Public/Private Services Income*

This source of livelihood was the most popular source of livelihood among the sample householdss. The data in the table-II show that the contribution of income from services sector to the total households income was 34.37% in the area. On the average the income from services of the householdss was R.s. 61,817 per year. Households reporting income from services was having an average income of R.s: 1, 79,883 per year.

#### *Pension Income*

Some of the householdss' members were retired from different public sector jobs and they were getting pension from their respective Departments. Such types of householdss were 2.79 percent in the sample area. The contribution of income from pension to the total households income was only 1.21%. The average income from this source was R.s: 3065 per households per year. Out of the total only 9 households reported income from this source. The average of these 9 householdss comes to Rs. 1, 10,000 per year.

#### *Other Sources Contribution to Total Households Income*

The others sources of income includes income from affiliation with political party, no regular income, income from rent, etc. supporting the livelihood of the households in the area. The data shows that out of total 323 sample households 188 (58.20%) reported for having income from other sources. The contribution of other sources of income to the total households income was 15.65%. The average households income based on total households from other sources of income was R.s: 39537 per year per households. Also the average income of the households reporting the income from the other sources was R.s: 67928 per year per households.

**Table II** Contribution of Different Sources to Total Income

Source of income	Average HH income based on total HH	Contribution of the source of income to total income (Percent)	Number of Householdss reporting income from	HH reporting income from (Percent)	Average HH income based on number of HH reporting the income
<b>Farm sources contribution to households income</b>					
Food crops	50104	19.84	262	81.11	61770
Fodder crop	1853	0.73	64	19.81	9266
Vegetable	786	0.31	11	3.41	23091
Sale of fruits	5461	2.16	125	38.70	14111
<b>(All crops)</b>	<b>58205</b>	<b>23.04</b>	-	-	-
Livestock	12716	5.03	137	42.41	29980
Agric labor	3610	1.43	65	20.12	17938
Forest	20293	8.03	201	62.23	32609
<b>{Agriculture and forestry}</b>	<b>94823</b>	<b>37.54</b>	-	-	<b>32609 9</b>
Land rent	6217	2.46	63	19.50	31873
Farm machinery	1594	0.63	5	1.55	103000
<b>Agric total</b>	<b>102634</b>	<b>40.63</b>	-	-	-
<b>Non- farm sources contribution to households income</b>					
Small scale business	29467	11.67	64	19.81	148719
Daily wages	6022	2.38	73	22.60	26562
Home remittance	9793	3.88	53	16.41	59679
Foreign remittance	279	0.11	1	0.31	90000
<b>(Remittances)</b>	<b>10071</b>	<b>3.99</b>	-	-	-
Services	61817	24.47	111	34.37	179883
Pension	3065	1.21	9	2.79	110000
Other sources	39537	15.65	188	58.20	67928
<b>Non-farm Total</b>	<b>149980</b>	<b>59.37</b>	-	-	-
<b>All source</b>	<b>252578</b>	<b>100.00</b>	<b>323</b>	<b>100.00</b>	<b>252578</b>
<b>Farm: Non-farm Ratio</b>	<b>0.68432</b>	-	-	-	-

Source: Field survey, 2009.

## CONCLUSION AND RECOMMENDATIONS

A number of livelihood sources were available to the rural householdss. These include both farm and non farm sources. Most of the householdss were resorting to both types of sources for their livelihood. Among the farm

households's income from crops, livestock, forest, and rental land was important, while the non-farm households were dependent on small scale businesses, public/private sector services, to some extent on remittances, and working as daily wage laborers. The average income of the households was R.s: 2,52,578 per annum. The contribution of the farm sector was 40.63% while the rest of the income (59.37%) was from the off farm activities. The share of the farm sources income was mainly comes from crop sector followed by income from livestock. While in case of income from non farm sources public sector services were the popular sources of livelihood in the sample area households followed by small scale businesses. The ratio of farm to non-farm sources was 0.684. The study concludes that off-farm livelihood sources are more popular than the farm sources in the area showing that the natural resources available are underutilized. On the basis of study findings the following recommendation are made:

- i. There is a need to properly exploit these resources through launching such development project that can enhance the agricultural productivity. As this a huge task only the public sector can intervene in this matter by providing the technical as well as financial assistance to the local community and involving the rural masses in the development process.
- ii. Moreover the area under reference has a natural advantage of free/cheaper grazing facility so encouragement of dairy farming business can enhance the income of rural people and hence overall development of the area. As dairy farming business need huge investment the government should start joint venture with the community in this regard so that the rural people may enhance their income.

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