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# **Participatory forest management: analysis of forest use patterns, livelihood strategies and extent of participation of forest users in Mansehra and Swat districts of Pakistan**

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## **Abstract**

*The increasing rate of forests depletion in North West Frontier Province (NWFP) of Pakistan has brought into focus the shortfall of traditional state controlled systems of forest management in sustaining the forest resource base. The participatory approach of forest management in NWFP was started in the early 1990s through Asian Development Bank funded Forestry Sector Project. The forest reforms seek to initiate a process of eliminating the fundamental causes of the depletion of forest resources through participation of various stakeholders. In this context this paper presents the findings from an empirical study conducted in the two case study villages, one each in Mansehra and Swat districts of NWFP, respectively. The objective of the study was to analyze the forest use pattern, livelihood strategies, and the extent of participation/degree of trust of local people on various local level institutions.*

## **1. Introduction**

The sustainable forest management faces challenges of conflicting needs and interests of their users. The involvement of communities in forest management is now a significant feature of national forest policy and practice and of internationally supported forestry programs throughout the world (Fisher, 1999; Poffenberger, 2000; and Shackleton et. al. 2002)). Large-scale community-based initiatives began in Pakistan in the 1995 through Forestry Sector Project (FSP). It aimed on protecting and improving the hilly and mountainous environment of NWFP, thereby raising the productivity of private, community and government lands that were suitable for trees, fodder, and other crops through active participation of beneficiaries in the design, planning and execution of project related activities (ADB, 1995). The FSP has developed and institutionalized the operational plan and Village Land Use Plan (VLUP) process for management of natural

resources particularly forests with the active participation of the local people (Khattak, 2002). Theoretically VLUP is a process that establishes Village Development Committees (VDC) and Women Organizations (WO) who represent all community sections and ultimately transform into the local community based organizations for improved natural resources management through developing natural resources management plans at village level. This involves a set of guided steps in a planning process in collaboration with the forest department (representing the state). Collaborative or Joint Forest Management (JFM) aims to develop partnerships between the local communities and Forest Department for the sustainable management of forest areas on the basis of trust and mutually defined rights and responsibilities of both the parties.

Importance of forestry in daily lives of the rural population living close to forests has been discussed by many authors (Ashley, 2001; Conway et al 2002; and Kapoor, 1994). Forest dependent communities are among the poorest segments of society, heavily relying on the natural environment for their livelihoods. Degradation of the forests affects the rural livelihoods, most strongly of those at the bottom of the socio-economic scale (Durr 2002; Khan & Naqvi 2000). On a global level, importance of forests in poverty reduction and providing livelihoods to local communities is being recognized (Warner 2000). Policies, institutions and processes form the context within which individuals or households build or adopt their livelihood strategies, while these institutionally shaped livelihood strategies may have an impact on the sustainable use of the natural resource. Rural people's livelihoods depend on their assets and the external environment they face. That external environment has two key components, their vulnerabilities and the range of policies, institutions and processes which support them (Hobley 2002). In NWFP, the concept of JFM was introduced with the assumption that the local communities were heavily dependent upon forest resources for their livelihoods (Khattak 2002; Nibbering & Samyn 2002). The forest use patterns, livelihoods analysis, and the degree of trust and confidence between local people and the representatives of state are also considered imperative for the success of JFM. The present paper reports the preliminary findings from an ongoing research project entitled "analysis of institutional changes in forest management and its impact of rural livelihoods in NWFP, Pakistan". This research work has been done in collaboration with the National Center for Competence in Research

(NCCR North-South), Switzerland and Sustainable Development Policy Institute (SDPI), Pakistan. The paper addressed the following research questions;

- What are the forest use patterns in the study villages?
- What are the livelihood strategies of local people?
- What is the level of trust in and extent of participation of local people on various institutions?
- Is there any correlation between the extent of participation and some independent factors (such as income)?

## 2. Methodology

The North West Frontier Province (NWFP) is chosen because it has the largest area of productive forests of the country's four provinces. Within NWFP, two districts viz. Mansehra and Swat are selected purposively because these districts have different institutional contexts regarding forest management, and are among those districts with maximum forest cover. From each district one village is selected randomly from the sampling frame of the villages where VLUP has been approved and the institutions of VDC and WO are working. These two villages were; Village A (Gujaro Khwore, in Tehsil & District Swat) and Village B (Gulmera in Tehsil Balakot, District Mansehra). Combination of qualitative and quantitative methods of social research was used in this study. Key informants as well as focus group interviews and participant's observations were included to acquire qualitative data. While quantitative data were obtained through structured questionnaire from 50 randomly selected households in each village. The quantitative data were analyzed using Statistical Package for Social Scientists (SPSS).

## 3. Results and Discussion

### 3.1 Forest Use Patterns

Figure 1 represents the forest use patterns in the study villages. The village A (situated in District Mansehra) has mostly *Guzara*<sup>1</sup> and the Reserve<sup>2</sup> Forests were at a

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<sup>1</sup> "Guzara"-a local word used for subsistence. Guzara forests are sizable patches of wooded lands close to settlements that were set aside to meet the needs of local communities in Hazara in 1872. Guzara forests are managed by the forest department which regulates the removal of timber for commercial as well local use.

<sup>2</sup> Reserve Forests are the state owned and the communities have very limited rights.

distance of more than 20 kilometers from the village, while the village B (in District Swat) has the Protected<sup>3</sup> Forests.

Figure 1 shows that 90% of the respondents in village A (Mansehra) were using the forest wood (fuelwood) for cooking. However 56% of the respondents were using forests for timber in the same villages. Only 20% of the respondents in village A used forests for the collection of medicinal plants for household needs. While 42% of the respondents were collecting fodder from the forests for their livestock. There were 50% of the respondents who were using forest lands as pastures. In this village only 4% of the respondents told that they cut the trees from the forests and sell the wood to earn some money.

In case of Village B (in Swat district), 96% of the respondents were using fuelwood for cooking purposes, and 84% of the respondents used forests for their timber needs. About 42% of the respondents were collecting medicinal plants from the forests for domestic use. In this village, 22% of the respondents told that they cut the trees from the forests and sell the wood to earn the cash income. Similarly 28% of the respondents used forests for *qalang*<sup>4</sup> and 44% of the respondents got royalty from the forests in the past.

The above results clearly indicate the level of dependency of the local people on the forest resource. More than 90% of the households (in both areas) used forest wood for cooking. Due to non-availability of the natural gas and the higher prices of alternate sources of energy like kerosene oil, electricity and gas cylinder the local people had no other option except to use wood for cooking and heating. Likewise forest land was being extensively used for fodder and pasture in both villages, and this was one of the main obstacles in natural regeneration of the forests. In case of timber, noticeably higher percentage of respondents from the village in Swat district was using forest wood for timber as compared to that of the village in Mansehra district. As most of the houses in the village B (Swat) were made of wood, and even if the house was made of mud/stones or brick yet timber was needed for the construction of roofs. Moreover institutional access of the respondents in Swat was comparatively easy as compared to the respondents in Mansehra therefore the percentage of timber use was higher in Swat.

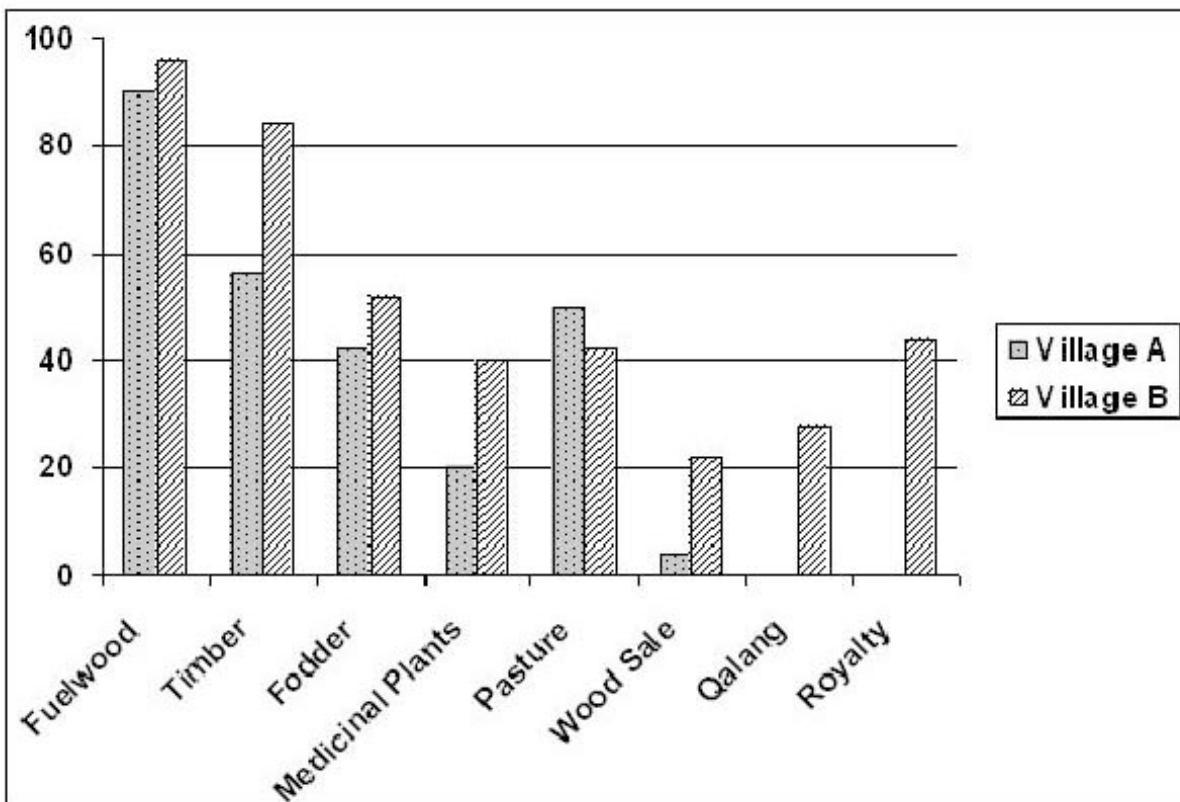
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<sup>3</sup> Protected Forests are the state owned forests where locals were given more rights like a share in timber sales proceeds, use of timber and fuelwood, and grazing of animals, etc.

<sup>4</sup> The fee that right holders receive from the gujars (nomads) in lieu of grazing cattle is called "Qalang".

More than 40% of the respondents in Swat received royalty from the harvesting of forests before the ban on timber harvesting in 1992, while the system of royalty was not prevailing in Mansehra. The *qalang* is not practiced in Mansehra district, therefore none of the respondent received *qalang* from the nomads, while in the Swat about 20% of the respondents received *qalang* from the nomads (Figure 1).

**Figure 1. Forest use pattern of the households in study villages**



### 3.3 Density and Institutional Access

The perceptions of villagers regarding density of the forests and institutional access (Table 1) indicates that according to the respondents of Mansehra district, the density of Guzara and reserved forests is 2.1 and 3.08, while their institutional access is 1.86 and 1.12 respectively.

In Swat district there is only one major category of forest namely protected forests and the respondents reported the density of the forests as 2.56 while according to their perception the institutional access was 1.98.

**Table 1. Density and Institutional Access to the forests**

Forest Types	Density of Forests	Institutional Access
Guzara Forest (Mansehra)	2.10	1.86
Reserved Forest (Mansehra)	3.08	1.12
Protected Forest (Swat)	2.56	1.98

*Density 1= very low, 2 = low, 3 = Average, 4 = high, 5 = very high*

*Access (Institutional) 1= very difficult, 2 = difficult, 3 = Average, 4 = easy, 5 = very easy*

These results revealed that the density of the forests (as per perception of the respondents) is below average, except for the reserve forests for which the density is slightly above average. The main reason for comparatively higher density of the reserve forests is their isolation from the population. These particular reserve forests are situated at a distance of more than 20 kilometer from the population and due to strict control by the forest department the local community cannot use these forests. Similarly the institutional access to the forests is in between very difficult to difficult. The access to the reserve forests is even more difficult.

### **3.4 Livelihood Strategies**

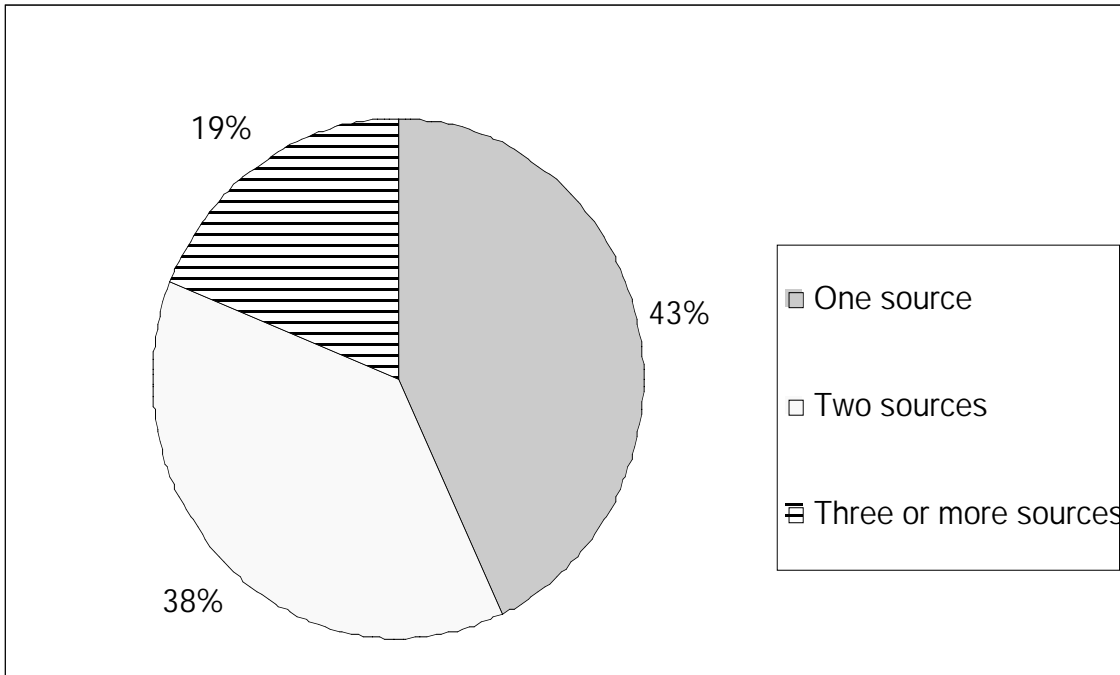
The term livelihood strategies is used to denote the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals (including productive activities, investment strategies, reproductive choices, etc.). People's access to different levels and combinations of assets is probably the major influence on their choice of livelihood strategies (DFID 2001).

The livelihood strategies were analyzed in terms of the sources of cash income of the households in the study areas. The respondents were asked about their sources of cash income (Figure 2). The results indicate that 43% of the respondents had only one source of cash income, while 38% of the respondents had two sources, and only 19% percent of the people had more than two sources of cash income.

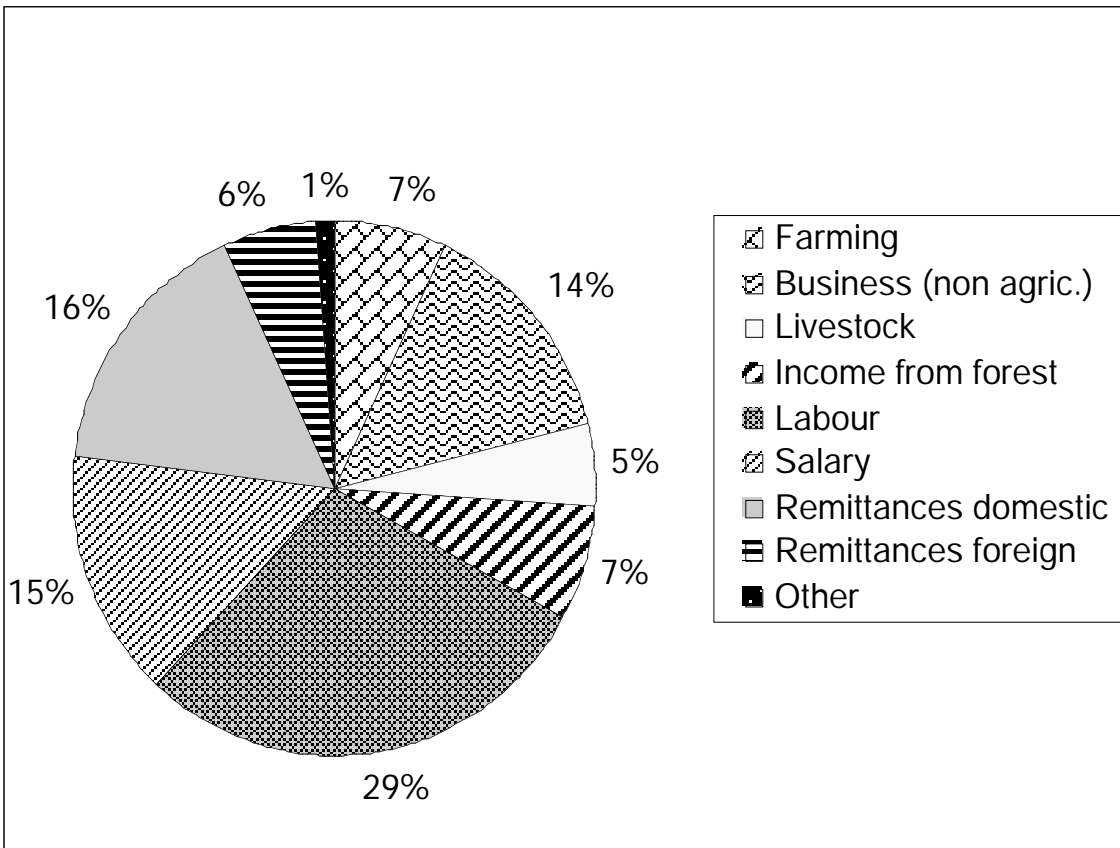
The primary source of income is that which contributes to more than 50% of the household income. Figure 3 indicates that the daily wage labour (non-farm) was most important primary source of cash income and 29% of the respondents were depending on labour for their livelihoods. Domestic remittances, salary and business were the other main sources of cash income which contributed to the income of 16, 15 and 14% of the respondents respectively. However very few households (7%) were depending on farming and income from forests as their primary source of cash income, similarly only 5% of the households were depending on livestock.

The Figure 4 represents the secondary source of cash income. Majority of the respondents (44%) told that they didn't have any secondary source of cash income i.e, they have only one source of income. Daily wage labour is once again the major secondary source of income as 15% of the respondents were relying on the labour as their secondary source of income. While 9% of the respondents told that they had farming as their second source of income, and 8% of the respondents had business as their second source of income. Only 7% of the respondents were using forest wood as their secondary source of income.

**Figure 2. Number of the sources of cash income in the study villages**

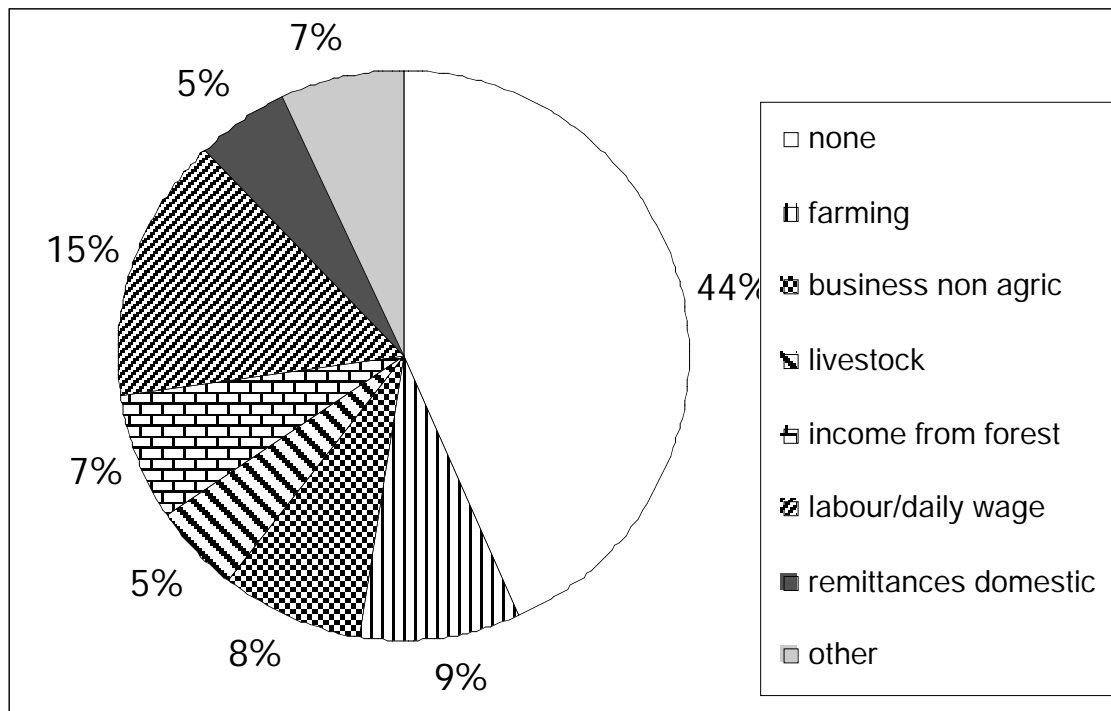


**Figure 3. Primary sources of cash income of the respondents.**

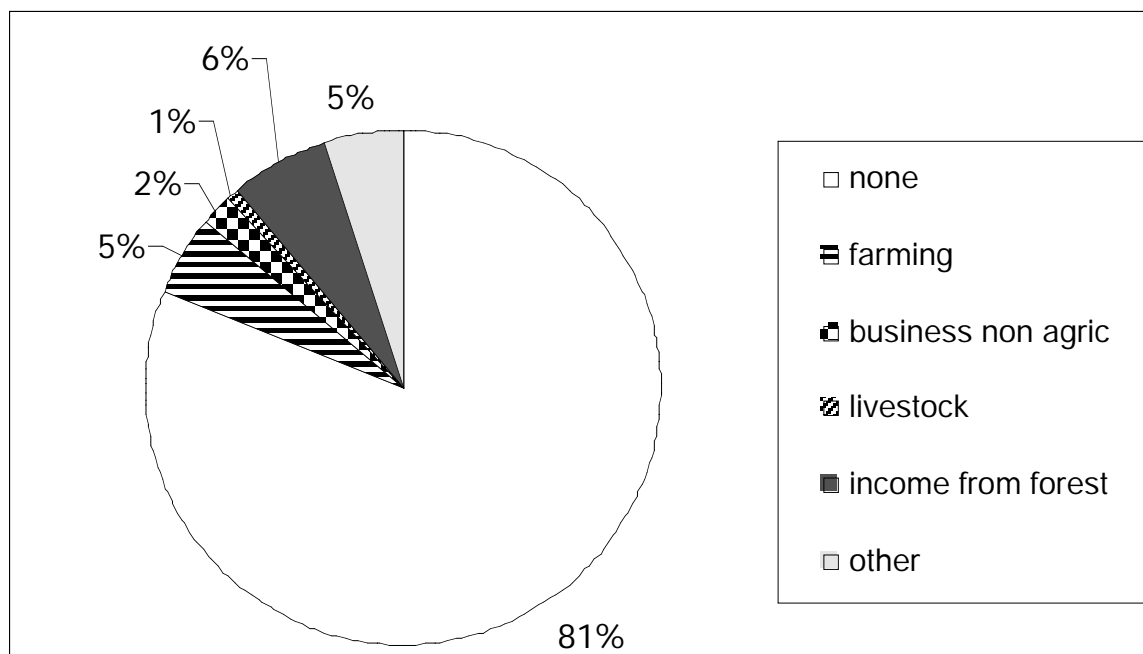




**Figure 4. Secondary sources of cash income of the respondents**



**Figure 5. Tertiary sources of cash income of the respondents**



Regarding tertiary source of income (Figure 5), majority of the respondents (81%) told that they did not have any tertiary source of income. Forest resource contributed to the income of 6% of the respondents as tertiary source of income. Agriculture and livestock were tertiary sources of income for only 5 and 1% of the households.

The above results clearly indicated that that majority of the local people do not depend on the natural resource (forest, land, water etc) for their cash income, and the daily wage labor is the most important source of cash income for most of the respondents. But in case of tertiary source of income, farming and forests are tertiary source of cash income for those 19% of the respondents who have more than three source of cash income. These results contradict the popular assumption that the rural people living in and around forests depend on forests for their livelihoods; instead people had adopted multiple livelihood strategies according to the available assets. Field observations revealed that rural areas of Mansehra and Swat district had least physical and financial assets. Their natural assets (forests) are degrading day by day, and the local people have no other option except to use their human capital for the low paid jobs like labour for their livelihoods. However, it should be noted that the people depend on forests for subsistence (non cash income) instead of their cash income.

#### **3.4 Degree of trust and level of participation in local institutions**

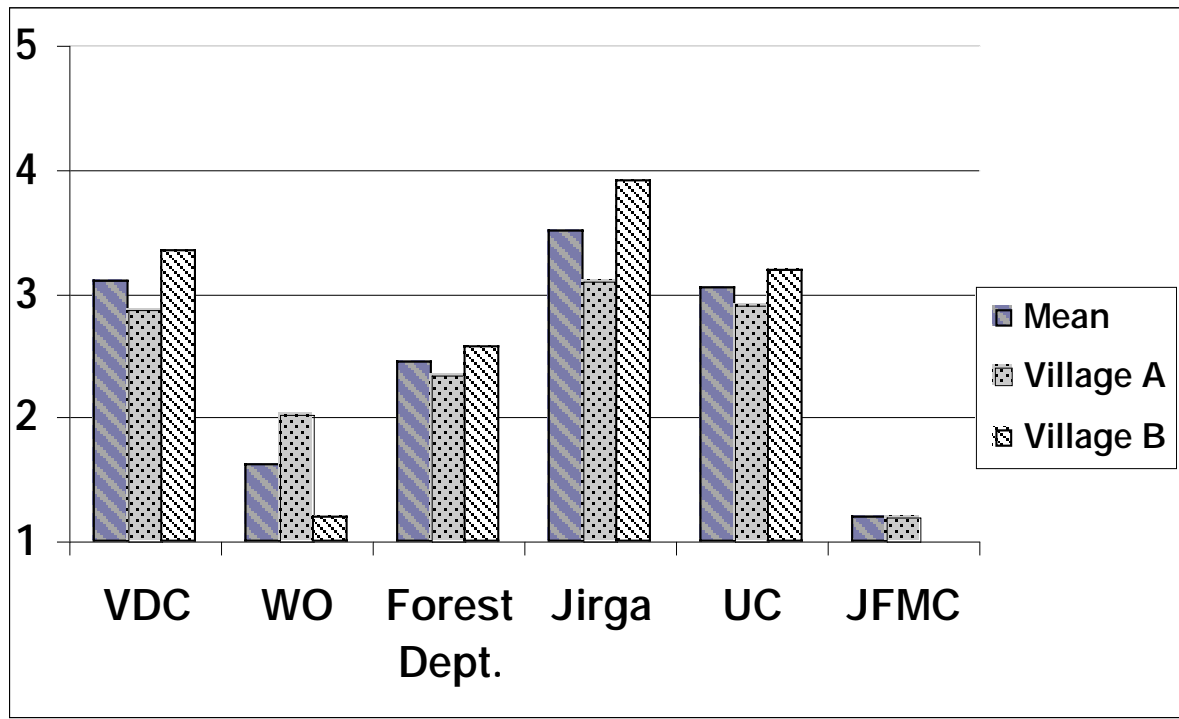
Various local institutions were selected to analyze the degree of trust and extent of participation of the respondents upon these institutions. The VDC and WO were the institutions emerged as an outcome of the participatory approach of forest management. The institution of *jirga*<sup>5</sup> was also selected for this study, because it is the most important village level institution for dispute settlement and other collective actions. The Union Council (UC) was also selected despite of the fact that it doesn't have any direct involvement in the forestry affairs because the forest department was not devolved in the devolution of power plan. However, there are informal linkages of the local councilors (union council) with the forest management. For example in both of the study villages the local councilors were also the important members of the VDCs and the union council is an important institution in daily matters of the villagers. Degree of trust on various

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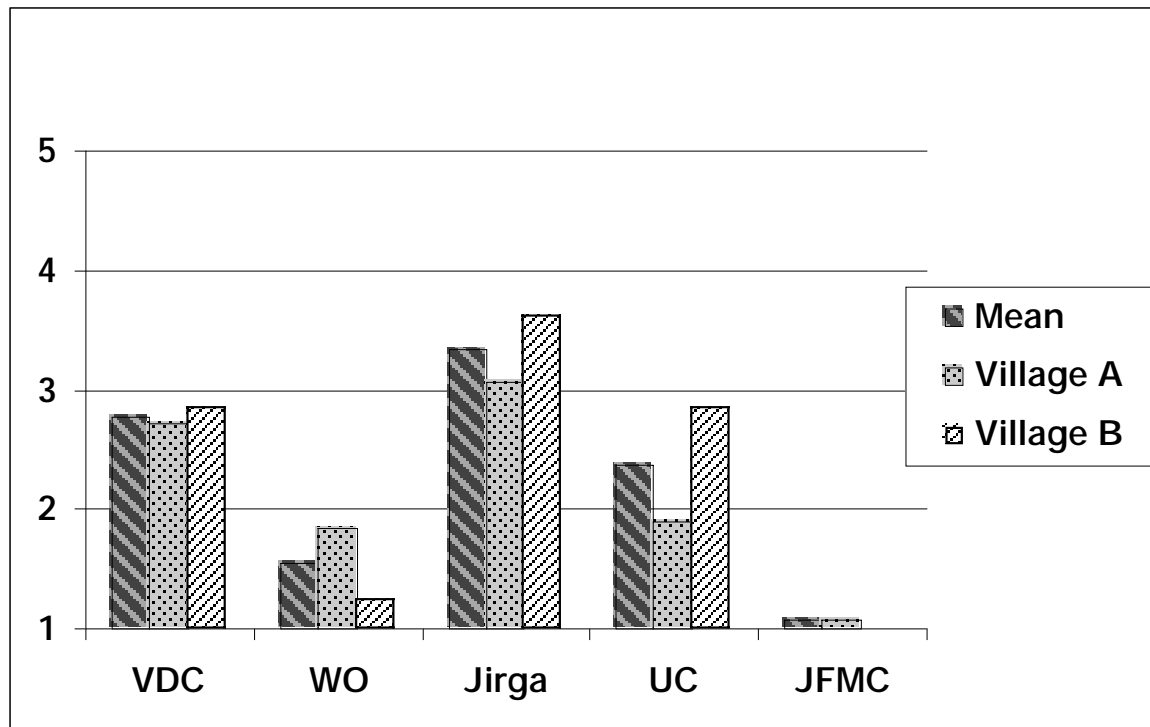
<sup>5</sup> An informal council of local elders

institutions was measured with the help of the scale (1 = very Low, 2 = Low, 3 = Average, 4 = High, 5 = Very High).

**Figure 6. Degree of trust of respondents on institutions**



**Figure 7. Extent of participation of respondents in institutions**



The results (Figure 6) indicate that the mean value of the degree of trust on VDC was 3.1, but the respondents showed least trust on WO, with the mean value of trust on WO as 1.61 only. Similarly the respondents had less trust on the forest department (2.46). The mean value of trust on union council was 3.04 (about average), while the *jirga* enjoyed maximum trust of the villagers with mean value of trust as 3.5. The degree of trust on forest department was only 2.45.

In case of the village A (Gulmera in Mansehra District), the degree of trust of respondents on VDC was 2.86 and that of WO was 2.02. While the trust of the respondents on forest department, *jirga* and union council was 2.34, 3.1 and 2.9 respectively. The respondents showed very low trust on the Joint Forest Management Committee (JFMC). This JFMC, constituted by the forest department, represented this particular village and the adjoining villages and mainly composed of very big forest owners, and the common respondents were even unaware of its activities.

For village B (Gujaro Khwore in Swat), the degree of trust of respondents on VDC and WO was 3.34 and 1.2, respectively. The trust on forest department was 2.56 and that of union council was 3.18. In this village the trust on *jirga* was high (3.90).

The above results indicate that the communities showed lower level of trust on the forest department which represents the State in the JFM system. The qualitative observation revealed that most of the people perceived the forest department as the sole responsible for the depletion of forests. According to the people the forest department worked with the timber mafia and sold their precious forests to the outsiders. The trust of the respondents on local institutions like VDC, union council and *jirga* was comparatively higher than that of the national institution (forest department). However the respondents showed very low to low trust on the WO. In fact the woman organization in most of the villages was not active, and interviews with some key informants exposed that the WO exists only on paper and in many villages even a single meeting of WO was not held since the last two years.

The level of participation of the respondents in various institutions is presented in graph. The scale use to measure the level of participation was 1= very low, 2 = low, 3 = average, 4 = high and 5 = very high. Figure 7 reveals that the *jirga* had maximum participation by

the respondents with mean value as 3.34, followed by the VDC and Union Council (UC) with their respective mean values as 2.78 and 2.37. The least level of participation was in WO and JFMC with only 1.55 and 1.08 as their respective mean values.

In case of village A (in Mansehra), the extent of participation of respondents in the activities of VDC and WO was 2.72 and 1.84 respectively. The extent of participation of the respondents in the activities of *jirga* was 3.06 and for that of UC was 1.9. The respondents had the lowest degree of participation in the activities of JFMC.

Regarding the village B (in Swat) the extent of participation of the respondents in the activities of VDC, WO and UC was 2.84, 1.24 and 2.84 respectively. While the participation of respondents in *jirga* was 3.62 (Figure 7). The JFMC was not present in this village, hence logically there was no participation of the respondents in this institution.

The results indicate that most of the respondents did not actively participate in the activities of the newly established institutions (VDC, WO and JFMC) constituted as a result of the forest reform process. The institution of JFMC was formed by the forest department. The qualitative interviews and field observations revealed that the local people are losing their trust on these institutions due to inactiveness of these institutions. The interviews with the members of VDC revealed that the forest department is responsible for the increasing rate of mistrust and inactive participation by the rural people. The forest department did not care for the demands/suggestions of the VDC/WO and in some areas where the VDC had done plantation by employing the local labour; the forest department had not been paying their wages for the last many months. Consequently the local people are losing their trust on VDC and WO, and the situation is getting worst as most of the respondents were not participating in the activities of these institutions.

The correlation between the income of respondents and their trust as well as participation in various institutions given in the Table 3, indicated significant positive correlation between the total income of respondents and the degree of trust on VDC, *Jirga* and UC. Similarly significant positive correlation is recorded between total income of the respondents and their participation in the activities of VDC, WO, *Jirga* and UC. It can

therefore be inferred that the respondents with more income have higher trust and higher degree of participation in most of the institutions

**Table 3. Correlation between total income of the household and their trust and participation in various institutions.**

	VDC	WO	JFMC	Forest Deptt.	Jirga	UC
<b>Trust</b>	0.23*	0.06	0.48**	0.15	0.33**	0.35**
<b>Participation</b>	0.37*	0.22*	0.40**	---	0.30**	0.41**

\* Correlation is significant at 0.05 level of probability

\*\* Correlation is highly significant at 0.01 level of probability.

The above table indicates that the poor people had less trust on institutions and comparatively rich people had higher degree of trust on the institutions. Similarly the households with low income had less participation in the activities of these institutions as compared to the households with higher income level.

#### 4. Conclusions and Recommendations

The results indicate the intensive use of forest wood for cooking purposes in both of the locations. Similarly majority of the respondents in Swat were using forest wood as timber. The forest land was also being used as pasture for the livestock. Comparatively less number of respondents were extracting the forest wood for commercial purpose. It can be stated that the forests contributes to the subsistence-oriented strategy of the respondents rather than the cash income strategy.

Regarding livelihood strategies the respondents had adopted diverse livelihood strategies, as 57% of the respondents had two or more sources of cash income for their households. Labour (non-agricultural) was the main source of income for most of the respondents, followed by domestic remittances, salary and business. Forests do not contribute significantly to the livelihood strategies of the respondents, because only 7% of the respondents were depending on forests as their main (primary) source of cash income. The general assumption that the local people are destroying forests to earn their living becomes illogical, because majority of the people were using forests for the subsistence and there were very few people who were using forests as main source of their income.

The degree of trust and extent of participation of the local people on newly created institution (VDC, WO and JFMC) was found to be on the lower side. The lack of trust between stakeholders was the main factor that hindered the effectiveness of the Joint Forest Management system. The correlation of cash income with the extent of participation and degree of trust on these institutions represents a bleaker picture. The people with less income (in other words poor segments of the community) had lesser trust and participation in the institutions as compared to the people with higher income. The correlation was also positive for the institutions like *Jirga* and Union Council.

Further research is needed to address the question that 'if the local people are not the main cause of forest depletion, then what are the other factors responsible for forest depletion'. The local institutions (VDC/WO) should be made more pro-poor and more participatory in nature, and the traditional institutions (*Jirga*) should also be taken into consideration before formulation of any policy.

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