INTERNATIONAL JOURNAL OF AGRICULTURE & BIOLOGY
1560–8530/2006/08–1–107–110
http://www.fspublishers.org

Analysis of Myths and Realities of Deforestation in Northwest Pakistan: Implications for Forestry Extension

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ABSTRACT

Pakistan is among those countries, which have very high deforestation rate. The remaining forests are very diverse in nature and of significant importance for the country's economy and livelihoods of the local people. This present paper attempts to analyze myths and realities regarding deforestation in the North West Frontier Province (NWFP) of Pakistan. It presents the perceptions of forest dependent people of the province regarding the forest use patterns, condition of forests, change in forest cover, factors responsible for the forest depletion and increase of illegal cutting. The intensive use of forest wood for household needs (cooking, heating, timber etc.) and ineffective forest management strategies by the forest department were some of the key reasons of deforestation in the study area. Policy guidelines (implications) are suggested for improving the effectiveness of forestry extension services.

Key Words: Forests; Forestry Extension; Deforestation; NWFP

INTRODUCTION

Forests occupy about 4.6 million hectares (Mha) of the total land area of Pakistan (Government of Pakistan, 2005). This includes, 1.96 Mha of the hill coniferous forests (43% of the total forests), 1.72 million ha scrub or foot hill forests (37.2% of the total forests), irrigated plantations (0.234 million ha), riverain (0.297 million ha) and mangroves (0.35 million ha) in the delta of Indus river (Qazi, 1994). Most of the country's forests are found in the northern part (40% in North West Frontier Province and 15.7% in Northern Areas and 6.5% in Azad Kashmir). The forests in the North West Frontier Province (NWFP) are distributed over the mountains of Himalayas, Hindukush and Korakoram. The mountain areas especially the districts of Dir, Swat and Mansehra, consist of many valleys with scrub and/or coniferous forests on the upper slopes, and alpine pastures on the ridges.

Although the forest resources of Pakistan are meager they contribute significantly to the economy of Pakistan. The forests of Pakistan perform various functions i.e. productive, protective, regulative and socio-cultural. Their role in soil conservation, water production, and regulation of stream flow and maintenance of ecological balance far exceeds the direct benefits realized from tangible forest products (Khan & Mahmood, 2003). These forests are vital for the protection of land and water resources, particularly in prolonging the lives of dams, reservoirs and the irrigation network of canals. Forestry is also essential for maintaining a sustained supply of wood and wood products (Qazi, 1994; Mehmood, 2003).

In the mountain areas of NWFP trees and forest resources almost always have a place in rural livelihoods. People rely on forests for fodder for livestock, timber for houses, and above all for fuel wood, which is the most important, and often the only source of energy for cooking and heating for most rural households. In addition, forest people collect diverse non-timber forest products for use at the household level and for cash income (Khan & Naqvi 2000). Farming is the most important subsistence oriented livelihood in the mountain areas of NWFP. To meet their subsistence, the farmers have to practice intensive method of cultivation, and bring marginal land under cultivation through encroachment of forests and of steep slopes (Hussain, 2003; Steimann, 2005).

Forest depletion is one of the most serious environmental issues for Pakistan. According to an estimate 39 thousand hectares of forests are vanishing annually. Between the years 1990 and 2000, the deforestation rate in Pakistan was 1.5% annually (FAO, 2005). Studies based on remote sensing show that the rates of decline in forest cover in NWFP will lead to a complete disappearance of the forest from most areas within 30 years. Though significant progress has been made in tree-planting, notably on farmland, it does not compensate the loss of natural forests (Suleri, 2002).

People living in and around forests are often blamed for the exploitative forest resource use (Geiser & Steimann, 2004). Khan and Mahmood (2003) highlighted critical threats (natural as well as artificial) to juniper forests viz. population explosion, poverty, lack of awareness, ruthless cutting by the locals, removal of undergrowth, overgrazing and trampling disease. Likewise, Mahmood (2003) argued that the removal of forest tracts to grow crops by the forest

dwellers, increase of urbanization, forest cuttings for roads construction, dependence of rural population on wood for fuel, over gazing of land by cattle and timber mafia are some causes of forest depletion in the NWFP.

Many authors believed that ineffective and unsustainable forest management practices by the state forest departments is the main cause of forest depletion, which have focused more on economic than on environmental utility. Such practices also deny community subsistence needs (Iqbal, 2000; Mahmood, 2003; Shahbaz *et al*., 2006). The roots of this approach can be traced back to the colonial era (Geiser, 2000). The staff within the forest department of NWFP is organized today in the same way as during colonial periods, in a highly hierarchical order with the central power in the provincial capital of Peshawar (Geiser & Steimann, 2004).

This paper analyzes some factors responsible for the forest degradation in the mountainous areas of NWFP. The results are discussed in the light of the forest use patterns of the forest dwellers, and the perceptions of local people regarding condition of forests, change in forest cover, factors responsible for the forest depletion and increase of illegal cutting. Implications for effective forestry extension are also given.

MATERIALS AND METHODS

The NWFP was chosen for the present research project because it has the largest area of productive forests (40%) of the country's four provinces. Within NWFP, two districts viz. Mansehra and Swat are selected purposively because these districts are among those having maximum forest cover. From each district four villages were selected randomly. Combination of qualitative and quantitative methods of social research was used in this study. Key informants as well as focus group interviews and participant observations were included to acquire qualitative data, while quantitative data were obtained through structured questionnaire from 50 randomly selected households in each village, and in total 400 interviews were conducted. The quantitative data were analyzed using Statistical Package for Social Scientists (SPSS).

RESULTS AND DISCUSSION

Demographic characteristics. The demographic characteristics of the respondents are presented in the Table I. The average age of the respondents was 49.5 years. About 62% of the respondents were illiterate, while only 38% were literate. The average family size of the respondents was 9.4 persons which is very high as compared to the national as well as provincial averages. Per capita income was Rs. 10,123/- or 168 US$ only which is many times lower that national per capita income of 736 US$. It shows that most of the households are extremely poor, illiterate and marginalized.

Fig. 1 represents the main sources of cash income of the respondents. Remittances (domestic & foreign) and daily wage labour are the major livelihood strategies for most the house holds (29 & 26 % respectively). Salary was the third main means of the livelihoods as only 15% of the households were depending on salary. However a small number of households were depending on farming (13%) and income from business (12%) as their primary source of cash income. Similarly, only 2.3% of the households were dependent upon livestock and only 2% earned their living from forests.

The above results suggest that majority of the local people do not depend on the natural resource (forest and land) for their cash income, and the daily wage labor and remittance is the most important source of cash income for most of the respondents. In most of the cases 1 to 2 family members of the respondents had migrated to big cities (mainly Karachi) to earn their livings. Focus group interviews revealed that most of the migrants are doing low paid jobs like bus conductors/drivers, laborers etc.

Forest use patterns. About 90% of the respondents were using forest wood for the cooking of food and heating purpose (Fig. 2). The intensive use of fuel wood was essentially due to non availability of the alternate sources of energy. The natural gas was not available in all of the

Table I. Demographic characteristics of the respondents

Average Age (years)	**49.5**
Literate%	62
Illiterate%	38
Family Size	9.4
Annual Income (Rs. per capita)	10,123

Table II. Distance, density and access to forest resources

	N	Min	Max.	Mean	S.D.
Distance of nearest forest from home (Km)	400	0	12	2.20	2.03
Density of nearest forest (1=very low, 2=low, 3=average, 4=high, 5 =very high)	400	1	4	2.38	0.85
Institutional access to nearest forest (1=very difficult, 2=difficult, .. ……5 =very easy)	400	1	5	2.19	0.90

Table III. Change in forest cover during the past 5 and 1 years

Perceptions of respondents	Past 5 years		Past 12 months	
	Frequency	Percent	Frequency	Percent
Decreased a lot	133	33.3	71	17.8
Decreased a little	181	45.3	197	49.3
Remained same	65	16.3	92	23
Increased a little	21	5.3	40	10
Increased a lot	0	0	0	0
Total	400	100	400	100

villages. Electricity was present in six out of eight villages, but higher cost of electricity was a constraint to use it for cooking and heating. Similarly the kerosene oil and liquid petroleum gas (LPG) cylinders were unaffordable by most of the respondents. The winter season is very harsh with heavy snowfall and the people have no other option except to use forest wood for cooking and hearting purpose. With the average household size of more than 9 persons the demand for firewood and fuel wood is increasing rapidly thereby adding enormous pressure on already degraded forests. The qualitative observations revealed that in one of the study villages the people used self-generated electricity through the hydro-powered generator, and this facility was available almost free of cost to the villagers. As a result the use of forest wood was less and the condition of the nearby forest was fairly good as compared to the other villages.

The forest wood was also being used intensively for the construction of new and repair of existing houses as was informed by 73% of the respondents. Most of the houses in all of the villages were made of wood. Even if the house was made of mud/stones or brick yet timber was needed for the construction of roofs, doors etc. As most of the households keep livestock, therefore about 50% of the respondents collected fodder from the forest and similarly 50% of the respondents were using forest land for the grazing of their animals. Very few people used forest for commercial purpose for example *qalang*[1], fruit, wood sale etc. (Fig. 2). Moreover free grazing of animals in the forest areas was revealed as one of the main reason of inadequate growth and regeneration of new trees.

Perceptions of the respondents regarding distance, density and access to the nearest forest from their home (Table II) indicated the average distance of 2.2 kilometers, while the average density was 2.38 which is below average. The access of the respondents regarding forest use was 2.19 (rated as difficult). Interviews of the focus groups and key informant revealed that in the past (10 years ago) the forests were at a distance of only 1 to 1.5 kilometers from village. Similarly density of the forests was high in the past but now most of the forests are vanishing due to over exploitation and illegal cuttings by the nexus of timber smugglers (timber mafia) and the provincial forest department.

Deforestation: perceptions of the respondents. The perceptions of the respondents regarding change in forest cover during the past 5 and 1 year were attained on a five point lickert scale (1=decreased a lot, 2=decreased a little, 3=remained same, 4=increased a little and 5=increased a lot). The information (data) is presented in Table III. More than 33% of the respondents told that the forest resource decreased a lot during the past 5 years, but most of the respondents (45.3%) told the forests were a little decreased during the past 5 years. Only 5.3% of the respondents told that they observed a little increase in the forest resources, while 16.3% opined that the forests were in the same condition as that of 5 years ago. Similarly for most of the respondents (49.3%) the forest decreased a little during the past 12 months while 23% of the respondents told that they didn't observe any change in forest cover during the past 12 months. None of the respondents told that the forests were increased considerably during the past 5 years (Table III). Data (overall mean was 1.94), indicated that the forests have decreasing trend.

Table IV. Trends in illegal cutting of forests during the past 5 years

Perceptions	Outsiders		Villagers	
	Frequency	Percent	Frequency	Percent
not at all	1	0.3	0	0
decreased a lot	28	7	11	2.8
decreased a little	86	21.5	81	20.3
remained same	130	32.5	83	20.8
increased a little	104	26	160	40
increased a lot	51	12.8	65	16.3
Total	400	100	400	100

Table V. Perceptions of respondents regarding the responsible for illegal cuttings

Responsible for illegal cutting	Frequency	Percent
Forest Department	315	79
Local Community	65	16
Other	20	5

Perception of the respondents regarding the trends of illegal cutting of forests, by outsiders and villagers, during past 5 years is presented in the Table IV. Majority of the respondents (32.5%) told that the illegal wood extraction by the outsiders remained the same. The qualitative data revealed that the illegal cutting was already very high for the last 10 years. About 26% of the respondents informed that the illegal cutting increased a little, while 12.8% of the respondents told that the illegal cutting increased a lot during the past 5 years. Most of the respondents (40%) opined that the there was a little increase in the forest cutting by the villagers over the period (Table IV).

Majority of the people (79%) blamed the forest department for the illegal deforeatation, while only 16% of the people told that the local people are responsible for illegal cutting, and 5% of the respondents assigned miscellaneous causes of this effect (Table V).

The qualitative interviews revealed that the foresters take bribe from the villagers and outsiders and allowed to cut trees. Similarly the higher forest officials take heavy amount of money from the timber smugglers and allow them to cut the trees. Some of the typical qualitative remarks of the respondents were;

"The foresters take money from the blackies (timber smugglers) and allow them to cut as many trees they want"; "the forest department has less control on the area, the timber smugglers are more powerful than the department";

[1] The fee that right holders receive from the gujars (nomads) in lieu of grazing cattle is called "Qalang".

Fig. 1. Main sources of cash income for the respondents households

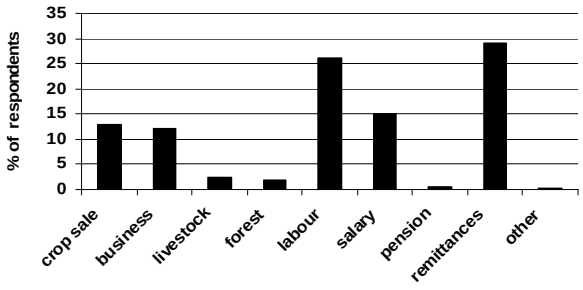
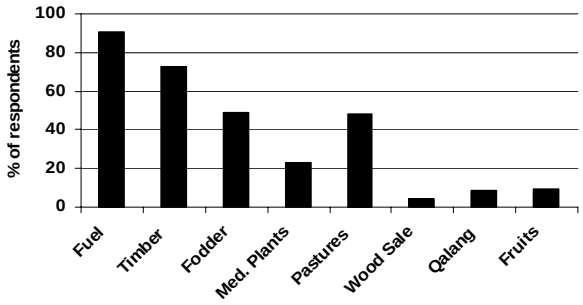


Fig. 2. Forest use patterns in the study village



"We established a village committee to protect the forests but the forest guard and the forester threatened the president and secretary of the committee and ultimately the activities of the committee were ceased"; "We are poor and we cannot survive without wood, but the forest department impose restrictions on us while for the rich people there is no problem at all";

"Our young boys are unemployed and they have nothing to do except to cut trees and sell it in the market".

The qualitative data support the findings obtained from the quantitative data. On one hand the access to forests for local people, who use forest wood for subsistence purpose, is rather difficult but on the other hand access for the timber mafia (smugglers) is quite easy illegal means like bribery.

CONCLUSIONS

This research study indicates that the general assumption that most of the forest resources are destroyed by local forest dwellers is not true. In fact local people do not cut trees for economic purposes, however they have to use minor part of the forest resource for their survival/subsistence such as fuel wood, timber (for household use), pastures, fodder. The deforestation results not only due to the subsistence of the people living in and around forest areas, but also due to the ineffective forest management strategies and bad governance by the provincial forest department. The forestry extension service offered by the department is quite ineffective and doesn't address the real problems. There is a need to streamline forestry extension services in the area by further strengthening the existing community based and non governmental organizations, so that the local people are involved in the reforestation. They need to be provided with educational services regarding sustainable use of forest resources and strategic forest management. Exploration of alternate resources of fuel and energy and providing training to local people can be a positive step to reduce deforestation. They further need to be trained regarding effective control of timber mafia and involvement of youth in productive forest care activities. In case such measures are not taken care of, the deforestation rate may be increased, due to increasing subsistence of increasing populace. Mountains will turn into the barren areas causing high temperature, loss of biodiversity, and a substantial decrease in water reservoirs.

Acknowledgement. The contribution of the National Center for Competence for Research (NCCR North South), Switzerland is gratefully acknowledged.

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(Received 10 May 2005; Accepted 20 October 2005)