IMPACTS OF PARTICIPATORY FORESTRY ON FOREST RESOURCE DEVELOPMENT: A CASE STUDY IN PAKISTAN

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ABSTRACT

Participatory forest management (PFM) initiatives have taken place in Pakistan for almost three decades, but apparently there have not been any visible impacts. The paper is based on assessing the impacts of two participatory forest management (PFM) programs, implemented in north-eastern and north-western parts of the Islamic Republic of Pakistan, on the forest resource development. The research was carried out in three Districts of Pakistan, viz. Muzaffarabad (AJK), Abbottabad and Mansehra in the areas where PFM programs namely Integrated Land Management (ILM) and Environmental Rehabilitation and Poverty Reduction in Terbela Reservoir Catchment (PWSM) were being implemented. The study on reforestation activities indicated no significant differences (p=0.231) between *program* and *no-progra*m areas, nor between participants and non-participants (p=0.128), even though more forest trees were planted under PWSMP. The participants planted more trees than non-participants. The programs succeeded in getting significant involvement (p=0.000) of people in forest protection activities. These two accomplishments serve the forest management and development aims of the programs, but do not materially improve the livelihood of the people at this time.

Key Words: Participatory forest management.

INTRODUCTION

Forest is a scarce resource in Pakistan, covering only 4.8% of the total land area (Nizamani & Shah, 2004; PFI, 1999). The per capita forest cover is only 0.03 ha and it is declining (AHKCRD, 2002). Forest cover is insufficient to meet the needs of forest-dependent communities. The growing population has led to added pressure on resources; especially those on communal land and state forests (reserved forest). Thus, there has been an overall decline in both the size of forest areas and the per-hectare growing stock. Similarly, common land has undergone a deterioration of desirable trees, bushes, shrubs and grasses (WFP, 1997). In Pakistan, most of the forests are still managed in the top-down management system (UNDP, 2002), with little regards to participatory forest management (PFM). The traditional system of forest and existing forest policies have not so far succeeded to either increase the forest cover or reduce the miseries of poor forest dependent communities. However the experiences revealed that focusing only on trees neither reduced deforestation nor improved

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the living condition of communities living in and around designated forests. In the study area and few other parts of the country the participatory (joint or social or community) forest management has been introduced with external donor support, however this has been patchy, and a great deal of effort is needed to sustain these initiatives.

Despite of the donor's intervention and intervention of all the Participatory Forest Management (PFM) initiatives for about three decades little impacts have been observed on deforestation rates (FAO, 2007a & 2005). There is no research done on PFM in Azad Jammu Kashmir (AJK) in particular. The work done in North West Frontier Province (NWFP) by Ali *et al.* (2006 & 2007) has focused only on one aspect of socioeconomic improvement i.e. income of people dependent on forest and forest resources. This research is an attempt to assess the impacts of Participatory Forest Management on forest resource development in Abbottabad, Mansehra and Muzaffarabad (AJK).

METHODOLOGY

This research assesses the impacts of PFM programs on forest resource development. The different program interventions/activities applied to the implementation of each program were expected to generate the impacts. It shows that independent variables (socio-demographic factors and program interventions / activities have resulted in impacts on forest resources. Participation was also treated as an impact because one of the program objectives was to increase peoples' participation in order to improve forest resources. Changes in peoples' attitudes and perceptions which were manifested by their initiative to actively participate in planting trees, protecting forest resources, carrying soil conservation and water harvesting practices were regarded as the impacts of the program implementation. In the conceptual framework various program impacts have been associated with different program activities to assess relationships between different activities carried out under relevant objectives. These envisaged impacts have been developed hypothetically, mainly based on the stated and implied program objectives and theory and findings of previous studies (Moss *et al.,* 2005, Thassim *et al.,* 2005 and Pandey, 2005).

RESULT AND DISCUSSIONS

The main objective of both the programs' implementation activities was to improve the forest resource conditions in the study areas through people participation. The objective was to be accomplished through increased forestation and forest protection activities on state forest as well as privately owned land.

Reforestation

Reforestation was the major program activity under both programs. The data showed that the number of forest trees planted by the people in the area ranged from 5 to 1,900 trees/hh in the last three years' the. The average number of trees planted under program (P) and no-program (NP) were 121.65 and 138.26 trees/hh respectively (Table 1). The average number of trees planted by participants was 124.06 trees/hh, as compared to only 87.32 trees/hh, by non-participants (NPT). About 40% participants (PT) have not planted any trees. Out of remaining participants who have planted trees 29.2% were from lower category of 1-100 trees/hh (Table 2).

Table 1. Number of Forest Trees Planted by P and NP Respondents

Tree Planted	P		NP		Total	
	Freq	%	Freq	%	Freq	%
None	140	41.4	611	41.3	751	41.3
1-100	87	25.7	426	28.8	513	28.2
101-200	3	10.9	179	12.1	216	11.9
201-300	26	7.7	111	7.5	137	7.5
301-400	10	3.0	36	2.4	46	2.5
401-500	10	3.0	33	2.2	43	2.4
> 500	28	8.3	83	5.6	111	6.1
Total	338	100.0	1479	100.0	1817	100.0

Note: Freq= Frequency, P=Program Respondents, NP=No-Program Respondents.

Table 2. Number of Forest Trees Planted by PT and NPT

Tree Planted	NPT		PT		Total	
	Freq	%	Freq	%	Freq	%
None	56	57.7	555	40.2	611	41.3
1-100	23	23.7	403	29.2	426	28.8
101-200	10	10.3	169	12.2	179	12.1
201-300	2	2.1	109	7.9	111	7.5
301-400	1	1.0	35	2.5	36	2.4
401-500	2	2.1	31	2.2	33	2.2
> 500	3	3.1	80	5.8	83	5.6
Total	97	100.0	1382	100.0	1479	100.0

Note: Freq= Frequency, PT= Participants, NPT= Non-Participants

Hypothesis testing was performed to determine whether the programs have accomplished their objective to augment the forest resource. The results of an independent sample t-test produced t-values (α) of reforestation activities for

program and no-program were not significant with t(1815)= 1.198, p=0.231 where NP has significantly larger mean than P as for number of trees planted (Table 3).

Table 3. T-Test of Reforestation by P and NP Respondents

Status	N	Means	t value	p value
No-Program	338	138.26		
Program	1479	121.63	1.198	0.231
Total	1817			

Note: N = Number of respondents, P= Program Respondents, NP= No-Program Respondents

Table 4. T-Test of Reforestation by PT and NPT

Status	N	Means	t value	p value
Non-Participants	97	87.32		
Participants	1382	124.04	-1.523	0.128
Total	1479			

Note: N = Number of respondents, PT= Participants,
NPT= Non-Participants

Further analysis on reforestation activities was conducted to see if the differences were significant for participants and non-participants. The t-test results for participants and non-participants were insignificant with t(1477)= -1.523, P= 0.128. (Table 4). Based on test results it can be deduced that there was not any significant differences in the number of forest trees planted by people under program and no-program villages. Greater numbers of trees were planted by participants on average as compared to non participants. However, these programs had not caused significant impact on reforestation done by people and this was key reason for the lower number of trees planted is the landholding size of participants. This is consistent with the finding of the research data that the maximum number of respondents in both programs have landholdings of only 1-20 kanals.

Although the qualitative data revealed that people are willing to plant forest trees on forest as well as on their banjar lands (waste or barren lands), their reluctance to plant forest trees was either the uncertainty of benefits from land that does not belong to them or they did not have sufficient land to be forested. The qualitative data revealed that one of the reasons for reluctance to plant forest trees was lack of assurance of rights and shares of the benefits from trees. Certainly this finding provides the evidence that effective people

participation in planting activities is conditional with ownership status, access rights and equitable benefit sharing of forest resources.

Forest Protection

The locals are normally blamed for excessive cuttings from state forest, and the participation of people in forest protection was expected to have positive impacts on forest resources. Hence this activity was also evaluated by investigating the respondents whether they volunteered in forest protection activities and what specific action they took to protect their forest. The majority of respondents (76%) in program and 79.6% in no-program areas claimed that they have participated in forest protection activities, surprisingly higher in No-Program villages than in Program villages. The respondents who have participated in forest protection activities were further asked to mention the specific actions they took to protect the forest (Table 5).

The descriptive analysis of the type of forest protection activities done by respondents indicated that the majority of them under program or no-program carried out two activities, either "reporting illegal cutting to forest guard" or "together with other villagers stop the illegal cutting activity themselves" along with fire-extinguishing activity (Table 5). With regard to inquiry about their source of motivation for participation in protection activities respondents under program considered it was due to program field staff efforts followed by "self awareness", while no-program respondents considered it was self awareness or by FD field staff. However, they did not credit the role of Village Head nor VO/CO members (Table 5).

Table 5. Forest Protection by Program and No-Program Respondents

No	Variables		P	NP
			Freq (%)	Freq (%)
1	Forest protection	Not Involved	355(24)	69(20.4)
2		Involved	1124(76)	269(79.6)
Total			1479(100)	338(100)
1	Actions to stop	Reporting the forest guard.	126(8.5)	37(10.9)
2	illegal logging activities	Together with other villagers stop the activities.	471(31.8)	123(36.4)
3		Stopping truck transporting timber.	80(5.4)	25(7.4)
4		Stopping NTFP illegal transportation.	15(1.0)	3(0.9)
5		Fire extinguishing.	149(10.1)	21(6.2)
6		Reporting and fire extinguishing.	153(10.3)	46(13.6)
7		Stop the activities and fire extinguishing.	130(8.8)	14(4.1)

8		No Action (NA)	355(24)	69(20.4)
Total			1479(100)	338(100)
1	Motivation source	Self awareness	355(24)	95(28.1)
2		Head of village	41(2.8)	3(0.9)
3		Forest guard	142(9.6)	73(21.6)
4		Program field staff	697(47.1)	0(0)
5		CO / VDC member	3(2.3)	0(0)
6		Not Participated (NA)	210(14.2)	167(49.4)
Total			1479(100)	338(100)
1	Reason for not	Not my obligation.	156(10.5)	54(16)
2	participating	Responsibility of program staff.	175(11.8)	0(0)
3		Never got any benefit.	28(1.9)	27(8)
4		Participated (NA)	1120(75.7)	257(76)
Total			1479(100)	338(100)

Note: P = Program Respondents, NP = No-Program Respondents,
Freq = Frequency, NA=Not Applicable;

Those who have not participated in this activity were further asked about the reason for their non-participation. Most of them (11.5%) under program considered it was program's responsibility followed by about 10.5% who still do not consider it their responsibility to protect the state forests. In the no-program the majority of the respondents do not consider it their obligation to protect forest (Table 5), hence they have not participated in forest protection activities. The analysis of the descriptive data among the program respondents showed that 1,124 (76%) actually were participants and 355 (24%) were non-participants (Table 5).

The Mann-Whitney U-test was conducted on this variable to determine the impacts of program on participation of respondents in forest protection activities. The mean ranks of NP, 935.54, were higher than P, 902.94, with the z-values of -1.407 ($p= 0.159$). Hence, the test results showed no significant relationship between program and no-program villages with regard to participation in forest protection.

However, the Mann-Whitney U-test was applied to participants and non-participants and found the z-value -6.077 ($p< .000$). Based on the test results it can be deduced that there was significant difference in the involvement in forest protection activities by participants and non-participants. Hence, the programs have significantly contributed to the involvement of people in forest protection activities. These findings are in concurrence with Rechlin *et al.* (2002), that found from their studies on community forestry in China and Nepal that forest management with community' participation increases the level of forest protection.

Relationship between People Participation Index (PPI) and Forest Resource Development

Further, analysis was carried out to identify the degree of relationship between participation at various levels and forest resource conditions. The Spearman correlation coefficient was computed for forestation activities and Pearson Chi-Squares for forest protection activities. The correlation values found for all levels of participation were very low (Table 6).

Hence, overall the negligible relationship and weak positive correlation was found. The correlation was significant at 0.05, in people' participation between forestation at information level of participation in P1, and information and consultation levels of participation in P2 (Table 6). The data results indicated that the relationship between levels of participation and forest conditions was positive for both reforestation and forest protection. The relationship was significant at 0.05, in people' participation between forest protection at information, consultation and joint planning, implementation and evaluation levels of participation in P2.This indicates that P2 has caused better outcomes on forest conditions than P1. Based on this finding it can therefore be concluded that by involving people at all levels of participation, the reforestation and forest protection activities could be increased. In other words, the peoples' participation in P2 has positively influenced forest conditions.

Table 6. Correlation and Dependency between PPI and Forest Resource Development

No	Program / Participation Levels	Forestation		Forest Protection	
		Spearman Correlation	p values	Pearson Chi-Square	p values
1	Program 1 (n = 574)				
	Information	0.092	0.028*	1.198	0.549
	Consultation	0.070	0.092	2.585	0.275
	Joint Planning, Implementation and Evaluation	0.049	0.242	1.737	0.420
	Decision Making	0.029	0.487	0.116	0.733
2	Program 2 (n = 808)				
	Information	0.097	0.006*	9.285	0.010*
	Consultation	0.155	0.000*	14.072	0.001*
	Joint Planning, Implementation and Evaluation	0.040	0.255	20.079	0.000*
	Decision Making	0.068	0.053	0.810	0.667

Note: * indicates significant at 0.05 level

The results presented in Table 6 showed that participation at decision making level was not significantly correlated with reforestation and also not

significantly affecting forest protection in both programs. It is now accepted fact that local people know their social and physical environment and can be expected to use their knowledge in participatory forest management. This in turn can increase the effectiveness of their participation in the decision making process for forest and forest resource in their villages. Moreover, the people have the right to take part in decisions which will affect their own lives. Cohen and Uphoff (1977) have supported this fact that participation in planning and decision making enhances the chances of participation in forthcoming stages.

This can be concluded from the above findings presented on the basis of Table 6 that higher PPI and higher participation at various levels, of the participants in P2 compared to participants in P1 have produced better impacts in terms of both impacts on forest resource conditions.

Forest management is a long term undertaking and the full impact from interventions in natural resource management will only become evident in the long term. Korten (1983) argues that people participation is generally agreed to be important to the long term success of local resources management systems. Besides this, Cohen and Uphoff (1977) argued that success in implementing any development program is guaranteed when local people are directly involved in programs.

Peoples' participation in both the programs was not ascertained in its real sense and one reason could be that the project was already established with a set of interventions. Participation should not be included in the programs just for functional reasons and not considering its philosophical basis (FAO, 2007b).

CONCLUSION

The average number of trees planted by participants was higher than the non-participants. The results of independent t-test of reforestation activities between the program (P) and no-program (NP) groups as well as participants and non-participants were not significant.

The majority of respondents participated in forest protection activities. More people in NP areas participated in forest protection activities than those in the villages of P. The results showed no significant relationship between program and no-program respondents with regard to participation in forest protection. However, the Mann-Whitney U-test results were found significant for the timing of initiating forest protection for participants and non-participants. The study concluded that the P1 and P2 programs have significantly contributed to the involvement of people in forest protection activities.

The results on reforestation activities showed that the participants have

planted more mean number of trees than non-participants. There were no significant differences found between program and no-program as well as participants and non-participants. However, the programs have significantly contributed to the involvement of people in forest protection activities. As the peoples' participation has significantly influenced forest resource conditions, it might eventually help to achieve the main objective of both the programs. This conclusion is in line with contemporary exchange theory and finding by Napier *et al.* (1986) who stated that people look for "best value" which can be achieved by their participation in forest management, reforestation and forest protection.

It can be concluded from the results of descriptive data that government administrative support to the program was not conducive and contra productive. Consequently, it can become a hindrance in full implementation of program activities. The lack of government administrative support and inadequate decentralization might have influenced the level of participation and lead to lack of enthusiasm on part of peoples to participate. Moreover, centralization of authority on one hand and lack of effective participation in program planning, implementation has discouraged local people to participate.

The majority of respondents were aware of the programs in their areas, and the data analysis revealed that participation in program is dependent on the awareness of the activity. A large number of respondents asserted that their main source of information was either field staff of the programs or Forest Department (FD) staff, while the role of community organization (CO) or village development committee (VDC) members was negligible. It can be concluded that the role of program or FD staff cannot be ignored in participatory forestry programs in the study areas.

Implications of the Research

The research results show the obvious need for concerted actions to have genuine people participation at all program levels. Continuous neglect of peoples' participation in PFM would result in the devastation of the few intact forests. Beyond that, to achieve the Millennium Development Goals of Forestry Sector to bring an additional 1.051 million hectares of land under forest by 2015 would remain a dream in the forest policy makers and planners minds

Both the programs were unable to reduce the people's dependency on the forest and forest resources. In order to reduce dependency on forest resources local people need to be provided practical alternatives. In this connection, the conducive institutional and legal environment to raise private forests has to be provided to people who have large landholdings. The people with small landholdings can be supported to raise NRM income generating activities such as establishing plants nursery. Considering the inevitable

necessity of land in PFM activities it is prerequisite to make provisions of land to poor and landless. Therefore, besides technical advice, financial and or administrative supports, banjar (communal) or barren (deforested) lands might be allocated to people interested in growing trees or raising plant nurseries.

An appropriate participatory forestry program monitoring and evaluation system is absolutely required particularly in P1, in order to monitor and evaluate PFM on regular basis. The existing monitoring and evaluation system needs to be strengthened and made participatory in P2.

REFERENCES

AHKCRD. 2002. *Statistical Highlights of Pakistan. Ministry of Environment, Local Government and Rural Development, Government of Pakistan, Islamabad.* Akhtar Hameed Khan Centre for Rural Development. Islamabad.

Ali , T., Ahmad, M., Shahbaz, B. and Suleri, A., 2007. Analysis: Impact of participatory forest management on financial assets of rural communities in Northwest Pakistan [Electronic version]. *Ecological Economics.* 63: 588-593.

Ali, T., Shahbaz, B. and Suleri, A., 2006. Analysis of myths and realities of deforestation in Northwest Pakistan: implications for forestry extension [Electronic version]. *International Journal of Agriculture and Biology*. 81: 107–110.

Cohen, J. M. and Uphoff, N.T., 1977. *Rural Development Participation: Concept and Measures for Project Design, Implementation and Evaluation*. Rural Development Monograph No.2. Ithaca, New York; The Rural Development Committee, Center for International Studies, Cornell University.

FAO, State of the world's forests. Food and Agricultural Organization, UN. Forestry Department, Rome. 2005.

FAO, Forest Resource Assessment, 2005. Main Report. Food and Agriculture Organization (FAO). 2007a.

FAO, 2007b. Participation. Retrieved on March, 2007 from http://www.fao.org/ Participation/english_web_new/content_en/key_concept.html

Fisher, R.J., Durst, P.B., Enters, T. and Victor, M., 2006. *Overview of the Themes and Issues in Devolution and Decentralization of Forest Management in Asia and the Pacific.* FAO. Retrieved on September 03, 2008 from http://www.fao.org/DOCREP/003/X6898E/ x6898e01b.htm#P32_6903.

Klandermans, B., 1984. Mobilisation and participation: social psychological expansions lessons from Kwara State of Nigeria. *Community Development Journal*. 17:121-133.

Korten, F.F., 1983. Community Participation: A Management Perspective on Obstacles and Options. In *Bureaucracy and the Poor: Closing the Gap.* Korten, (pp.183-200). David C. and Alfonso, Felipe B. Eds. West Hartford, Connecticut: Kumarian Press.

Moss, C., Thassim, L., Luttrell, C. and Schreckenberg, K., 2005. Participatory Forest Management and Poverty Reduction: A Review of the Evidence. Draft paper 28 April 2005. Prepared for the Start-up workshop of the project: *Action Research on Assessing and Enhancing the Impact of Participatory Forest Management on the Livelihoods of the Rural Poor*. May 2-6th 2005. Kentmere Club, Nairobi, Kenya. Overseas Development Institute, London, UK.

Nizamani, A.A. and Shah, A.A., 2004. A Review of Forest Policy Trends for Community Participation in Pakistan. In *Policy Trend Report.* Institute for Global Environmental Strategies (IGES). Yokohama: Sato Printing Co. Ltd.

Pandey, N., 2005. *Monitoring the Impact of Joint Forest Management on Rural Livelihoods.* A report of the study conducted during the summer internship at Winrock International-India. New Delhi. PGP-I. Aravali Institute of Management Jodhpur 342 006, Rajasthan.

PFI. 1999. *State of Forestry in Pakistan (1999-2000)*. Pakistan Forest Institute (PFI). Peshawar. Ministry of Environment, Local Government & Rural Development, Peshawar: Government of Pakistan.

Seetharam, M., 1990. *Citizen Participation in Rural Development*. New Delhi.

Rechlin, M.A., Hammett, A.L., Burch, W.R., and Song, Y., 2002. Sharing the wealth: a comparative study of distribution of benefits from community forestry management in Southern China and Nepal. *Journal of Sustainable Forestry* 15: 1-23.

Thassim, L., Cecilia, L., Moss, C., and Schreckenberg, K., 2005*. Review of Methodologies for the Assessment of the Poverty Impact of Participatory Forest Management* (Draft) April 29th, 2005, Prepared for the Start-up workshop of the project: Action Research on Assessing and Enhancing the Impact of Participatory Forest Management on the Livelihoods of the Rural Poor. Nairobi, Kenya, Overseas Development Institute.

UNDP, 2002. *Regional Strategic Framework Country Guideline Paper for PTF Implementation in Pakistan 2002-2006. Annex C.* The European Commission (EC), United Nations Development Programme (UNDP) Small Grants Programme for Operations to Promote Tropical Forests (SGP PTF), Islamabad.

WFP, 1997. *Summary Evaluation Report on Sectoral Evaluation for Natural Resource Management in Pakistan*. Evaluation Reports. WFP/EB.2R/97/2/Add.3. The World Food Program: Rome.