



## Impact of Joint Forest Management on Rural Livelihoods in the Kalam and Siran Forest Divisions, Khyber Pakhtunkhwa Pakistan

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### Abstract

*Forest management policies in Pakistan have been generally following conventional approaches without considering the role of local community's participation. In Khyber Pakhtunkhwa Pakistan, Joint Forest Management (JFM) was introduced in 1996 with the active involvement of local communities for both sustainable forest management and community livelihoods. This study analyzes the impacts of JFM on rural livelihoods in Pakistan using a sample from 10 villages of Siran and Kalam Forest Divisions of Khyber Pakhtunkhwa. Data were collected through interview schedule and focus group discussions from the local community members & forest department personnel. Results of the study revealed that the JFM played a key role in livelihoods improvement and forest development. Also, JFM improved relationship between local communities and forest department. This study recommends for introduction of policies that help in building trust and friendly relationships between forest department and local communities for sustainable forest management.*

**Key Words:** Joint Forest Management, Rural Livelihoods, Forest Resources

### Introduction

Forests and forest products have been a huge source of livelihoods for many rural communities across the globe. FAO (2015) estimated that 3999 million hectares (31%) of the earth area is under forests which are providing livelihoods to 1000 million extremely poor people in the world. According to the UN strategic plan for forests 2017-2030, 25% of the world population depends on forest resources for livelihood, survival, income earning and employment. Forests provide not only products that can be valued at market prices such as timber for construction uses, wild fruits/ food, firewood and grazing lands/fodder especially to the forest fringe communities but also not market goods such as clean air & water, carbon sequestration and tourist destinations. Fuel wood and charcoal is the main energy source of about 2.4 billion people. Further about 2 billion people are reliant on traditional medicines which come from forests. Fishing and hunting provide 20 percent of protein requirements in 62 developing countries (FAO, 2015).

As compared to other developing countries, the forest area in Pakistan is quite deficient i.e. only 4.8 % but these forests are a primary livelihood source for millions of rural people who reside in the forest areas (Ali et al., 2006). Khyber Pakhtunkhwa (KP) province of Pakistan is known to have the largest area (40%) of productive forests of the country. These forests contribute significantly towards the economy of the country and also constitute a main source of livelihood for rural communities living adjacent to the forest areas of the Province (Government of Pakistan 2010). The forest adjacent people who make their income from the forest resources are the poorest segments of society because these people are highly reliant on the natural environment (Durr, 2002). In KP, the benefits derived by the local communities from forest resources include fuel wood for cooking and heating purposes, timber for construction, Non-Timber Forests Products (NTFPs) and medicinal plants. Steimann, (2005 & 2006); Awais (2005); Ali et al., (2006) indicated that fire wood is the most important source of subsistence livelihoods of the rural people living close to forests especially in Khyber Pakhtunkhwa. Secondly,

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they are also dependent on forest wood/ timber for their shelter as the houses of these people are mostly made of wood. Thirdly, the forests provide grazing lands/ fodder to the livestock of rural people.

In spite of the above socio-economic contributions and livelihood provision to millions of poor people, loss of forests through degradation and deforestation has increased over the years (Secretariat of the Convention on Biological Diversity, 2008). FAO (2010) estimated global forest loss at the rate of 5.2 million hectares per annum. The loss of natural forests especially in developing countries negatively affects the livelihoods of rural communities.

Generally, a centralized and exclusionary approach to management of forest resources has been widely practiced in developing countries. But in the late 1970s, the paradigm shifted and the approach of Joint Forest Management (JFM) emerged at global level to overcome the extensive deforestation and increase forest cover. JFM is generally the term used for the co-management of forests by the state forest department and local communities with the objective to improve forest cover and livelihoods of the rural communities. The practice of JFM differs from place to place but a common feature is that the participating communities in collaboration with the state forestry department protect, develop and manage the forest resources in their villages. In turn, the locals receive greater access to the forest products and revenue share/ economic benefits.

In Pakistan, JFM was introduced in 1996 by the Siran Forest Development Project (SFDP) in Siran Forest Division of Khyber Pakhtunkhwa. The JFM system in Khyber Pakhtunkhwa was further legalized under the sections 101 and 102 of KP Forest Ordinance 2002 which legally empowered the Divisional Forest Officer to involve Joint Forest Management Committees in the protection and management of forests within their jurisdiction. For effective implementation of the JFM system, the Government of Khyber Pakhtunkhwa Forest Department framed and notified JFM (Community Participation Rules), 2004 on 24/12/2004. The approach of JFM was then expanded to whole of the Khyber Pakhtunkhwa Province and a number of JFMCs (representative forum of the rural communities/ villagers) have been established under the above rules in various parts of the KP Province for joint management of forests. It is therefore, important to investigate the challenges and opportunities of JFM in Khyber Pakhtunkhwa, Pakistan.

As per JFM (Community Participation) Rules, 2004 the local community/beneficiaries are entitled to receive the royalty share in the sale of forest products. They are particularly allowed to collect and market non-timber forest produce like herbs, seeds, spices, grasses, mushrooms, medicinal plants from the forests (JFM Rules, 2004).

The key aim of JFM is livelihoods improvement of the communities as well as improving the condition of forests through involvement of the forest adjacent communities in the protection and development of forests. However, there has not been any significant research effort to systematically evaluate the role of Joint Forest Management in forest development and providing livelihoods to rural communities in our country which has created a gap between the theoretical concepts of JFM and its practical implementation in the field. The research study was therefore, designed to analyze the present Joint Forest Management System in Khyber Pakhtunkhwa, Pakistan and the impacts it introduced in that sphere.

## Literature Review

Joint forest management (JFM) is a partnership among the forest adjacent rural people and government forestry departments with defined tasks for the protection and conservation of forests (TERI, 2001). Patnaik and Dutta (1997) explained that JFM is an agreement between the village communities and forestry department to jointly rehabilitate and protect the forests. As a reward the locals are given a share in the sale of trees from the forests and greater access to the forest produce for their domestic use. They further suggested that community empowerment and benefit sharing under the JFM can contribute in forest development and protection.

Natural resources management through involvement of local communities has become the subject of nearly every country in the world. They are trying to devolve some of their powers to the local communities to sustainably manage the resources (Edmonds, 2002). Our neighboring countries (India, Nepal, and Thailand) recognized quite earlier the role of local communities in the sustainable management and protection of forests. The experiences gained in these countries have shown that the local communities, if properly organized and

empowered to utilize the forest resources, can help in managing the protected and developed forests as well heavily degraded ones (Khattak, 1996).

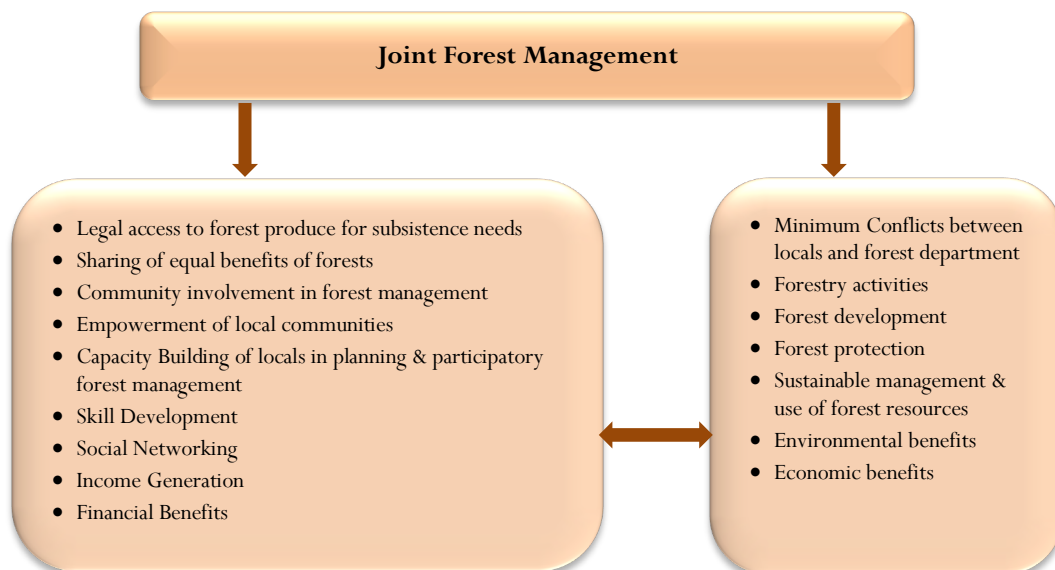
In India, the approach of Joint Forest Management emerged since 1970s for the protection of forests and improvement of rural livelihoods (Bhattacharya et al 2010). According to Bahuguna (2004), 17.33 million hectares of forests in India is managed by 84,632 JFM committees involving 8.38 million families in its 27 states. Community forestry programme in India covers 62.39 million population. In Nepal, JFM is being practiced since 1980s through forest user groups whereby the government has handed over 1.1 million hectares of forests to 14000 forest user committees (Agawal and Ostrom, 2001). JFM is being practiced in more than 30 countries of Africa, covering about 100 public owned forests and engaging approximately five thousands village communities (Wily, 2002). According to FAO (2003), JFM is considered an effective strategy for the sustainable management of forests in Africa. Tanzania has been promoting JFM since early 1990s. It covered about 5.39 million hectares of forest area. In Tanzania, the JFM is primarily implemented in the government reserve forests (Government of Tanzania, 2012). The legal basis for the JFM was provided under its Forest Act, 2002 which allowed legally the involvement of local communities and other stakeholders in the co-management of forest resources.

### **Research Methods**

This section firstly explains the conceptual framework of the study, followed by the explanation of the study area, and selection of the sample size.

### **Framework of the Study**

The main focus of this research study is the impact assessment of the JFM regarding its twofold objective of forest development and livelihoods improvement. After thorough analysis of various JFM studies conducted in different countries, an impact pathway was developed to analyze the impact of JFM on rural livelihoods in the study villages. The framework describes the cause-and-effect relationship as a result of JFM implementation and the impact it may have on rural livelihoods. The framework is given as follows:



### **Study Area**

The study was conducted in Kalam and Siran Forest Divisions of Khyber Pakhtunkhwa, Pakistan. The Kalam Forest Division is in District Swat whereas Siran Forest Division is in District Mansehra. Swat and Mansehra are those districts of Khyber Pakhtunkhwa, Pakistan that have the maximum forest resource.

Geographically, district Swat stretches from 34°34' to 35°55' North latitude and 72°10' to 72°50' East longitude and covering an area of about 5,337 Square kilometer. The valley is surrounded by high mountains and its altitude varies between 2500 to 7500 feet above sea level. Swat lies in the temperate Zone and the winter season of Swat is harsh with minimum temperature of -2°C. The summer is moderate with a maximum temperature of 34°C. The legal category of forests in district Swat is protected forests covering 20% (497,969 acres) of the total land area with variety of pine trees. The population of Swat District is 2,309,570 as per 2017 census, making it the third-largest district of Khyber Pakhtunkhwa. According to census 2017, population density in district Swat is 430/km<sup>2</sup>. People living here can broadly be divided into two demographic categories i.e. the Pukhtoons and the Kohistani. Kalam forest division can be termed as Agri-Silvi- Pastoral based Division, where people seek their livelihood in agriculture, forest and livestock (Hussain, 2014). Kalam Forest Division of District Swat comprises 20.855% of forest, 0.422 Alpine Pastures and 1.911% of shrubs and bushes. Figure 1, below indicates the land cover of the Kalam forest division taken from the GIS lab Khyber Pakhtunkhwa Forest Department, Peshawar.

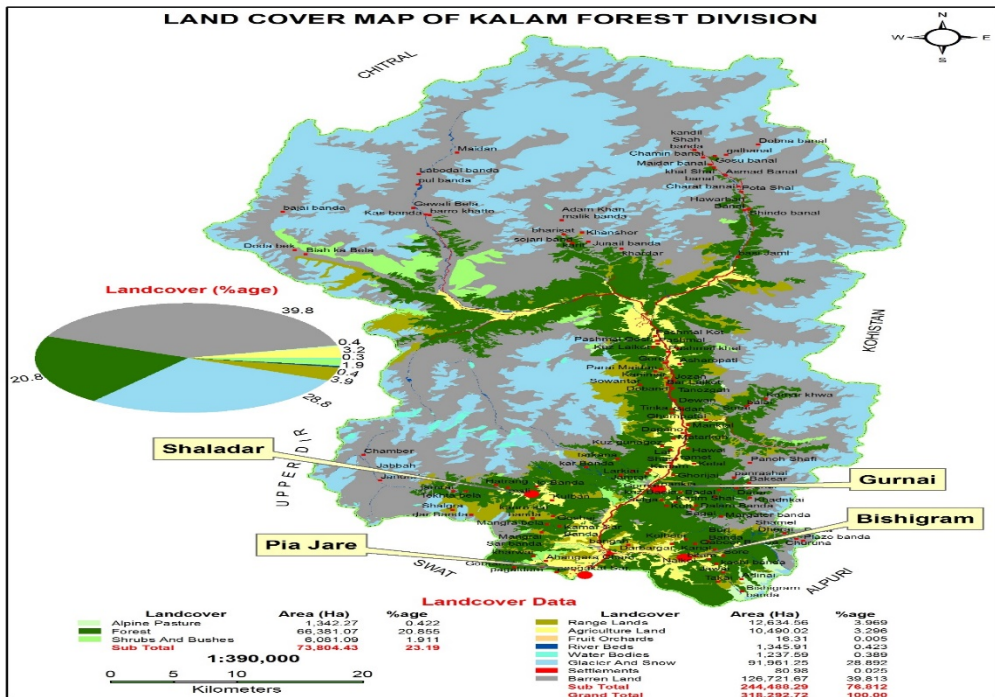
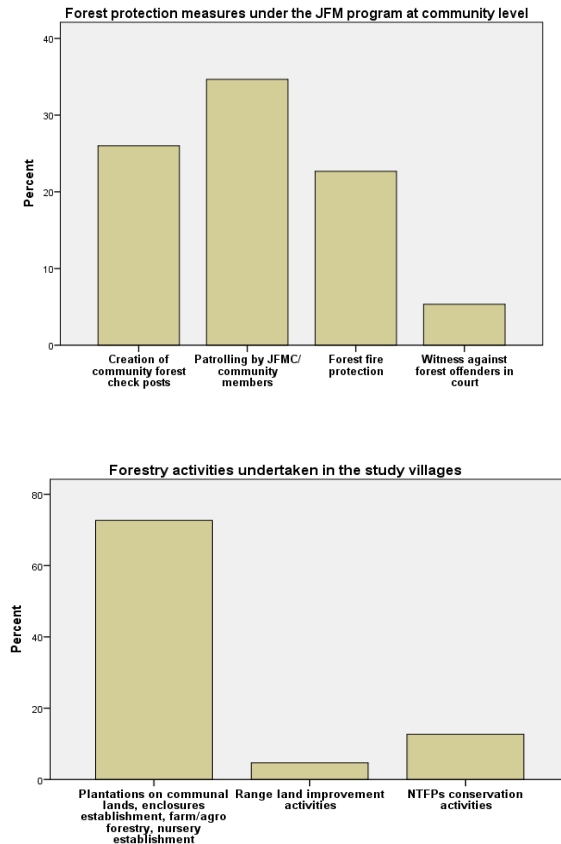


Figure 1: Land use map of Kalam forest division showing study villages

Furthermore, Siran Forest Division is situated in central part of district Mansehra of Khyber Pakhtunkhwa, Pakistan. It covers an area of 4,579 squares Kilometer. The Longitudinal Extent of District Mansehra is from 72° 48'9.43" East to 74° 8'51.05" East and Latitudinal Extent is from 32° 12'29.39" North to 35° 10'51.62". The northern part of Mansehra is extremely cold in winter and receives heavy snow fall. Most of the precipitation occurs in July, averaging 294 mm. According to 2017 census, District Mansehra has a total population of 1,556,560. Population density in District Mansehra is 340/km<sup>2</sup>. The land uses in the landscapes are forestry, grazing, agriculture, wetlands, and communication infrastructure and human settlements. The communities in these two landscapes are poor and mostly depend on marginal agriculture, non-farm jobs and forests resources such as timber, firewood, fodder, grazing, NTFPs. Siran Forest Division of District Mansehra is very rich in biodiversity and comprises of 37.92 % of Forest, 10.71 % Range Lands and 0.85 % of Shrubs and Bushes. Figure



regeneration, farm forestry, nursery raising, NTFPs conservation and rangelands improvement activities as reported by 90.0% of the community respondents. The JFM has also involved the locals in the protection of forests through creation of community forest check posts, patrolling by JFMCs, forest fire protection and production of witnesses against forest offenders in the court as indicated by 88.7% of the community respondents (figure 3).



**Figure 3:** JFMC role in the protection of the forests and other activities

Forestry activities and forest protection measures carried out by the local communities under the JFM program had a very positive impact on the condition of forests and the forest resources have been developed and increased in the area as reported by majority of the respondents (88.7%). Joining of traditional indigenous knowledge of forest dependent communities with the scientific knowledge of forest department/state foresters, under JFM, is considered an ideal and pragmatic approach to sustainable management of forests (Wily, 2002; Appiah, 2001). Similarly, 85.0% of the respondents from forest department personnel also stated that JFM program had contributed in the protection and development of forests.

Since JFMCs are registered bodies of forest department, therefore forest department prioritizes those areas/villages for implementation of project activities where the JFMCs are available. The forest department personnel were of the view that the JFMCs provide support in protection of the plantations and other forestry interventions carried out in the JFM villages.

Furthermore, focus group discussions held with the local communities revealed that the forest development projects had been implemented in the study areas and the local communities remained involved in implementing



the project activities and also gained financial benefits. During the last 5 years, the well-known mega Project “Billion Trees Tsunami Afforestation Project” (BTAP) of KP Forest Department had carried out large scale forestry activities in the study areas through JFMCs/local communities which has not only a positive impact on the condition of forests but the locals were provided income and employment opportunities through these forestry activities for their livelihoods improvement.

### Forest Dependence & Access to Forest Produce

In the study areas, the forest products were available in the adjacent forests managed jointly by the forest department and local communities under the JFM program and these forest products were used by all of the respondents at household level. The intensive use of firewood in the hilly areas/study villages was due to the non-availability of natural gas in those areas and the kerosene oil or LPG cylinders were unaffordable. Secondly, the winter season is very harsh and too long with heavy snowfall and the temperature even goes to -5 to -7, therefore the local people have no other option except to use forest wood for cooking and heating purposes. Other uses of forest products reported by the locals were use of timber for construction and repair of their houses, fodder and grazing lands for livestock and collection of NTFPs from the forests. This shows the survival/ subsistence oriented livelihoods dependency of locals on the forest products. Approximately, 82% of the respondents confirmed that the JFM increased the access of local communities to the above forest products. Local community involvement in forest management on the other hand can protect and increase livelihood benefits from the forest, and enhance their role as a safety net (Brown et al., 2002).

The study results revealed that the forest produce contributed significantly (cash and non-cash/ subsistence) in community livelihoods. Forests contribution in the firewood, construction timber, fodder/ grazing lands was 52.7%, financial benefits through royalty share in the sale of trees was 30.0% and collection/selling of NTFPs and medicinal plants was 17.3%. This was also confirmed by 100% of the respondents from forest department personnel that due to livelihoods dependency of the local communities on forest resources, the operating rules of the JFM program i.e. JFM (Community Participation Rules 2004) legally allowed the local communities especially for collection and selling of NTFPs from forest, royalty/ community share in the sale of trees and satisfying their direct needs (firewood, fodder, construction timber) from forest. The reserve forests were declared free of all rights under Pakistan Forest act of 1927 before the introduction of JFM. The new system of JFM proved to be a legal way for these communities to fulfill their direct needs from the forests (Iqbal, 2002).

### Monetary / Financial Benefits of JFM

The Figure 4 exhibits both the market and non-market based benefits that communities obtained from the forests due to the existence of the JFM system in the study sampled areas.

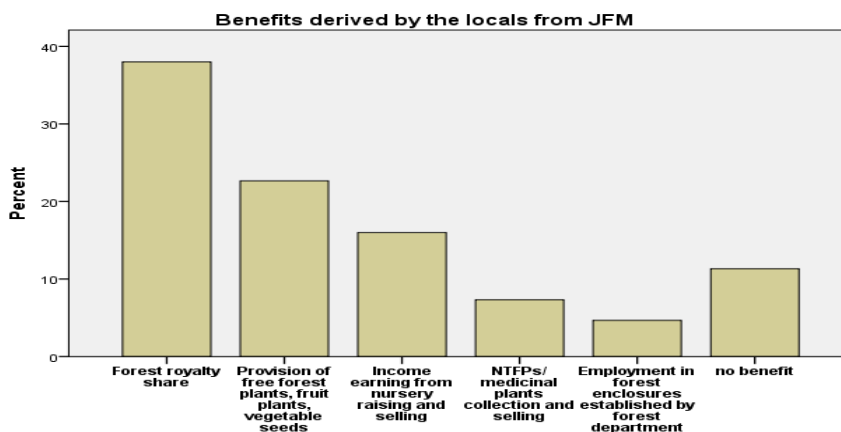


Figure 4. Market and non-market forest due to the JFM system

During focus group discussions with the local community, the participants informed that they had gained financial benefits from the forestry project activities such as nursery raising and selling to the project. Many of the participants reported that they were given a nursery raising unit of 25000 plants under the BTAP Project which they raised and the plants were then purchased by the forest department at the rate of Rs.6/- per plant as per agreement signed with the forest department i.e. (Rs. 150000/- was paid for each unit of 25000 plants). It was found that a number of such nursery raising units of 25000 plants were given to locals and then the plants were purchased from them by the forest department.

Another forestry intervention reported by the participants which provided financial benefits/ employment opportunity to the locals was establishment of forest enclosures for natural regeneration. These forest enclosures were established in consultation with the JFMCs/local community and the agreements were signed between JFMCs and forest department for protection of these enclosures. The persons nominated by the JFMCs/ local community were appointed as Chowkidars/ guards for the protection of forest enclosures who were paid Rs. 15000/- per month by the forest department for each forest enclosure. Therefore, the majority of the respondents i.e. 82.7% indicated that JFM has improved both the forest condition and local community livelihoods through employment and income generating activities.

### Social Networking and Skill Development of local Communities

The research study found that the forest department has a specialized wing/Directorate named the Community Development, Extension and Gender and Development for social capital/ JFMCs formation and strengthening of the JFMCs through development of its linkages with other departments and organizations. About 62.7% respondents informed that the JFM had provided support in linkages development of the JFMC with agriculture department, livestock department, horticulture and NGOs. These departments provided trainings and other services to the local people for best results who were earning their livelihoods from agriculture, livestock, and horticulture. The NGOs had also implemented their projects through JFMCs in some of the study villages. This shows that JFM has contributed directly in social capital formation and making the social networks stronger which had a positive impact on the livelihoods of the locals.

The study results further showed that the locals had acquired income generating trainings through JFM program such as nursery raising, bee keeping, NTFPs and medicinal plants collection and preservation techniques, kitchen gardening. This indicates that the JFM has not only focused on forestry activities but also provided the alternate sources of livelihoods/ income earning to the local communities through skill development trainings.

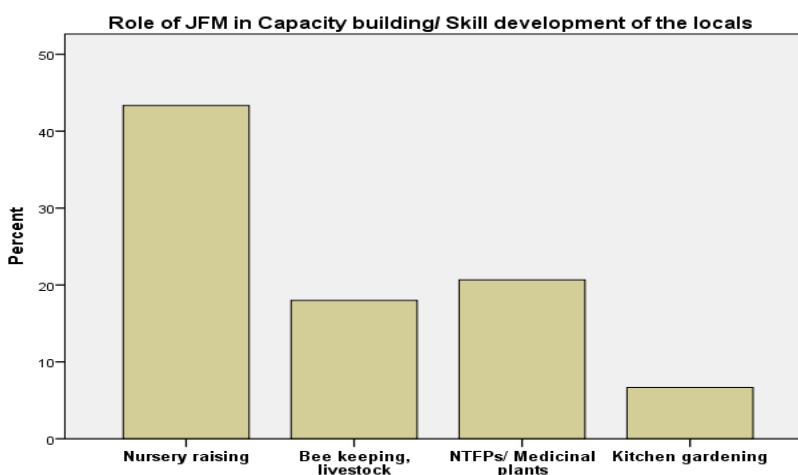


Figure 5. Role of JFM in capacity building of the local communities



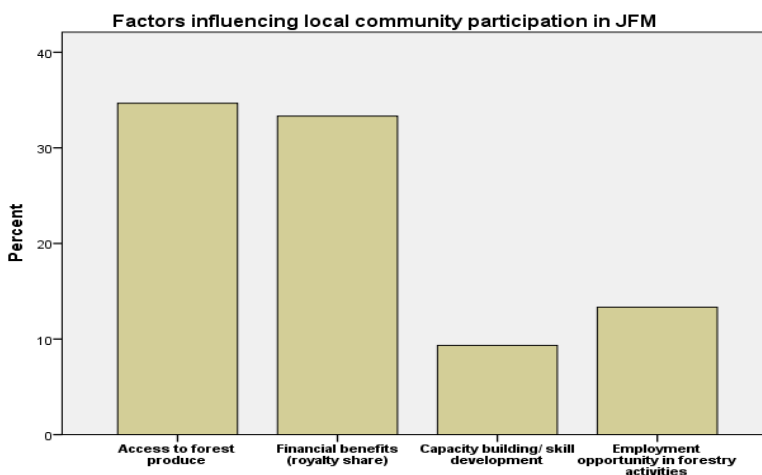
### Rural Communities and Forest Department Staff Attitude Towards The JFM

Majority of the respondents 88.7% indicated that JFM is a practical approach for forest management and livelihoods improvement and it should be continued whereas 11.3% of the respondents were not in favor of the JFM approach and had the assertion that in JFM the decision making powers are with land owners/influential community members and forest department personnel. It was observed that those respondents who were having the reservations regarding the JFM were from the area where the JFM had benefited the influential land owners. In rural areas, the influential groups such as the rich, elite and politicians constantly made attempts to grab the benefits and increase their authority (Shackleton et al., 2002). The dominance of these influential groups in decision making at the community level exists instead of the fact that the policy demands the involvement of vulnerable and poor groups in the decision making process (Behera & Engel, 2006).

The attitude of majority of the forest department personnel 85% regarding the JFM approach was found positive. On the other side, 15 % respondents from forest department opposed the JFM approach and stated that the conventional approach/policing role of forest management was better than the new system. This shows that although less in proportion but the mindset of traditional forest management exists in the forest department as forests have been managed through traditional/colonial approach for more than 100 years. However, the overall interviews of forest department personnel revealed that the colonial approach of forest management had been replaced by the JFM/participatory approach. Institutional arrangements had already been made for participatory management of forests. The forest ordinance 2002 under its sections 101, 102 and JFM Rules 2004 give legal provisions for joint forest management.

### Factors Influencing Local Community Involvement in Joint Management of Forests

Results of the study revealed that the main factors influencing local community involvement in JFM were access to forest products such as firewood, construction timber, fodder for livestock, NTFPs and financial benefits, skill development, and income earning opportunities provided under the JFM program as reported by 90.7% respondents (Figure 6).



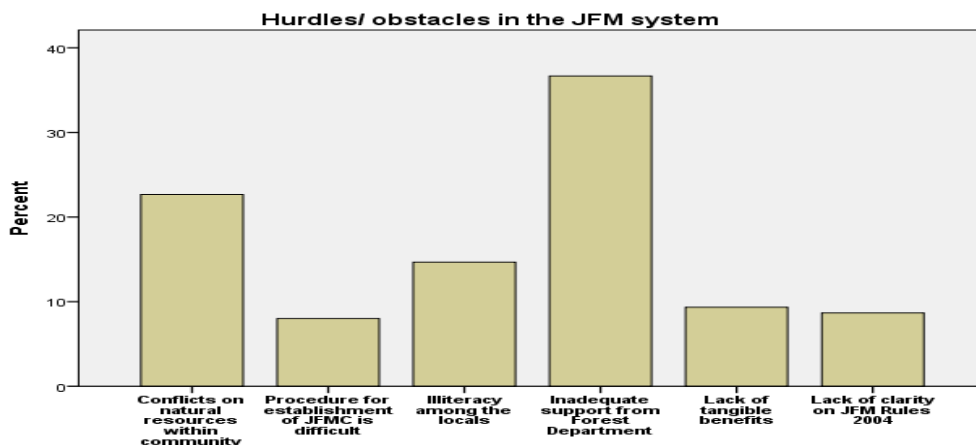
**Figure 6:** Factors influencing local community participation in JFM

The majority (70%) of forest department personnel also reported high level of community participation in JFM. The benefit sharing mechanism between the forestry department and rural communities was found to be the most important factor in the success of JFM programs (Jumbe & Angleson, 2007). Local people participate in the JFM

program because of the expected benefits for their time spent in the forest protection and management activities (Bwalya, 2004). Another important factor in the success of JFM program was the transfer of authority/decision making powers to the rural communities.

### Issues/ Problems in the Joint Forest Management

The main issues identified in the JFM program were lack of trust between forest department personnel and local community, bureaucratic approach of forest department, illiteracy of local community, internal conflicts within the community and royalty/ community share in sale of trees (figure 7).



**Figure 7:** Obstacles in the JFM system of forest management

The results indicated that 63.3% of the respondents were satisfied with the services/role of forest department in JFM whereas 36.7% of the respondents were not satisfied due to the non-participatory/bureaucratic attitude of forest department staff. The forestry departments representing the state mostly failed to transfer decision making powers under the JFM program to the grass root level/community organizations which affects the success of JFM. The rural communities could not play an effective role in the participatory management of natural resources unless they are given the decision-making powers (Arnold, 2001). Another barrier identified in the implementation of JFM program was unclear land settlement due to which conflicts existed among different khels/tribes on natural resources/land ownership in the rural areas. Further, the illiteracy has also stimulated these conflicts.

Royalty/community share in the sale of trees was found another issue of the locals from Kalam Forest Division where the forest royalty was distributed at the ratio of 60:40 (60% local community share and 40% forest department share). The respondents from Kalam Forest Division were not satisfied with the distribution ratio of forest royalty. Their dissatisfaction was found justified due to the reason that the distribution ratio of the same royalty share in Hazara Region was 80:20 (80% for local community and 20% for forest department). Therefore, they strongly demanded that the royalty/community share should be increased from 60% to 80% in Kalam Forest Division too. In this regard, the forest department personnel informed that the difference in the distribution of royalty share is due to the legal categories of forests i.e. (for protected forests as in Kalam the royalty/community share is 60% and for guzara forests, as in Hazara, the royalty share is 80%).

### Conclusion and Recommendations

The focus of the research study was to explore the role of Joint Forest Management System in KP, Pakistan in the better management of forest resources and identify opportunities and obstacles therein. The rural communities of the study areas were dependent upon the forest resources for their subsistence needs such as fuel wood, timber, fodder, NTFPs and medicinal plants. The firewood was extensively used for cooking and heating

whereas the forest wood was found the main construction material in the houses of the local people. Forests were providing grazing lands and fodder for the livestock of the local people. Some of the low-income rural people were also involved in collection and selling of NTFPs and medicinal herbs for income earning. All of these forest products were available to the locals from the adjacent forests in their villages. Another financial benefit obtained by the local community from forest products was royalty/community share in the sale of trees. The JFM had allowed the local communities to legally obtain products as per their needs from the local forests. Further, they were also legally allowed for collection and selling of NTFPs like herbs, seeds, grasses, mushrooms, medicinal plants from the forest under JFM and royalty/community share in the sale of trees from forest.

The JFM had stimulated the income generating opportunities in the study villages. The local communities were provided income and employment opportunities through nursery raising and selling, employment in forest enclosures and daily wage opportunities in plantations and other forestry activities. In addition to that capacity building and skill development trainings, locals in the study areas benefited from income generation in their local forests.

It is therefore concluded that the JFM had provided support to the rural participating communities in their livelihoods improvement both cash and non-cash (subsistence oriented). It had made a contribution to sustainable management, protection and development of forest resources. Therefore, there is a need for further strengthening of the JFM approach and extending it to the management of all the reserve, guzara and protected forests throughout Pakistan. This will undoubtedly contribute to sustainable forest conservation and livelihoods in Pakistan.

## References

- Agawal, A., & Ostrom, E. (2001). Collection Action, Property Rights and Decentralization in Resource use in India and Nepal, *Politics and Society*, 29(4), 485-514. Accessed on November 25, 2016, from <http://www.personal.umich.edu/.../Collective%20Action%20Property%20Rights%20>
- Ali, T., & Shahbaz, B., & Suleri, A. Q. (2006). Analysis of myths and realities of deforestation in Northwest Pakistan: implications for forestry extension. *International Journal of Agric. and Biol*, 8(1), 107-110. Accessed on December 7, 2016 from <http://www.condesan.org/mtnforum/sites/default/files/publication/files/6418.pdf>
- Appiah, M. (2001). Co-partnership in forest management: The Gwira-Banso joint forest management project in Ghana. *Environment, Development and Sustainability*, 3(4), 343-360.
- Arnold, J.E.M. (2001). *Community Forestry: 25 years in Review*. FAO Rome. pp 1-128.
- Awais, M. (2005). A futuristic study of institutional changes and livelihood assets of forest users in Mansehra district, NWFP, Pakistan. Masters Thesis. NCCR North-South. Department of Agricultural Extension, University of Agriculture, Faisalabad, Pakistan.
- Bahuguna, V. K. (2004). Root to Canopy: An Overview in: V. K. Bahuguna, K. Mitra, D. Capitrano, and S. Sargal, eds., *In Root to Canopy: Regenerating Forests through Community-State Partnerships*, Winrock International and Commonwealth Forestry Association, Delhi.
- Behera, B., & Engel, S. (2006). Who Forms Local Institutions? Levels of Household Participation in India's Joint Forest Management Program. ZEF – Discussion Papers on Development Policy No 103. 37pp
- Bhattacharya, P., & Pradhan, L., & Yadav, G. (2010). Joint forest management in India: Experiences of two decades. *Resources, Conservation and Recycling*, 54 (8), 469–480. Accessed on November 24, 2016, from <http://pdfs.semanticscholar.org/9893/a4db902b0d617b965a838f3d7a5df1aaac98.pdf>
- Brown, D., Malla, Y., Schrenkenberg, & Springate-Baginski, O. (2002). From Supervising 'Subject' to Supporting 'Citizens': Recent Developments in Community Forestry in Asia and Africa, *Natural Resource Perspectives*. London: Department for International Development, The Overseas Development Institute, No: 75, February 2002.
- Bwalya, S. M. (2004). Rural Livelihoods and Collective Action in Joint Forest Management in Zambia. Accessed on January 6, 2017 from <http://www.saga.cornell.edu/images/cau-bwalya.pdf>
- Durr, C. (2002). The contribution of forests and trees to poverty alleviation. Series IC No. 3, Inter-Cooperation, P.O. Box. 6724, 3001 Berne, Switzerland.
- Edmonds, E. V. (2002). Government-initiated community resource management and local resource extraction from Nepal's forests. *Journal of development economics*, 68(1), 89-115.
- FAO. (2015). Global Forest Resources Assessment, How are the world's forests changing, Accessed on January 11, 2017 from <http://www.fao.org/3/a-i4793e.pdf>
- FAO. (2010). Global forest resources assessment 2010, Country Report Pakistan, Forestry department FAO-FRA 2010/158, Rome.
- FAO. (2003). Proceedings of the Second international workshop on participatory forestry in Africa. Defining the way forward: sustainable livelihoods and sustainable forest management through participatory forestry. 18-22 February 2002, Arusha, United Republic of Tanzania. FAO, Rome.
- Government of Pakistan. (2010). Economics Survey 2009-10, Ministry of Finance and Economics Affairs, Government of Pakistan, Islamabad.
- Hussain, I. (2014). Divisional Profile of Kalam Forest Division. Accessed on February 17, 2017 from [https://www.academia.edu/12377322/Divisional\\_Profile\\_Kalam\\_Forest\\_Division\\_by\\_Iqbal\\_Hussain\\_CDO\\_Kalam](https://www.academia.edu/12377322/Divisional_Profile_Kalam_Forest_Division_by_Iqbal_Hussain_CDO_Kalam)
- Iqbal, M. (2002). Socioeconomic impacts of joint forest management in Mouza Fateh Bandi (Key area-1), Siran Forest Division, Hazara. Pakistan Forest Institute, Peshawar.
- Jumbe, C. B., & Angelsen, A. (2007). Forest Dependence and Participation in CPR Management: Empirical Evidence from Forest Co-management in Malawi. *Ecological Economics* (62): 661-667.
- Khattak, A.K. (1996). Joint Forest Management plan of Doga Forest for Mouza Fateh Bandi 1995-96 to 2004-05. Siran Forest development Project, Abbottabad.

- Pattnaik & Dutta. (1997). "JFM in South Bengal - A Study in Participatory Development", *Economic and Political Weekly*, Vol. XXXII, No. 50, Dec. 13, Pp. 3225-3232.
- Population Census. (2017). Pakistan Bureau of Statistics, Government of Pakistan.
- Shackleton, S., & Campbell, B., & Wollenberg, E., & Edmunds, D. (2002). Devolution and community based natural resource management: Creating space for local people to participate and benefit. *Natural Resource Perspectives* No. 76, Overseas Development Institute (ODI), London, U.K.
- Steimann, B. (2005). Livelihood strategies in North West Pakistan. IP-6 Working Paper No. 5. NCCR North-South; Development Study Group, University of Zurich, Switzerland. 92p
- Steimann, B. (2006). Rural livelihoods and the role of forest resources in the NWFP. In *Troubled times: Sustainable development in the age of extremes*. Sustainable Development Policy Institute (SDPI) and City Press, Pakistan: 44-65.
- TERI. (2001). Study on Joint Forest Management conducted by TERI for Ministry of Environment and Forests. New Dehli: Government of India.
- Wily, L.A. (2002). Participatory Forest Management in Africa. An Overview of Progress and Issues. A Key Note Paper Presented in the Second International Workshop in Participatory Forestry in Africa, 18 – 22 February 2002. Arusha, Tanzania. 25pp.