



Analysis of elements of forest governance in joint forest management system: a comparative study of actual and ideal forest governance in Allai Guzara forests, Hazara tribal forest division, Khyber Pakhtunkhwa, Pakistan

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Abstract

In Pakistan, the traditional hierarchal governance of forest resources performed well as long as the large forest resources were available, however, after independence the population increased rapidly and consequently their demands of timber, fuelwood, grazing and other products and services increased too. It was felt that the any conservation measure without the people's involvement will be in vain. Looking at the experiences and lessons learnt from the neighbouring countries like Nepal and India, the concept of Joint Forest Management was introduced in the province of KP. However, JFM-a type of co-governance-also did not perform upto the expectations despite of the fact that the main objective of JFM was to conserve the forest resource. Forest depletion is at constant rise even after the implementation of JFM model. One of the major underlying causes is the poor forest governance. This necessitates the fact to analyze the existing governance mechanism; compare it with the ideal forest governance; find out the governance issues and its underlying causes; and recommend a framework for governance reforms in JFM. With these stated objectives, the current study was designed to cover the Allai valley Guzara Forest where JFM is in place since 2004. The study resulted in key findings in relation to forest governance which will be helpful not only to the concerned authorities but also to academia, NGOs and general public.

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Introduction

Historically, the state was mainly involved in governing the forests in Europe as well as in the colonies (Scott, 1998). The need of regulating the ownership and access to natural resources was felt immensely as otherwise the private resource users would have continued to degrade the natural resource for their personal gains and vested interests (Hardin, 1968). As a result of protests by conservation NGOs, opposition by civil societies, and pressure by international donors led to reforms in the governance process (Agrawal *et al.* 2008). The current governance underpins three basic thematic areas viz decentralization, participation and marketization (ETFRN, 2012). Poor forest governance can have negative consequences in terms of environment, poverty reduction and social development, and economic growth- the three pillars of the World Bank's Forest Strategy (World Bank 2004). For example, REDD has been considered as an effective tool to combat climate change (Stern, 2009). But poor forest governance will discourage the investors of REDD, and hence the desired objectives could not be met (World Bank, 2009).

Objective and adequate forest resource management depends on good governance. To achieve the development outcomes in forestry sector, good forest governance is the preliminary requirement (FAO, 2012). In Khyber Pakhtunkhwa, the concept of community based forest conservation and management was internalized as result of Forestry Sector Project which was implemented through the province. The concept of joint Forest Management was launched on pilot basis in the designated forests of Hazara in two villages during 1996 under the Siran Development Project (Khattak, 1996, Swati, 2001).

Despite of its success in neighbouring countries like India and Nepal, the JFM did not perform upto the expectations mainly because of the governance issues. Iqbal (2002) opines that the concept of JFM was bottom-up in theory but in practice it remained top-down and hence the JFM failed to deliver in Mouza

Fateh Bani due to lack of trust and confidence among the communities and forest department. Sungi (2007) in its report states 'Forest regeneration/restocking and maintenance, while mandated, is not markedly visible. The perception is that once marked trees have been harvested and sold, the JFMCs will become dormant. Essentially, the driving force behind JFM in Allai is individual leadership rather than institutional legitimacy'.

This study aimed to assess the current level of forest governance in Joint Forest Management; and to carry out comparative analysis of actual and ideal forest governance in JFM. The study was successful in terms of finding out the strengths and weakness in the forest governance in JFM, which give clear guidelines to forest managers and policy makers to take corrective measures to improve governance mechanism in JFM.

Material and methods

Study area

Management System in place. The Allai forests are situated in Allai Tehsil of District Battagram of Hazara Civil Division of Khyber Pakhtunkhwa approximately between 34°-44 ½' and 34°-58' North latitude and 72°-54' and 73°-15' East longitude (Khan, 1985).



Fig. 1. Location map of study area.

Source: Resource Management Plan for Allai Guzara Forests of Hazara Tribal Forest Division. (2001-02 to 2010-11)

The tract is bounded on the east by Chaur, on the north by Kohistan, on the west by Indus River and on the south by Nandhyar valley. These forests are situated on the northern, north-eastern, southern and western aspects (Khan, 1985).

Allai valley has the total area of 56,081 hectares of which coniferous forests cover an area of 40%, agricultural lands 30%, broad leaved forests 4%, range lands 20% and alpine pastures 6%. (Muhammad, 2001).

Administratively, Tehsil Allai has been divided into eight union councils, namely, Banna, Bateela, Sakargah, Batkul, Jambera, Biari, Rashang and Pashto (GoP, 2012). The population of Allai valley is 131,765. The total number of households is 19,377 whereas the average household size of 6.8 (GoP, 1998)

Data collection

Sampling

Multistage sampling (Snijders, 2001; Hankin, 2011; Mohanty & Sahu, 2012) was adopted for this research to achieve time and cost efficiencies associated with extensive field. The first stage sampling consisted of listing the entire registered JFMCs of Allai valley. This list was obtained from the Divisional Forest Office of Hazara Tribal Forest Division at Battagram. In the second stage, 20 JFMCs were selected randomly.

In the third stage, each selected JFMC was divided into the following target groups:

Forest Owners: 2 Nos

Non-Forest Owners/Users: 2 Nos

Forest Official/Officer representing JFMC: 1 No

Thus 5 persons per JFMC were selected and interviewed on specially designed research questionnaire. In total 100 persons were interviewed.

Research Instrument

Sophie Higman (2005) identified the components of good governance as: Rule of law, Transparency, Equity and Incentives, Efficiency; and Accountability. World Bank (2009) identified five building blocks of forest governance, namely, Transparency, accountability, and public participation; Stability of forest institutions and conflict management; Quality of forest administration; Coherence of forest legislation and rule of law; Economic efficiency, equity, and incentives. Framework for Assessing and Monitoring Forest Governance proposed by a core group constituted by FAO and World Bank/PROFOR (2012) has established six elements of forest governance. These elements are Accountability; Effectiveness; Efficiency; Fairness/Equity; Participation; and Transparency.

Keeping in view the objectives of the study, the following steps were taken to design the research instruments:

1. A questionnaire was prepared for collecting primary data for this research. It helped in conveying the correct meaning and context of the questions as most of the respondents comprise illiterate and semi-literate population. The questionnaire was based on Framework for Assessing and Monitoring Forest Governance proposed by FAO (2012) because the tool is comprehensive in nature and has a global relevance.
2. Under each element of governance, six (06) indicators were developed. Thus in total 36 indicators (06 elements X 06 indicators) were developed.
3. Each indicator was assigned a score (1 to 4) based on their relative importance, the results of which were combined to determine effectiveness of the forest governance. It should be noted that all the indicators were given equal weightage.

4. Each respondent was asked to rank his position (score) on the given scale.
5. Based on spider-web tool, the score sheet was translated into visual diagram. i.e current score on governance under each principle was plotted against the maximum obtainable score of the relevant principle, and octagon was prepared. The assessment also identified the current status of the governance and the gap between the current and ideal situation. The NWFP (now KPK) Joint Forest Management (Community Participation) Rules, 2004 were used as yard stick to compare current governance in JFM with the ideal governance.
6. Based on the results of the assessment and discussions to improve the weaker areas, finally the respondents prepared an action plan to address the gaps.

In order to determine the validity of the questionnaire, it was pre-tested in the field and amendments were incorporated into the questionnaire in conjunction with thesis supervisor.

The list of the registered members (Owners, Users and officials of Forest Department) of the selected JFMCs was obtained from the Divisional Forest Office of Hazara Tribal Forest Division, Battagram. Identification of and access to the selected JFMC members was facilitated by the officials of Allai Forest Sub-Division. Face to face interview of the selected respondents was done by the author where questions were put before the respondent in local language (Pashto) and his response recorded on interview schedule.

Secondary data

In addition to primary data, secondary data related to the research was collected from the Divisional Forest Office, Battagram, Sub-Divisional Forest Office, Allai and Range Forest Office, Pashto. This included Resource Management Plan/Working Plans of Allai Guzara forests, JFM Plans, harvesting record and plantation record, constitution of JFMCs, annual audit reports, minutes, correspondence and other records of JFMCs that provided the basic information in the context of natural resource management and governance.

Data analysis

The data collected was analyzed statistically by using Statistix 8.1 software and MS-Excel computer programme. Descriptive statistics like Percentages, Weighted Scores, Mean and Standard Deviations were calculated. One-sample Student's *t*-test was performed to compare of sample means of actual scores to that of ideal/desired scenario. Similarly, Pearson's Correlation and ANNOVA was used to measure association between variables. Confidence interval of 95% or $\alpha = 0.05$ level of significance was used. The calculations were based on the following formulae (Yount, 2006).

Results and discussion

Analysis of stakeholders' perception towards the elements of forest governance in JFM

For this research study, the perceptions of three categories of stakeholders that comprise the Joint Forest Management Committee (JFMC) were recorded regarding the existing/current status of forest governance in JFM. The mean score for each element of forest governance for each stakeholder-FD officials, Owners and Users- is given in the Table 1.

Table 1. Perception of various stakeholders regarding elements of forest governance.

Elements of Forest Governance	Forest Deptt Officials	Owners	Users
	Mean Score		
Participation	1.6	1.2958	1.1958
Transparency	3.01	2.6041	1.725
Accountability	2.525	1.6916	1.1666
Fairness/Equity	2.966	2.9791	2.05
Effectiveness	1.583	1.5791	1.2625
Efficiency	2.833	2.6708	2.2958

The calculated F-value ($F=2.58$, $p=0.1089$) is less than the tabulated F-value (3.6823) at $\alpha=0.05$, therefore, the null hypothesis of equal means is

accepted and it is concluded that there is no statistical difference between the perceptions of FD officials, owners and users (Table 2.).

Table 2. ANNOVA: stakeholders perception regarding the elements of forest governance in JFM.

Source	DF	SS	MS	F	p
Between respondents	2	1.99375	0.99687	2.58	0.1089
Within Respondents	15	5.79614	0.38641		
Total	17	7.78989			

The Pearson’s Correlation Co-efficient (r) value for the perception between FD officials and owners is 0.8934, between FD officials and users is 0.7337 and between owners and users 0.9092. This means strong association among the stakeholders’ perception. In other words, FD officials, owners and users offered/presented uniform response pertaining to the elements of forest governance in JFM (Table 3.).

Table 3. Correlation between stakeholders’ perceptions.

Correlation between	"r" value
FD Officials and Owners	0.8934
FD Officials and Users	0.7337
Owners and Users	0.9092

Comparison of actual and ideal forest governance by Achievement and Gap Analysis

Table 4. depicts that the Equity (65%) topped the list in terms of achievement followed by Efficiency (64%). Other elements of forest governance in JFM in order of achievements were: Transparency (58%), Accountability (41%) and Effectiveness (36%). The Participation (33%) was ranked lowest amongst all the elements in the achievement section.

The maximum gap between actual and ideal forest governance in JFM was observed under the element of Participation (67%) followed by Effectiveness (64%). Other elements of forest governance in terms of gap between actual and ideal forest governance in JFM were: Accountability (59%), Transparency (42%), Efficiency (36%) and Equity (35%).

Table 4. Comparison of actual and ideal forest governance: achievement and gap analysis.

Element of Governance	Mean Score (Ideal)	Mean Score (Actual)	Achievement (%)	Gap (%)
Participation	4	1.3166	33	67
Transparency	4	2.335	58	42
Accountability	4	1.6483	41	59
Equity	4	2.605	65	35
Effectiveness	4	1.4533	36	64
Efficiency	4	2.5533	64	36

Comparison of actual and ideal forest governance through spider-web diagram

Spider-web diagram was used for the visual interpretation and comparison between actual and ideal forest governance. Assuming each element of forest governance in JFM in ideal scenario be 100, the spider-web diagram (Fig.2.) clearly indicates that

Equity in actual governance was the most closest to the ideal governance on the same element followed by Efficiency (64). Other elements in actual scenario that are close to their respective elements in ideal condition were: Transparency (58), Accountability (41), Effectiveness (36) and Participation (33).

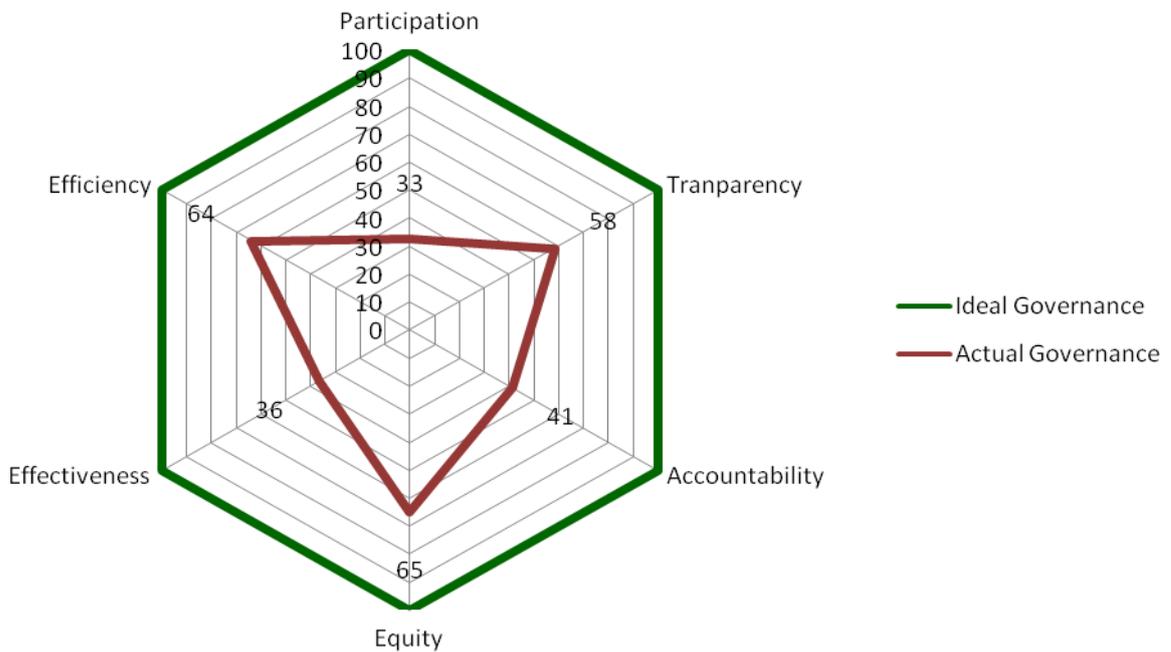


Fig. 2. Comparison of ideal and actual forest governance in JFM.

Testing the hypothesis

One sample *t*-test was used to statistically test the null hypothesis of the study. Statistix 8.1 was used to

compute the *t*-value. Confidence interval of 95% ($\alpha=0.05$) was used. The corresponding *t*-value for each governance element is shown in Table 5.

Table 5. One-sample *t*-test .

Element of Governance	Mean	SD	t-value	DF	P
Participation	1.3167	0.2890	-22.74*	5	0.0000
Transparency	2.3350	0.8850	-4.61*	5	0.0058
Accountability	1.6483	0.5760	-10.00*	5	0.0002
Equity	2.6050	1.0289	-3.32*	5	0.0210
Effectiveness	1.4533	0.7269	-8.58*	5	0.0004
Efficiency	2.5533	1.0139	-3.50*	5	0.0174

The inferences drawn are as follows:

- I. The mean actual score of Participation (Mean=1.3167, SD=0.2890) was significantly different from the mean ideal score of 4 of Participation in JFM ($t(5) = -22.74, p < 0.05$). Therefore, the null hypothesis, actual level of Participation does not differ from the ideal level of Participation in JFM, is rejected and it is concluded that the actual level of Participation differs significantly from the ideal level of Participation in JFM.
- II. The mean actual score of Transparency (Mean=2.3350, SD=0.8850) was significantly different from the mean ideal score of 4 of Transparency in JFM ($t(5) = -4.61, p = 0.0058$). Therefore, the null hypothesis, actual level of Transparency does not differ from the ideal level of Transparency in JFM, is rejected and it is concluded that the actual level of Transparency differs significantly from the ideal level of Transparency in JFM.
- III. The mean actual score of Accountability (Mean=1.6483, SD=0.5760) was significantly different from the mean ideal score of 4 of Accountability in JFM ($t(5) = -10.00, p = 0.0002$). Therefore, the null hypothesis, actual level of Accountability does not differ from the ideal level of

Accountability in JFM, is rejected and it is concluded that the actual level of Accountability differs significantly from the ideal level of Accountability in JFM.

- IV. The mean actual score of Fairness/Equity (Mean=2.6050, SD=1.0289) was significantly different from the mean ideal score of 4 of Fairness/Equity in JFM ($t(5) = -3.32, p = 0.0210$). Therefore, the null hypothesis, actual level of Fairness/Equity does not differ from the ideal level of Fairness/Equity in JFM, is rejected and it is concluded that the actual level of Fairness/Equity differs significantly from the ideal level of Fairness/Equity in JFM.
- V. The mean actual score of Effectiveness (Mean=1.4533, SD=0.7269) was significantly different from the mean ideal score of 4 of Effectiveness in JFM ($t(5) = -8.58, p = 0.0004$). Therefore, the null hypothesis, actual level of Effectiveness does not differ from the ideal level of Effectiveness in JFM, is rejected and it is concluded that the actual level of Effectiveness differs significantly from the ideal level of Effectiveness in JFM.
- VI. The mean actual score of Efficiency (Mean=2.5533, SD=1.0139) was

significantly different from the mean ideal score of 4 of Efficiency in JFM ($t(5) = -3.50$, $p=0.0174$). Therefore, the null hypothesis, actual level of Efficiency does not differ from the ideal level of Efficiency in JFM, is rejected and it is concluded that the actual level of Efficiency differs significantly from the ideal level of Efficiency in JFM.

Conclusion

Among the six elements of forest governance, Equity (65%) was found to be the top of the list in terms of achievement followed by Efficiency (64%). Other elements of forest governance in JFM in order of achievements were: Transparency (58%), Accountability (41%) and Effectiveness (36%). The Participation (33%) was ranked lowest amongst all the elements in the achievement section.

The stakeholders i.e Forest Department's officials, Owners and Users expressed uniform opinion regarding Forest Governance in JFM ($F=2.58$, $p=0.1089$). The Pearson's Correlation Co-efficient (r) value for the perception between FD officials and owners is 0.8934, between FD officials and users is 0.7337 and between owners and users 0.9092. This means strong association among the stakeholders' perception.

The actual level of Participation, Transparency, Accountability, Equity, Effectiveness and Efficiency differ significantly from the ideal level of their respective elements in JFM. The student's t value of Participation, Transparency, Accountability, Equity, Effectiveness and Efficiency was $t(5) = -22.74$, $p<0.05$, $t(5) = -4.61$, $p=0.0058$, $t(5) = -10.00$, $p=0.0002$, $t(5) = -3.32$, $p=0.0210$, $t(5) = -8.58$, $p=0.0004$ and $t(5) = -3.50$, $p=0.0174$ respectively.

References

Agrawal A, Chatre A and Hardin R. 2008. 'Changing Governance of the World's Forests' *Science* **320**: 1460–62.

European Tropical Forest Research Network. 2012 Moving Towards with Forest Governance. *ETFRN News*. **53**: pp.5

Food and Agriculture Organization. 2012. Assessing and Monitoring Forest Governance: A user's guide to a diagnostic tool. Programme on Forests (PROFOR).

Government of Pakistan. 1998. District Census Report of Battagram District.

Government of Pakistan. 2012. Tehsils and Union Councils in the District of Battagram. National Reconstruction Bureau.

Hankin D G. 2011. Multistage Sampling Designs in Fisheries Research: Applications in Small Streams *Canadian Journal of Fisheries and Aquatic Sciences* **41(11)**, 1575-1591.

Hardin G .1968. 'The Tragedy of the Commons' *Science* **162 (3859)**, 1243–1248.

Higman S. 2005. 'The sustainable forestry handbook: a practical guide for tropical forest managers on implementing new standards' International Institute for Environment and Development, London, England.

Iqbal M. 2002. Socio-economic impacts of joint forest management in Mouza Fateh Bandi (Key area-1), Siran Forest Division, Hazara. M.Sc.Forestry Thesis. Pakistan Forest Institute, Peshawar.

Khan S W. 1985. Revised Working Plan for the Allai Valley Forests of Hazara Tribal Forest Division. (1985-86 to 1994-95). NWFP Forestry Pre-Investment Centre, Peshawar.

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.

Khattak, A K. 2002. Guidelines for the preparation of joint forest management plans for upland forests in NWFP. Forest Management Centre, Peshawar.

Mohanty B, Sahu G. 2012. 'An empirical study on elements of forest governance: A study of JFM implementation models in Odisha' *Procedia - Social and Behavioral Sciences*: **37** (2012).pp. 314 – 323

Muhammad S. 2001. Resource Management Plan for the Allai Guzara Forests of Hazara Tribal Forest Division for the period (2001-02 to 2010-11). Forest management Centre, NWFP Forest Department.

Scott J. 1998. Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed. New Haven: Yale University Press.

Snijders TAB. 2001. 'Sampling' In: A. Leyland and H. Goldstein (eds.) *Multilevel Modelling of Health Statistics*.

Stern N. 2009. *The global deal: Climate change and the creation of a new era of progress and prosperity*. New York: Public Affairs.

Sungi. 2007. The quest for sustainable forest management: Exploring Public-Private Partnerships in the Forestry Sector in Pakistan.

Swati M I. 2001. Joint Forest management, an approach for better protection and management of forests. *Ethno-botany applied to participatory management in Pakistan*.

World Bank. 2004. *Sustaining forests: A development strategy*. Washington DC: World Bank.

World Bank. 2009. *Roots for Good Forest Outcomes: An Analytical Framework for Governance Reforms*. Agriculture and Rural Development Department, Washington DC: Report No. **49**, 572-GLB.

Yount W R. 2006. *Research Design & Statistical Analysis in Christian Ministry*. **4th** edition. Printed in USA.