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Determining Demand Priorities of Various Stakeholders Regarding Forest Goods and Services in the Context of Sustainable Forestry: A Case Study from Turkey

¹Atakan Öztürk and ²Mustafa Fehmi Türker

¹Department of Forest Economics, Faculty of Forestry, Kafkas University, 08000 Artvin, Turkey

²Department of Forest Economics, Faculty of Forestry, Karadeniz Technical University, 61080 Trabzon, Turkey

Abstract: Forests supply various goods and services for individuals and groups. This requires that forest management decisions be not made by foresters only. The interaction between forestry and the society is an integral part of sustainable forest management. In Turkey, State Forest Enterprises are the main forest management units that manage public forests according to timber-oriented management plans prepared by foresters. These plans omit the social dimension and direct participation of relevant stakeholders. This is a preliminary study to include the social dimension in forest policies and management strategies. The case study in northeastern Turkey involved urban, rural, managerial, industrial and recreational stakeholders as well as non-governmental organizations. In view of the findings, guidelines for forestry administrations at local and national levels and a framework of sustainable forest policies and strategies were developed.

Key words: Public forest, participation, forest stakeholders, ranking

INTRODUCTION

People have benefited directly or indirectly from the forest resources for a long time and it is still continuing. This is because all natural resources including forest resources are useful and meaningful for people as long as they are served to human being.

Forests supply a number of goods and services for individuals and groups. This implies that forest management decisions should not to be made by foresters solely. The interaction between forestry and the society is an integral part of sustainable forest management. This interaction entails the involvement of the various stakeholders in the forest management process.

On the other hand, demands for forest goods and services are growing in local, regional and global context. These demands can often contradict. This conceivably raises the allocation problem of forest resources^[1].

At this point, involvement of stakeholders comes into agenda in the management of natural resources and in the meantime forest management both in decision making and implementation process. Participation became a major issue in the international policy arena since the early 1990s in the management of natural resources. Today, it is obvious that to incorporate views, demands and suggestions of interest groups for sustainable forest

management and planning is crucial. In this way, it would be possible to have more sound decisions and to pretend potential conflicts among the different groups^[1].

There exists an interaction process basically between forest and people while producing direct and indirect uses. One of the most observed characteristic of this interaction process is abundance and diversity of the human needs that are met by forests. Similarly, individuals and groups that benefit from forests directly or indirectly are ubiquitous. Thus, sustainable management or utilization of forest resources is closely related to the involvement of those concerned. This involvement process is not purely sharing of benefits, but also concerning the planning, decision-making and implementation and even undertaking responsibilities^[2]. In Turkey, dominated state ownership (99.9%) increases the importance of public participation in sustainable forest management and planning.

The way and level of public participation in forest resource management can differ highly among the countries. In Turkey, State Forest Enterprises (hereafter SFE's) are the main management units. These administrations manage their forests according to the management plans mandating timber-oriented goals prepared by foresters. These plans are highly technical and biological and omit the social dimension and

participation of stakeholders directly related to management of forests. Therefore, an urgent need arises for approaches and practices to realize stakeholders participation in the process of sustainable management of Turkish forest resources.

This study, which is preliminary to include the social dimension in forest policies and management strategies, aims to determine priorities of the demands of various stakeholders in Turkey regarding forest goods and services in the context of sustainable forestry. In the end a set of guidelines are developed for forestry administrations from local level to national level in the framework of sustainable forest policies and forest management strategies considering the demand priorities of six stakeholders.

MATERIALS AND METHODS

The case study was conducted in Maçka SFE in the northeast part of Turkey and involved six different stakeholders including urban (residents in the urban), rural (forest villagers), managerial (technicians and managers of forestry administration), industrial (members of sawmills) and recreational (members of hunting club) stakeholders as well as non-governmental organizations (NGOs).

Fifteen alternative demands were identified related to forest resources of Maçka SFE (Table 1).

Each stakeholder was asked to assign a rank of importance to each of 15 alternative demands. Priority preferences of each stakeholder were determined using the Regular Ranking Approach.

In this approach, each element relevant to decision process is assigned a rank depending on the perceived importance of the element. Ranks are assigned according to the following 9 point scale^[3].

Table 1: Alternative demands related to forest resources of Maçka SFE

Symbol	Type of demands
D ₁	Protection of forest resources (trees, animals, water, pasture etc.)
D ₂	Protection of natural, historical, cultural values etc. in the forest areas
D ₃	Forest plantation
D ₄	Production of fuel wood
D ₅	Production of industrial wood
D ₆	Non-wood forest products such as mushroom, medicinal plants etc.
D ₇	Recreation and natural tourism activities
D ₈	Productivity, profitability and economic efficiency in all enterprise activities
D ₉	Employment
D ₁₀	Socio-Economic development of forest villagers
D ₁₁	Erosion control activities
D ₁₂	Supporting of pasturage in forest
D ₁₃	Supporting of fisheries in forest
D ₁₄	Forests management for quality water producing
D ₁₅	Development of hunting and wild-life activities

Weakly important	Less important	Moderately important	More important	Extremely important
1	3	5	7	9

When the ranks were assigned to each demand, Friedman test was applied to each group. The Friedman test is a nonparametric test to compare three or more matched groups^[4]. It uses the ranks of the data, rather than the data itself^[5].

Null and alternative hypothesis of Friedman test are shown below^[6]:

- H₀ : Treatments have identical effects
- H₁ : At least one of the treatments has different effect

This study used the Friedman test to compare demand order of the all stakeholder groups through the ranking values of the alternative demands. Furthermore, the study employed the Kendal W test to measure the agreements of different stakeholders whom are offered various demand alternatives to rank^[7].

RESULTS AND DISCUSSION

Result of Table 2 shows that forest villagers gave the highest ranks to the D₁, D₁₀ and D₁₁, respectively. That D₁ is the first choice may be attributable to the villagers’ benefit from and dependence upon forest products and services. Also, increased risk of the natural disasters such as landslide and flood that are directly connected to the forest degradation may have reinforced the idea of forest conservation. D₁₀-2nd and D₉-4th likewise reflects the desire of local forest villagers to escape from their present ruined economic conditions. These demand types are of direct interest and benefit of forest villagers.

D₁, D₃ and D₂ are, respectively the first three demands of the urban residences (Table 2). Urban people ranked the forest protection the first within the general tendency. General public consensus about the need for afforestation is the reason why the forest growing and plantation comes for the second demand. The leading demand for the D₂ can be interpreted as a reflection of the awareness among the urban people for the maintenance of natural, historical and cultural values connected to the forests.

D₃, D₁ and D₁₀ are, respectively the first three demands of sawmill owners (Table 2). Foremost demand of this stakeholder is forest plantation due to the fact that plantation is a kind of guarantee for the wood supply. Sawmill owners gave the third priority to D₁₀ and thus differed from the urban residents. This may be due to the cultural links of this group with the forest villagers. Many of this sawmill owners are still living in forest villages.

Table 2: Demand priority order related forest resources management in Mačka SFE according to stakeholders

Stakeholders		Priority order															Total (%)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Forest villagers	Rank	8.47	8.37	7.92	7.71	7.68	7.58	7.16	6.78	6.68	5.92	5.88	5.64	5.52	4.88	3.79	100
	Demand	D ₁	D ₁₀	D ₁₁	D ₉	D ₃	D ₁₄	D ₂	D ₁₃	D ₈	D ₄	D ₇	D ₅	D ₁₅	D ₆	D ₁₂	-
Technicians and managers of forestry administration	Rank	9.89	8.79	8.60	8.09	8.09	7.93	7.70	6.80	6.02	5.82	5.63	4.96	4.96	4.03	2.70	100
	Demand	D ₁	D ₇	D ₂	D ₈	D ₃	D ₁₁	D ₁₀	D ₁₄	D ₁₅	D ₅	D ₁₃	D ₉	D ₆	D ₄	D ₁₂	-
Residents in the urban	Rank	10.02	9.81	8.56	8.55	7.72	6.61	6.50	6.21	6.04	6.04	5.97	5.19	4.83	4.68	3.27	100
	Demand	D ₁	D ₃	D ₂	D ₁₁	D ₁₀	D ₇	D ₁₄	D ₁₃	D ₁₅	D ₈	D ₉	D ₆	D ₅	D ₄	D ₁₂	-
Members of sawmills	Rank	8.89	8.71	8.25	8.2	7.98	7.98	7.44	6.99	6.7	6.31	5.91	5.86	4.47	3.20	3.07	100
	Demand	D ₃	D ₁	D ₁₀	D ₁₁	D ₈	D ₉	D ₂	D ₅	D ₇	D ₁₄	D ₆	D ₁₃	D ₄	D ₁₅	D ₁₂	-
Members of hunting club	Rank	9.46	8.98	8.91	8.61	8.35	7.20	7.01	6.90	6.6	6.49	6.23	4.94	3.78	3.38	3.12	100
	Demand	D ₃	D ₁₅	D ₁	D ₁₁	D ₂	D ₁₀	D ₇	D ₁₄	D ₁₃	D ₈	D ₉	D ₆	D ₄	D ₅	D ₁₂	-
Members of NGO's	Rank	11.11	9.98	9.29	9	7.30	7.25	6.33	6.17	5.5	5.26	5.15	4.88	4.72	4.46	3.60	100
	Demand	D ₁	D ₃	D ₁₁	D ₂	D ₇	D ₁₄	D ₁₀	D ₈	D ₁₅	D ₉	D ₆	D ₅	D ₁₃	D ₄	D ₁₂	-

Demand D₅, which is directly connected to the sawmill owners, took the 8th place. But it is relatively stronger demand compared to the other groups' demand order.

D₁, D₇ and D₂ are, respectively the first three demands of the local forest administration (Table 2). One of the major responsibilities of this administration is the protection of forest resources. Sustainability of the forest resources is closely connected with the existence of forest administration. Thus, D₁ is the leading demand as expected. Another study^[8] revealed that the 84% of the state forest administrators perceive the sustainability of forest managements itself as the most important goal in the forestry profession. Meanwhile, forest administrators placed relatively higher priorities on non-timber forest values (D₇ and D₂), inasmuch as the study area comprises various natural and historical values including the Altundere National Park, Sümela and Vazelon Monasteries and the Silk Road that are closely connected with the forest resources.

D₃, D₁₅ and D₁ are, respectively the first three demands of the members of hunting club (Table 2). That this stakeholder gave first priority to the D₃ can be attributed to the significance of forest protection for the long term sustainability of wildlife resources. Also, publicity efforts for the forest plantation may be another cause for this demand selection. D₁₅ is directly related to the interest area of this stakeholder group and thus compatible with the expectations. Moreover, initial goal of the hunting clubs and the demand D₁₅ for the development of hunting and wild-life activities are overlapping.

D₁, D₃ and D₁₁ are, respectively the first three demands of the NGOs (Table 2). These NGOs are already acting to raise the public awareness about the environment. They gave the priority for their goals that is related to the protection and improvement of the forest resources.

To determine whether there are any differences among the demand priority order of the stakeholders, Friedman test was applied to data in question.

Because of the calculated significance level (0.000) is smaller than 0.05, the null hypothesis is rejected. In other words, at least one of the treatments has a significant effect on the demand priority orders of the stakeholders. This means that each stakeholder subject to investigation will give a rank changing from one stakeholder to another for each demand.

Following the Friedman test, Kendall's W test was conducted in order to ascertain relation degree for each other of six different stakeholders given a rank each alternative demand.

Kendall's harmony coefficient is calculated as 0.794. This calculated coefficient when coming near to zero harmony reduces and coming near to one harmony increases. Consequently, harmony among different stakeholders is approximately 79% or disharmony is at 21% level.

CONCLUSIONS

Evaluated the stakeholders' demand priorities in Mačka SFE, there are not appear significant differences among the stakeholders. Their priorities, however, differ slightly especially regarding the special demands that are directly refers to the each group. Four of six different stakeholders identified the demand related to forest protection as foremost demand. The other two groups included this demand into first three demand preferences. Considering this demand preferences, Mačka SFE should take into account these demands especially the forest resources protection demand while preparing the management plans and formulating the management goals.

NGOs gave the highest rank to the forest protection and improvement, forest villagers to the fuelwood

production and socio-economic development of forest villages, members of sawmills to the industrial wood production and employment, forestry administration to the recreation and rationality in the applications, members of the hunting club to the maintenance and development of wildlife according to the demand priorities and relative order among the groups.

Statistical analyses revealed that the different demands relatively foremost in the each group. In this case there comes out the problem of weighting the different stakeholders so that the forest management planning can respond the demand preferences of all stakeholders. A final demand list corresponding to the all stakeholders should be created according to the weight score assigned to the each stakeholder. This list would be a guideline for the forest management. Each group may be perceived equally when the weighting is not possible. This would generate better results for the sustainable forest management than the case of disregarding the demands of stakeholders do. It somewhat means that public participation is imported to the forest resource management process. Thus, more reliable and sound policies and strategies for the forest management could be formulated.

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