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# Investigation of demands of various stakeholders and participatory management in Zagros forests, Iran

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Zagros forests, located in the western part of Iran. Up to now, enough attention has not been paid to the demands of stakeholders and participatory management in Zagros forests. The main objective of this research is studying the demands of various stakeholders in Zagros forests to determine the communication gaps and problems of participatory management. This research was carried out in Dashte-Barm watershed of Fars province, south-west of Zagros forest. In this research, with the questionnaire design based on Likert scale, the stakeholder' demands of forest management plan (FMP) were studied. The result of research show the decentralization of management is most important element of stakeholder demands. Decentralization of management include giving the right of suffrage to the local resident, attention to traditional knowledge, participatory management and delegating authority to local units. It is important that the local inhabitants have the opportunity to periodically review the actions of municipal authorities and community representatives. No effort can succeed if the majority of the local inhabitants must follow rules and regulations that others can circumvent, thereby reaping lion's share of the benefits.

**Key words:** Decentralization of management, Likert scale, traditional knowledge, participatory management.

## INTRODUCTION

### Introducing the Zagros forests

Zagros forests, located in the western part of Iran. These forests characterized by a semi-Mediterranean climate, are one of the most important and sensitive ecosystems in Iran. These forests are about 5 million ha, occurring in the north-western part of country. The main tree species in these forests are *Quercus* spp (oaks) (Purhashemi et al., 2004). These forests do have very important non-market values include restorative and protective significance. Around 40% water resources of Iran results from this region. In addition, these forests have social function. Local resident depend on forest recourses (Jazirehei and Ebrahimi, 2003).

Forests and Rangelands in Iran nationalized through

legislation passed in 1963. More than 1.7 million ha of the Zagros forests has destroyed since 1963 (Ghazanfari et al., 2004). Zagros forests involve some kind of conventional ownership by communities within village. Current forest utilization practices are traditional and support subsistence livelihoods (Ghazanfari et al., 2004).

For more than 40 years, the government of Iran's forest and rangeland organization (FRO) has tried to stop deforestation and manage the Zagros forests through different forest management plans (FMPs), but none of the FMPs has been successfully implemented (Jazirehei and Ebrahimi, 2003).

Up to now, enough attention has not been paid to the demands of stakeholders and participatory management in Zagros forests. The main objective of this research is studying the demands of various stakeholders in Zagros forests to determine the communication gaps and problems of participatory management.

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## Public participation

Assessing and formulating sustainable forest management (SFM) is not only an issue involving ecological or physical matters, because natural resources also exist in the social and political world. Thus, SFM requires ethical consideration, with local actors also being involved. The need to include the human spirit, the sense of place and the social values in land management has been emphasized (Balana et al., 2010).

Public participation has two goals: namely, gathering information and achieving communication among the stakeholders. Public participation enables extremely useful knowledge to be obtained about the stakeholder's opinions, values and preferences. For example, it is possible to provide valuable information for the planner concerning threatened species areas and the importance of local berry-picking incomes (Purnomo et al., 2005). However, gathering information is not enough for ethical considerations and proactive involvement of the public: instead, a more communicative process is needed.

Public participation as a communicative process helps decision makers better understand the values and knowledge possessed by the participants, or allows the stakeholders to directly influence planning and decision-making (Hickey et al., 2007). Public participation is becoming increasingly embedded in national and international environmental policy, as decision makers recognize the need to understand who is affected by the decisions and actions they take, and who has the power to influence their outcome, that is, the stakeholders. Although this is a vital first step in any participatory exercise, stakeholders are often identified and selected on an ad hoc basis. This has the potential to marginalize important groups, bias results and jeopardize long-term viability and support for the process (Kangas et al., 2010). For this reason, interest is growing in a collection of methods that can be used for "stakeholder analysis".

We define stakeholder analysis as a process that: (i) defines aspects of a social and natural phenomenon affected by a decision or action; (ii) identifies individuals, groups and organizations who are affected by or can affect those parts of the phenomenon (this may include nonhuman and non-living entities and future generations); and (iii) prioritizes these individuals and groups for involvement in the decision-making process (Salam and Noguchi, 2006). Approaches to stakeholder analysis have changed as tools have been progressively adapted from business management for use in policy, development and natural resource management.

## The relationship between stakeholder analysis and non-market values' forest

Social science and resource management literature is full of instances where decisions about uses or non uses of

natural resources have often resulted in disputes and interpersonal conflicts. Disputes and conflicts arise mainly due to diversity of preferences and behaviors of various stakeholders, resource managers, forest industry, local forest users, and environmental groups with respect to resource use (Adhikari, 2001).

Human values, according to cognitive hierarchy model, provide foundation for preferences and behaviors. Natural resource management controversy, therefore, can be conceptualized as a consequence of divergent and often conflicting human values with respect to resource use, and a failure to recognize and address this diversity of human values, within a society or a group, would result not only in interpersonal conflicts, but also into resource degradation and possibly resource extinction (Harrison et al., 2002). Hence, for effective resource management, it is imperative that diversity of values and preferences for a given resource, across stakeholder groups, are explicitly included in resource management decisions.

Forests, like other natural resources, provide umpteen products and services (forest values) for the society, but the traditional forest management paradigm endorsed a forest resource utilization philosophy, which was based on the dominance of market over non-market values (Davis et al., 2001). In last two decades, this paradigm has been vehemently criticized for ignoring the non-market values, such as natural heritage or intrinsic values of the ecosystem.

Environmental movements and increased public awareness about ecosystem values, coupled with increasing recognition of Aboriginal rights and values have resulted in a demand to incorporate non-market values in forest management (Cuizon, 2007). As a result, a newly emerging forest management paradigm SFM takes a more inclusive approach by emphasizing the need to incorporate each stakeholder's preferences for different forest values, including nonmarket values (Balana et al., 2010).

## The challenge of stakeholder's opinions

Individuals have different perspectives and see things differently because words, phrases, expressions and objects are interpreted differently according to their frame of reference. Systems analysts prefer to use the term "actors" while sociologists talk of "social actors" (Kant and Lee, 2004).

Stakeholder analysis refers to a range of tools or an approach for understanding a system by identifying the key actors or stakeholders on the basis of their attributes, interrelationships and assessing their respective interests related to the system, issue or resource (Salam and Noguchi, 2006). Stakeholder analysis is also derived from participatory methods of project design that seek to integrate the interests of disadvantaged and less

powerful groups (Hickey et al., 2007). Furthermore, stakeholder analysis is a central theme in conflict management and dispute resolution.

## MATERIALS AND METHODS

### Study area

This research was carried out in Dashte-Barm watershed of Kazerun city's Fars province, south-west of Iran. Woody species composition is characterized by *Quercus brantii* as the main species and other tree species such as *Amygdalus scoparia*, *Pistacia atlantica*, *Acer monspessulanum* and *Crataegus aronia* as the associated species. These forests have destroyed same other regions of Zagros and almost 96 percent of forest stands are in coppice form. The life of local resident depends on forest resources to supply fuelwood and forage.

### Study methods

In this research, with the questionnaire design, the stakeholder demands of forest management plan were studied. The questionnaires were semi-structured conducted. In this study, governmental stakeholder organizations include national stakeholders (Iran's forest and rangeland organization, Iran's research institute of forests and rangelands), and local stakeholders (Kazerun natural resources office and Kazerun agricultural office organization).

Iran's forest and rangeland organization and Kazerun natural resources office are executive management of forests and Iran's research institute of forests and rangelands is research sector. Furthermore, local resident who involved were farmers, nomads, and the people who live at the forest. Experts were choosing among stakeholders based on experience and degree of proficiency. Also demands of local resident gathered of village's headmans based on reputation approach. Stakeholder analysis is initially identified through reputation, focus groups or demographic analysis. Reputation approach is focused on managers and headmens select.

In this study, the range of five-level Likert scale was used. Different numbers from one to five were allocated to each of level based on their importance. In the questionnaire asked about the stakeholder's demand and the importance Likert-based spectrum. Questionnaires were distributed to experts and headmans. Totally for the use of stakeholders, we distributed eleven questionnaires. After filling the questionnaire by stakeholders, the importance degree of each element was summed. Elements with minimum importance degree omitted from the list of elements due to focusing on main important factors in final list. If the importance degree of each element were more than ten it were remain in the final list.

In order to better analyze the results, after data collection, were used to classify them. Attention to traditional knowledge, giving the right of suffrage to the local resident and participatory management and delegating authority to local units, grouping in decentralization of management. Attention to enriching, conservation practices and protection of regeneration, grouping in forest preservation. In this research, stakeholder demands were gathered by the Likert scale. Description of this scale is as follows:

### Likert scale

A Likert scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale, or more

accurately the Likert-type scale, even though the two are not synonymous (Kline et al., 2000).

The scale is named after its inventor, psychologist Rensis Likert. Likert distinguished between a scale proper, which emerges from collective responses to a set of items (usually eight or more), and the format in which responses are scored along a range. Technically speaking, a Likert scale refers only to the former. The difference between these two concepts has to do with the distinction Likert made between the underlying phenomenon being investigated and the means of capturing variation that point to the underlying phenomenon.

When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item, while the results of analysis of multiple items (if the items are developed appropriately) reveals a pattern that has scaled properties of the kind Likert identified (Rickenbach and Overdeest, 2006).

A Likert item is simply a statement which the respondent is asked to evaluate according to any kind of subjective or objective criteria; generally the level of agreement or disagreement is measured. It is considered symmetric or "balanced" because there are equal amounts of positive and negative positions. Often five ordered response levels are used, although many psychometricians advocate using seven or nine levels; a recent empirical study found that a 4- or 7- point scale may produce slightly higher mean scores relative to the highest possible attainable score, compared to those produced from a 10-point scale, and this difference was statistically significant (Marshall and Marshall, 2007).

In terms of the other data characteristics, there was very little difference among the scale formats in terms of variation about the mean, skewness or kurtosis. The format of a typical five-level Likert item is: strongly disagree, disagree, neither agree nor disagree, agree and strongly agree (Rickenbach and Overdeest, 2006).

## RESULTS

Table 1 shows the demands of different stakeholders. Table 2 shows the main elements considered by stakeholders involved in their care (total number in Likert scale).

## DISCUSSION

At combination the stakeholders' demands according to their important, decentralization of management with forty-seven scores and forest preservation with thirty-nine score, are most important factors (Table 2). FMPs in Zagros forests have combination of social and preservation problems. Between these two elements (social problems and preservation problems), the social problems are more significant.

Executive management is the only stakeholders that considered protection element is as the first demand (Table 1). Forest management can be a governmental or participatory (Hayes and Persha, 2010). In the governmental management, state managers manage the forest via centralized institutional arrangements which largely exclude local communities from participating in forest management.

**Table 1.** Demands of different stakeholders.

Stakeholders	Demands
Local resident	Decentralization of management, design A sylvopastoral system in forest
Executive management (Kazerun natural resources office and Iran's forest and rangeland organization)	Forest preservation, design a system management and land use planning and Planning for ecotourism
Tourism sector	Planning for ecotourism, forest preservation
Agricultural sector	Design a sylvopastoral system in forest, design a system management and land use planning
Research sector	Decentralization of management, forest preservation, design a sylvopastoral system in forest.

**Table 2.** Main elements considered by stakeholders involved with the care they (total number in Likert scale).

Factors	The importance quantity
Decentralization of management	47
Forest preservation	39
Design a sylvopastoral system in forest	24
Design a system management and land use planning	20
Planning for ecotourism	16

Public participation in policy planning and policy implementation, the essence of democratic civil society, faces many constraints in contemporary public governance systems. Participatory in which the local communities have authority to manage the forest (Nordström et al., 2010). Policy goals of such decentralization efforts are often multi-faceted, aiming to better conserve forest resources while also improving the livelihoods of local forest dependent households. At least 22% of forest area in developing countries is now owned or managed by communities (Hayes and Persha, 2010).

Decentralization can increase democratization of forest management by allowing local populations to make decision on the control and use of local resources. Development of forest management to local governments may also provide local communities with new revenues and contribution to the more equitable distribution of benefits (Anderson, 2003).

With decentralized forest management, local people may feel a greater sense of ownership of rules for resources use and be more engaged in their implementation, monitoring, and enforcement (Nygren, 2004). Decentralized is also considered to make it easier for marginalized groups to influence environmental policies. On the other hand, local governments may be more subject to bribery and political pressure from local

resources users, or they may be captured by political elites who promote hierarchical relations instead of democratic participation and political accountability (Atmis et al., 2009).

Decentralization of management to local people and the research sector is joint demand (Table 1). Unlike some of the executive management, research sector has studied on traditional knowledge and participatory management. In order to achieve participatory management, traditional knowledge should be considered serious.

To participatory management, traditional knowledge (TK) is largely dependent (Elbakidze and Angelstam, 2007). Traditional knowledge generally refers to the long-standing traditions and practices of certain regional, indigenous, or local communities. TK also encompasses the wisdom, knowledge, and teachings of these communities. In many cases, TK has been orally passed for generations from person to person (Parrota, and Agnoletti, 2007). As a consequence, the knowledge required to realize sustainable forest management is heterogeneous, and dependent on sets of values with different spatial and temporal scale dimensions.

Moving into the post-industrial society, ecological dimensions became included in the definition of SFM in the 1990s. More recently also the role of the social and cultural aspects of SFM in the overall goal of sustainable

development, including the role of traditional forest-related knowledge has been highlighted (Aoudji et al., 2011).

At the national level, policy instruments are then gradually developed, and may include legislation, information, subsidies, monitoring, vocational training, etc. However, the maintenance of natural and cultural biodiversity is usually not maintained by institutions, but rather by local people acting in different formal and informal governance systems. Consequently, several policy areas with their respective planning traditions coincide: forestry, agriculture, transport infrastructure and the energy sector, as well as regional and urban planning (Balana et al., 2010).

The development of policies, legislation and land use (particular forest) planning systems and management practices that can harmonize environmental, economic, social and cultural objectives is a major challenge, not only in Iran's Zagros forest, but throughout the world (Nanang and Inoueb, 2000; Davis et al., 2001).

Achieving this balance will require broader participation of local communities and a better understanding by decision-makers and the scientific community of the knowledge and wisdom of these often-marginalized communities on issues related forest landscape conservation policy and management will encourage further, much needed interdisciplinary research on topics related to the past, present and potential further roles of traditional forest management practices and its associated knowledge, embedded deeply in the socioeconomic and cultural fabric of local and indigenous communities, in fostering more sustainable forest management (Adhikari, 2001).

Designing a sylvopastoral system in forest is also important. Sylvopastoral is shared between local people and research and agricultural section (Table 1). Local people tend to have cattle grazing in forests function. Forest grazing has been for a long time a normal activity in Zagros forests (Jazirehei and Ebrahimi, 2003). Grazing is organized to prevent the damage in the Zagros forests and is also required to meet local resident (Ghazanfari et al., 2004).

Silvopastoral is a one type of agroforestry systems, which focuses on the production of livestock and tree products in one integrated pasture system. Sylvopastoral systems establish can simultaneously try to preserve natural resources in the livelihood of the people. The system is trying to control livestock grazing in the forest. Grazing management can increase brows impact through feeding management rules (protein-rich supplementation, range fertilization, overseeding) and herding techniques.

The many benefits of silvopasture include increased income opportunities through diversification of production, enhancement of economic performance, reduced climate-induced stress to livestock, enhanced wildlife habitat and improved soil conditions (Shrestha et al., 2004). Sylvopastoral planning is necessary to safeguard

Zagros forest ecosystems (Ghazanfari et al., 2004) but only drastic regulations and a strict supervision of the local residents' practices can reverse the degradation process. Design system management and land use planning is another element that can be considered for this process (Table 2).

There are rules and procedures in place that have been defined by statute and ordinance. When land use controls are imposed, local governments are required to adopt specific rules and standards that will govern what can be built in the community and what process must be used to get approval to build it. Following local procedures, it is essential to obtaining a legal approval. The process does not involve much guesswork or assumptions about what procedures must be followed. It is specific and written down somewhere (Elbakidze and Angelstam, 2007).

Decisions in land use plans guide future land management actions and subsequent site-specific implementation decisions. These land use plan decisions establish goals and objectives for resource management (desired outcomes) and the measures needed to achieve these goals and objectives (management actions and allowable uses).

Planning for recreation functions another factor that should be considered when planning the Zagros forests. In a rapidly changing socio-economic context, constantly new demands are being made by society on Zagros forests management. Currently, the demand for recreation functions is increasing.

## Conclusion

Demands of stakeholders show the importance of participatory management, though decentralization of structure is the main problem in Zagros FMPs. The problem is that without the participation of local residents, the protection of forests will not be achievable. The following are some of the characteristics of local forest management (LFM) (Purnomo et al., 2005):

1. Access and control over the land and forest resources by local people;
2. Control over local decisions, independent initiatives and self-mobilization;
3. Solutions to competing demands over resources that minimize conflicts;
4. Complementary or synergistic relationships among different forest uses and users and
5. Equitable shares of the forest benefits.

These indicators have not been achieved in the past forest management plans in Zagros forests or more were achieved. The term participation is "highly context-specific and in practice it ranges from coercion to full local control" (Nordström et al., 2010). According to this approach, there are seven types of participation:

- (i) Manipulative participation: the people's representatives on the official board are not elected and have no power.
- (ii) Passive participation: people are simply told what has been decided in a unilateral announcement made by administrators.
- (iii) Participation by consultation: people are consulted and analysis and decisions are made by external agents.
- (iv) Participation for material incentives: people contribute resources (e.g., field and labor), and receive cash, food and other material incentives. They have no ability to prolong participation incentives when the incentives end.
- (v) Functional participation: participation by the people is an answer to predetermined objectives made by external agents. They may be involved in the decision-making, but only after major decisions have been made. They may be co-opted.
- (vi) Interactive participation: people participate in joint analysis, development of action plans and formation or strengthening of local institutions. Participation is a right, not a means to achieve a goal. A group takes control over local decisions and resources. They have a stake in maintaining structures or practices.
- (vii) Self-mobilization: independent initiatives by the people take place. Contact with external institutions is based on the needs of the people. They retain control over decision and resource use. Facilitation comes from the outside. The structure and distribution of wealth and power may or may not be challenged from within (Nanang and Inoueb, 2000).

The current management of the Zagros forests in the foregoing discussion is far different from the previous management. Zagros forest's management should strive to be a gradual process one after another. To achieve the previous indicators, it is necessary for this regime to have a decentralized management structure.

When assessing the success of decentralization and community-based forest management, considerable attention needs to be focused not only on the entire spectrum of actors with divergent interests, but also on the social and political processes through which these actors interrelate, along with the institutional mechanisms that shape their interactions (Nygren, 2004).

Although there are no simple recipes for democratic decentralization and creation of viable form of integrative development, the following recommendations are worth considering. Efforts to achieve inclusive and participatory forest management at the local level should be tailored to deal effectively with the local sociopolitical power structures that would frustrate them.

Populist agendas for grass root participation and community action should be replaced by realistic strategic that recognize the needs and goals of multiple actors with differentiated resource interests (Anderson, 2003). As opportunities to manage and control forest resource are undoubtedly influenced by the existing distribution of power, it is important to ensure that the institutions regulations local resources use include

legitimate representation of the less powerful segments of the local population as well (Balana et al., 2010).

No effort can succeed if the majority of the local inhabitants must follow rules and regulations that others can circumvent, thereby reaping lion's share of the benefits. Most of the local people have their own systems and practices for managing the forest. They have abundant knowledge of the forest environment and a strong commitment and responsibility to maintain the forest because their lives depend on it.

Unfortunately, in many cases the local systems and practices cannot be fully applied due to constraints and pressures from outside these communities (Hayes and Persha, 2010). In this respect, a more integrated forest management plan in Zagros forest should be developed by forest authorities together with the local people, and non-timber forest products, such as resin, carbon and firewood should be included in this plan. Such a plan could help the municipal authorities and local resources users to recognize the ways different forest activities complement and compete with each other in the local livelihood strategies.

Establishment of more secure usufruct rights for local residents to forest resources could help to prevent outsiders from gaining unfair or undesirable access these resources. It is important that the local inhabitants have the opportunity to periodically review the actions of municipal authorities and community representatives.

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