

CASE STUDY

Willingness to participation of local communities in the conservation of national parks

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ABSTRACT: Removing local communities from lands that they have been exploiting for generations without consultation or adequate compensation can result in retaliation and hostile attitudes toward the objectives of the protected areas. Therefore, this study examines the application of willingness to participate of local communities in the conservation of national parks. For the empirical observations, Iran's Khabr National Park was studied. The required data were collected using questionnaires fulfilling and interviewing with locals and tourists of the Khabr National Park. For analyzing the data, the logit econometric model was applied. Results indicated that 80 percent of them were eager to participate and they wanted the park to be managed by private sectors. Therefore, it is recommended that the government provide a condition where the private sector act and engage people in the conservation of the park. Factors such as a history of participation in previous projects, being Indigenous, lack of management organization, and familiarity with the environment were determined as the factors which affected the participation in this project.

KEYWORDS: *Environmental conservation; Khabr national park; Logit model; Natural resources; Private sector*

INTRODUCTION

Over the coming years, policy makers must make important decisions about the future of natural resources that are rapidly degraded. Continuous destruction of natural ecosystems has great consequences for all people, both those who directly depend for a living on these systems, and for other people. Relying on the resources of the community, not only because they provide goods and services directly, but also because they play an important role in regulating the climate, set gases, protect watersheds, control soil erosion, flood and drought control. In fact, the value of non-market services of natural ecosystems far more of their marketed goods and services (Boyd, 2007). Conservation is the planned management of a natural resource or the total environment of a particular

ecosystem to prevent exploitation, pollution, destruction, or neglect and to ensure the future use of the resource (Adetla and Adetoro, 2014). Local communities in the vicinity of national parks and protected areas have increasingly gotten a key role in achieving their conservation objectives and due to their ongoing interactions with the environment, they get familiar with the surroundings through recreation and use its resources (Schelhas *et al.*, 2002). Community-based ecotourism has become a popular tool for biodiversity conservation, based on the principle that biodiversity must pay for itself by generating economic benefits, particularly for local people (Kiss, 2004).

Jerath *et al.* (2014), acknowledge that in order to enhance community participation to protect three wetlands member of the Ramsar Convention in Punjab,

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government protection measures include biological and mechanical controls have not been fruitful. Therefore, to succeed in improving the wetlands conditions community participation is essential.

Environmental education has two aspects: First, all social classes addressing environmental education, and second, environmental education is not within the competence and ability of the Environmental Protection Agency (EPA) alone. Hence, all the organizations and institutions responsible for education in the country, particularly environmental non-governmental organizations that have been established with an educational approach and there is environmental education in the field of their activities are Responsible for environmental education. The organizations as a platform to attract and guide of public participation, as well as a conduit to institutionalize this participation will have a major contribution in this regard. Impressive achievements in the field of environmental education in many parts of the world, more than all have been indebted the NGOs (Turnock, 2004). Iran is located at the beginning of environmental education; however, limited but effective measures taken in this area (Hemmati and Shabiri, 2016).

It has been acknowledged in many areas that popular participation changes policies and enhances management and governance. Complex issues of natural resources management, participatory techniques have helped communities develop collective responsibilities towards the management of their resources and projects (Mutamba, 2004).

Sam et al. (2014), studied Level of community participation in the conservation of natural resources in Akamkpa local government area, Southern Cross river state in Nigeria. The results obtained from analysis of data revealed that, the level of participation significantly influences forest and wildlife conservation.

Environmental protection in Iran has taken a formal and institutional state with the formation of the Environmental Protection Agency since the 1970s. It is policy making and tendency have been on conservation policies to create parks and protected areas, which are precious natural reserves (EIA, 2002; Lahijanjanian, 2010). Environmentally responsible behavior is one of the key elements in the sustainable development of the environment and governments has to develop plans to protect the environment at different scales to reduce environmental threats as well as people should

cooperate to implement the plans and programs (Salehi, 2008). Today, Iran's population growth lead to constraints such as the destruction of grasslands, overgrazing of livestock, and soil and air pollution that their resolving needs public participation and determination (Farzan, 2004). Participation is a voluntary activity of the self-wanted change of life and environment that is ultimately an enhancement in the ability to respond to the developmental plans and programs (FAO, 1990). The existence of participation in different parts of the government is the very essence of democracy (Ward, 2010). Managers can benefit from the views and opinions of the general public in the decision-making process as well as in carrying out practical cooperation in environmental protection (EPA, 2010). Olesu and Baid (1998) showed that past approaches to the protection of sea turtles in Ghana often used to create conflicts between government officials and local people, but with the help of grassroots organizations which are supportive of the environment, changing local people's views on protecting the environment, the use of turtles as food, and the hostile feeling towards government officials was made possible. Croxton (1999) sees the attitude of farmers to the research and development of technology important and considers the development of participatory approaches as another key for the contribution. In their study in New Zealand, McCleave et al. (2006) acknowledged the value of understanding the relationship between people and parks for the effective management, community support of conservative plans, social welfare, tourism, and recreation development. While studying community participation in the conservation of wetlands in Nepal, Shrestha (2013) emphasized the critical role of local communities in the conservation and sustainable use of these resources and came to the conclusion that the protection cannot be obtained without the convergence of the government and local institutions.

This study seeks to examine the factors affecting the willingness of local communities to participate in the protection of the environment of Khabr National Park in the south east of Iran. Khabr National Park and Rochoun wildlife refuges have an area of 150 thousand hectares. Khabr National Park (KNP) is the eleventh region in Iran that has gotten the title of the National Park. The lowest elevation is 1000 and the highest 3845 m. The area has a rich flora (about 750) species. This area was known as a protected area in 1971 and it was

registered as a national park in UNESCO in 1999. Due to its biodiversity and rare animal and plant species, the park has a great deal of importance in the South East of Iran (Kerman DOI, 2001). The Khabr National Park is one of the ecotourism destinations that its natural scenery is visited annually by thousands people.

This study has been carried out in the year 2015, in Baft county of Kerman province. The Fig. 1, show the location of Khabr district on Iran map.

MATERIALS AND METHODS

In this section, public participation in environmental protection is investigated using willingness to participate model can be shown with D_i , which is under the influence of different socioeconomic variables. Assuming a linear relationship between these variables and the willingness to participate model; D_i function is presented as Eq. 1 (Menegaki *et al.*, 2007; Gujarati, 2009; Kacho and Asfaw, 2014).

$$D_i = \beta_0 + \sum_{k=1}^k \beta_k x_k + \varepsilon_i \quad (1)$$

Where, D_i is the willingness to participate by i^{th} individual, X is the explanatory variable, β_0 is the intercept, and β_k shows explanatory variable parameters. A Person Willingness to participate in environmental protection if the utility of the participant is more than utility of no participate as Eq. 2 (Amirnejad and AtaeiSalout, 2012).

$$U_{i1}(1, s) + \varepsilon_{i1} > U_{i0}(0, s) + \varepsilon_{i0} \quad (2)$$

Where, U_{i0} and U_{i1} are the utilities obtained from selections, and s is the different socioeconomic variables. According the difference of utility obtained from participate and no participate is ΔU as Eq. 3 (Amirnejad and Ataei Salout, 2012).

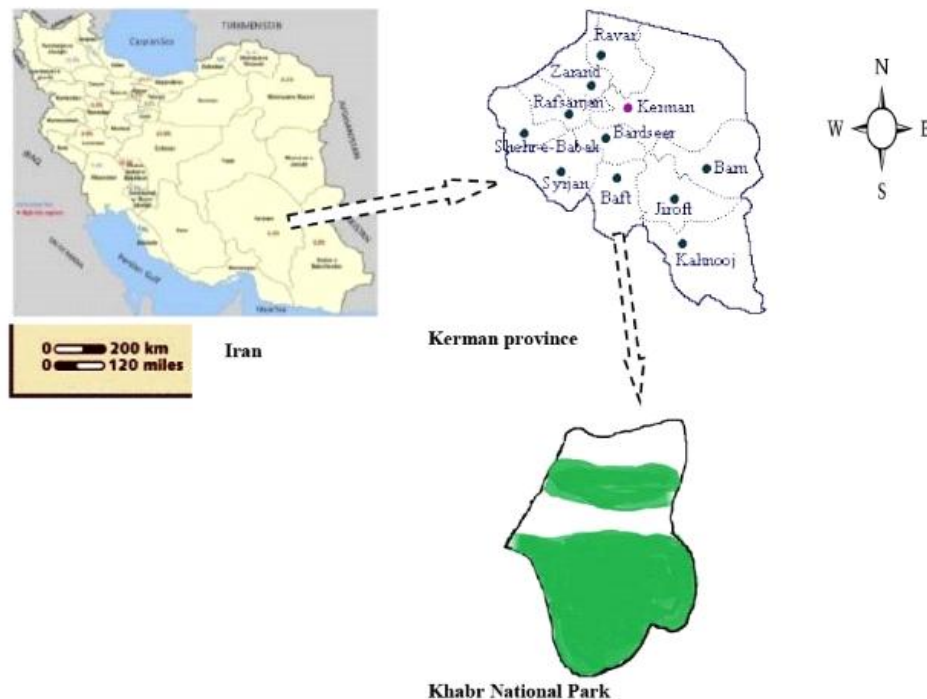


Fig. 1: Location of Khabr national Park on Iran map

$$\Delta U_i = U_{i1}(1, s) + \varepsilon_{i1} - U_{i0}(0, s) + \varepsilon_{i0} \quad (3)$$

If $\Delta U_i > 0$ individual willingness to participate (WTP=1) and if $\Delta U_i < 0$ individual does not have the willingness to participate (WTP=0). Everyone in the case study has been asked if he has the willingness to participate or not? Therefore, the independent variable is 0 or 1 and the logit model is good for this variable. As shown in Eq. 4, the probability of distribution in logit model is:

$$P_i(WTP = 1) = \frac{1}{1 + \exp(\Delta U)} \quad (4)$$

So the Eq.1 can be regress as Eq.4. The information required for this study includes cross-sectional data. To collect the data, random sampling method and completed questionnaires by the national park's residents were used. The sample size was determined as 228 people using Cochran formula. For statistical calculations and model estimation, Excel and Shazam software were used.

RESULTS AND DISCUSSION

Table 1 shows the statistical description of the variables used in the estimation of the model for willingness to participate. Various factors such as education, age, indigenous status, history of involvement in environmental and natural resource management organization, familiarity with the environment, environmental education, the media, connection of projects with environmental problems, trusted managers and initial support for projects by the government affected the people's willingness to contribute to protect the environment and the national park's natural resources.

The effects of the factors affecting the willingness to participate were estimated with model No. 4 and the results are represented in Table 2.

The results presented in Table 1 show that Education has a positive effect on the willingness of people to participate in environmental and resource protection. However, its effect was not significant. This result shows that educational programs on the environment and natural resources has not been enough attention.

The age variable has a positive and significant effect on people's willingness to participate in park conservation. Therefore, older people are more important to the environment and Tend to preserve resources for themselves and their future generations.

Record participation in projects has a positive and significant effect on people's willingness to participate. This result indicates that people who have participated in previous projects, the positive effects of the carried out projects have observed and because of this, experienced people have the willingness to participate again.

Being native variable has a positive and significant effect on people's willingness to participate. So compared to non-native, native people care more about the environment and natural resources around them; because they see a closer relationship between their lives and the environment.

The existence of a management governmental organization (MGOs) has a significant positive effect on people's willingness to participate. Respondents believe that the lack of a management organization in the field of environment and natural resources makes people stay away from environmental and natural resources issues. If an organization formed in the region, it can make people aware of the benefits of the

Table 1: Summary of the descriptive statistics for the variables

Variables	Average	Standard deviation	Variance	Minimum	Maximum
Age (year)	44.26	15.74	247.81	18	90
Family size	4.37	2.10	4.45	1	14
Education (year)	9.20	5.28	27.90	0	18
Income (Thousand Rials)	9780	9370	878550000	5000	100000

Table 2: The result of Logit model estimation

Variable	Coefficient	The value of the statistic T	Significance level	Weight traction	The final effect
Constant	-10.65	-5.16 ^{***}	0.01	-1.26	-
Education	0.17	1.17	Ns	0.072	0.018
Age	0.34	1.84 ^{**}	0.05	0.088	0.035
Participation history	1.12	1.93 ^{**}	0.05	0.024	0.11
native ¹	0.92	1.59 [*]	0.1	0.068	0.091
(MGOs) ²	0.47	2.57 ^{***}	0.01	0.18	0.047
Understanding of the environment	0.42	2.72 ^{***}	0.01	0.12	0.042
Environmental literacy	0.37	2.46 ^{***}	0.01	0.13	0.037
Media	0.29	1.26	Ns	0.13	0.029
Relating with local problems	0.27	1.12	Ns	0.13	0.028
Trusted managers	0.22	1.40 [*]	0.1	0.099	0.022
Initial financial support from the government	0.68	2.95 ^{***}	0.01	0.34	0.068
Log likelihood function= -69.83				Estrella R-Square=0.40	
Log likelihood (0) = -116.01				Maddal R-Square=0.33	
Likelihood ratio test= 92.35				Cragg-Uhler R-Square=0.52	
Probability= 0.0000				McFadden, R-Square=0.40	
Percentage of right prediction= 0.89				Total observation= 228	

The significance of the model variables: *** in level 0.01, ** in level 0.05 and * in level 0.1
 1-being native=1 and none=0, 2- Do not a management governmental organization=1 and other= 0

environment, and encourage people to protect the environment and natural resources.

Trading with environment has a positive and significant effect on people's willingness to participate. Respondents believe that knowledge about the ecosystem of the park, visiting the projects, identification of material and spiritual values of parks, etc., are factors that make people to have a closer relationship with the environment and the natural resources.

Environmental knowledge has a positive and significant effect on people's willingness to participate in protecting the environment. Environmental literacy causes people to suppose that the environment and the natural resources are their property and in dealing with natural resources (plants and animals) are seeking protection point of view.

The media have a positive effect on people's willingness to participate, but its effect was not significant. This result illustrates that the promotions about the environmental awareness and the environmental education by the media is not enough.

The proportion of projects with regional problems has positive but non-significant effect on people's willingness to participate. This result indicates that the previous plans have had positive effects on the protection of national parks; but have not completely solved the problems of the region. Therefore, in the choice of projects and the implementation of projects, should be more careful until the people participate in the protection of national parks.

The employment of trusted managers also has positive and significant effect on people's willingness to participate.

Initial financing support of the projects by the government has a positive and significant effect on people's willingness to participate. Therefore, one of the main barriers for the participation in environmental protection projects is the financial issue; if the government solves financial problems of projects; as a result, local communities show more participation in this regard.

According to the explanatory variable, coefficient of determination McFadden (40%) explains the relationship between the dependent variables. According to prediction accuracy, the estimated model has been able to predict a high percentage of

dependent variable values with respect to the explanatory variables.

CONCLUSION

In this study, it is tried to determine the factors influencing the willingness of native residents to participate in the protection of the Khabr national park. The Data needed for research collected by completing 225 questionnaires in the Baft County. The results show that the local people welcomed the arrival of the private sector in managing the parks. Therefore, it is recommended that the government provide a condition where the private sector act and engage people in the conservation of the park. Then, it should develop the necessary infrastructure, create the economic space, provide welfare and health services in recreational areas and use other potentials in the park as well as the private sector should consider the protective legislation of the park as a priority. The results show that the effect of the level of education in the willingness to contribute to the protection of the park is not statistically significant. Thus, it can be concluded that in the governmental education programs, enough attention have not been given to the environment and the natural resources.

It is recommended that the Cultural Council of Education includes subjects related to the efficient use of natural resources and their importance in all the education levels. The results show the relevance of projects to regional problems affects the community participation tendencies. Since the performed projects do not have significant positive effects for solving the problems of all the residents of the area; therefore, it is recommended that for the success of the projects, first, regional problems be identified from the perspective of experts and local people in the region and then the project plans are implemented with the use of reliable and experienced managers with the cooperation of local people.

The effect of media, contrary to the expectations, was not statistically significant on people's willingness to participate, which means that the media have not been able to make people familiar with material and spiritual values of promotional trainings and other environmental information. Therefore, it is recommended that the media expand the scope of media training, informing, protecting and distributing

advertising documents related to natural resources, so that the individuals earn more information from their surroundings, try more to protect the natural resources and increase their participation. The existence of a Non-Governmental Environmental Organization, to manage is one of the factors that influence people's willingness to participate. Hence, it is recommended that a non-governmental environmental organization should be established in all protected areas and national parks and a budget should be considered for these organizations in the Budget Planning Organizations. Employing trusted managers and governmental support for the projects are important factors that influence people's willingness to participate. If the managers of the plans are trusted by the members of the community and if they have governmental support, it will lead to public participation of the community. Therefore, it is suggested that the government consider a substantial annual sum of budget for environmental initiatives and Natural Resources and employ trusted men to increase community participation in the implementation of environmental projects.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

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