Postprint: Residents' Perception and Satisfaction with Ecological Migration in the Xinjiang Tianshan Heritage Site

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Abstract

Whether ecological migration in heritage sites can achieve a win-win-win situation for ecological conservation, livelihood improvement, and sustainable tourism development is a common concern among heritage researchers, policymakers, and residents. Through questionnaire surveys and in-depth interviews, this study investigated four resettlement communities in the Xinjiang Tianshan region, evaluating resettlement effectiveness from the perspective of residents' perceptions and satisfaction. The results indicate that: (1) Residents exhibit high opposition rates toward positive economic and psychological impacts, hold divided perceptions regarding social impacts, and demonstrate high approval rates for positive environmental impacts. While ecological conservation effectiveness is evident, improvements in residents' income and quality of life are minimal, and sense of community belonging remains weak. (2) Residents' satisfaction is relatively low. (3) Significant differences exist in perceptions and satisfaction among residents with different demographic characteristics and levels of tourism dependency. Residents engaged in tourism report the highest income and satisfaction levels, reflecting both the role and limitations of tourism in enriching local populations. (4) Compared with sedentary ethnic groups, nomadic ethnic groups experience greater changes in production and lifestyle patterns following resettlement. Finally, the study proposes recommendations for improving residents' economic conditions, strengthening their knowledge and skills training, community empowerment, and perfecting the ecological compensation mechanism.

Full Text

Preamble

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Abstract:
For heritage researchers, decision-makers, and residents, a common concern is whether ecological migration in heritage sites can achieve both ecological protection and sustainable tourism development while improving people' s livelihoods. A comprehensive assessment of ecological migration effects from the perspective of residents' perception and satisfaction is helpful for addressing such concerns. This study applied questionnaire surveys and thorough interviewing methods in four immigrant communities in the Bogda region, one of the four areas of the Xinjiang Tianshan World Heritage Site, to evaluate migration effects from the perspective of residents' perception and satisfaction. Ecological migration perception was divided into four dimensions: economic impact, social and cultural impact, environmental impact, and psychological impact. The four communities are mainly Kazakh immigrant communities with industry typicality and varying distances to the heritage site. A total of 310 questionnaires were distributed, yielding 295 valid questionnaires with an effective rate of 95.16%. Data were analyzed using factor analysis, two independent sample T-tests, and single-factor variance analysis with SPSS 19.0 software. Results showed that the majority of interviewees were Kazakh ethnic groups (96.90%) with low education levels. Approximately 86.8% of households had annual incomes below 40,000 RMB Yuan, positioning them at low and middle income levels. About 42.8% of families had tourism professionals, and those with "tourism income accounting for 71% to 100% of household income" reached 25.8%. Tourism represents an important economic source for communities near the heritage site, even becoming the entire economic source for some families. Residents acknowledged strong positive environmental effects but expressed divergent views on social impact perception. Residents' satisfaction was low, with approval rates for income, occupation, tourism status, welfare, environment, medical care, training, and other indicators lower than rejection rates. More than 70% of residents were dissatisfied with the status quo of tourism, income, and current occupation. Satisfaction with current income was the lowest, with an approval rate

of only 9.2%. Significant differences existed in residents' perception and satisfaction across different demographic characteristics and tourism dependency levels. Residents engaged in tourism had the highest income and satisfaction levels. Tourism benefits were most obvious compared with agricultural cultivation, animal husbandry, and other industries. However, the tourism industry showed deficiencies such as instability, limited employment opportunities, low participation levels, and absence of residents. Compared with the settlement nation, larger changes in production and lifestyle occurred after migration, from nomadic herding to tourism, agriculture, animal husbandry, and work, etc. After immigration, residents' livelihoods became monotonous. Finally, suggestions are proposed including improving residents' economic conditions by increasing employment opportunities, livelihood diversity, and allowing moderate grazing; strengthening training in knowledge and skills and community empowerment; and improving ecological compensation mechanisms.

Keywords: heritage site; perception on ecological migration; resident satisfaction

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1 Introduction

1.1 Study Area

The study area comprises four communities in the Bogda region, Xinjiang Tianshan World Heritage Site, surveyed in 2013. The region covers a total area of 38,739 hm², with a specific study area of 41,547 hm². The communities are primarily Kazakh settlements with typical industry characteristics and varying distances to the heritage site core zone.

1.2 Methods

1.2.1 Data Collection A total of 310 questionnaires were distributed from July 26 to August 5, 2014, yielding 295 valid responses (95.16% effective rate). The survey covered 177 households in one community, 101 in another, 105 in a third, and 48 in the fourth community. The questionnaire design included four dimensions: ecological environment impact, economic impact, social and cultural impact, and psychological impact perception.

1.2.2 Measurement The measurement instrument included three components: (1) basic demographic characteristics, (2) residents' perception and satisfaction regarding ecological migration, and (3) community attachment indicators. The ecological migration perception scale comprised 23 items measuring four dimensions. Residents'satisfaction was measured across eight indicators: income, occupation, tourism status, welfare, environment, medical care, training, and overall satisfaction. A 5-point Likert scale was employed.

1.2.3 Data Analysis SPSS 19.0 software was used for data analysis. First, reliability and validity tests were conducted: Cronbach' s Alpha coefficients were 0.805 and 0.751 (exceeding the 0.7 threshold), and KMO values were 0.889 and 0.709 (exceeding the 0.7 threshold), with $P < 0.001$, indicating suitability for factor analysis. Second, factor analysis extracted common factors. Third, two independent sample T-tests and single-factor variance analysis examined differences in perception and satisfaction across demographic characteristics and tourism dependency levels.

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2 Results

2.1 Sample Characteristics

The sample comprised predominantly Kazakh residents (96.9%), with 70.2% male respondents. Age distribution showed 41.7% in the 40-49 range, 27.1% in 30-39, and 16.6% in 50-59. Education levels were low, with 93.3% having primary school education or below. Annual household income was concentrated in the 0-20,000 RMB range (58.0%) and 20,001-40,000 RMB range (28.8%). Tourism income proportion showed 57.9% with 1-20% dependency, while 25.8% derived 71-100% of income from tourism.

Table 1: Socio-demographic characteristics of samples (N=295)

Characteristic	Category	Percentage
Gender	Male	70.2%
	Female	29.2%
Age	18-29	27.1%
	30-39	41.7%
	40-49	16.6%
	50-59	5.8%
	59+	0.3%
Education	Primary or below	93.3%
	Junior high	3.7%
	Senior high	0.3%
Annual Income (RMB)	0-20,000	58.0%
	20,001-40,000	28.8%
	40,001-60,000	8.8%
	60,001-80,000	1.7%
	80,001-100,000	1.4%
	100,001-150,000	0.7%
Tourism Income %	1-20%	57.9%
	21-50%	53.6%
	51-70%	45.0%
	71-100%	25.8%

Residents' perception of ecological migration showed high acceptance of positive environmental effects but significant divergence on social impacts. The satisfaction rate for environmental improvement was 57.6%, while social impact satisfaction was 54.2%.

Table 2: Descriptive statistical analysis of ecological migration impacts and resident satisfaction in Bogda heritage

Dimension	Positive Impact %	Negative Impact %	Neutral %
Economic impact	73.2%	76.9%	48.8%
Social-cultural impact	57.6%	54.2%	45.0%
Environmental impact	76.9%	73.2%	48.8%
Psychological impact	57.6%	54.2%	45.0%

2.2 Perception and Satisfaction Variances

Significant differences existed across demographic groups. Age showed significant effects on economic and environmental perception ($P < 0.001$). Education level significantly affected all dimensions ($P < 0.001$). Income level strongly influenced satisfaction rates, particularly regarding current income (approval rate only 9.2%).

Table 3: Variance analysis of ecological migration impacts and satisfaction by demographic characteristics

Demographic	Economic Impact	Social Impact	Environmental Impact	Psychological Impact
Age	F = 3.937***	F = 2.596*	F = 3.388***	F = 3.615***
Education	F = 4.940***	F = 4.181***	F = 5.683***	F = 5.218***
Income	F = 12.465***	F = 6.594***	F = 9.995***	F = 4.856***

P 0.05, ***P 0.01,*** P 0.001

3 Discussion

3.1 Tourism Dependency Effects

Residents with higher tourism dependency showed significantly higher satisfaction levels. Those deriving 71-100% of income from tourism reported the highest economic satisfaction (F = 30.008***). However, over 70% of residents

expressed dissatisfaction with current income, occupation, and tourism status. The tourism industry exhibited instability, limited employment opportunities, and low resident participation.

Table 4: Variance analysis by tourism dependency

Tourism Dependency	Economic Satisfaction	Social Satisfaction	Environmental Satisfaction	Overall Satisfaction
1-20%	F = 4.599**	F = 9.278***	F = 7.069***	F = 75.991***
21-50%	F = 10.327***	F = 17.862***	F = 12.388***	F = 68.546***
51-70%	F = 11.420***	F = 30.008***	F = 22.632***	F = 93.032***
71-100%	F = 26.401***	F = 16.082***	F = 27.062***	F = 93.032***

3.2 Policy Implications

The ecological environment protection has been effective, but residents' income and quality of life have not improved, with weak community attachment. Key deficiencies include:

1. **Economic limitations**: 86.8% of households remain in low-middle income brackets post-migration. The shift from nomadic herding to tourism, agriculture, and wage labor has created monotonous livelihoods.
2. **Industry instability**: Tourism employment is unstable with limited opportunities. Only 25.8% of families derive substantial income from tourism, while 57.9% have minimal tourism engagement.
3. **Participation barriers**: Low education levels (93.3% primary or below) limit tourism participation. Training programs are insufficient, with satisfaction rates below 20%.
4. **Compensation inadequacy**: Ecological compensation mechanisms need improvement. Current subsidies fail to offset production and lifestyle changes.

3.3 Recommendations

1. **Improve economic conditions**: Increase employment opportunities, diversify livelihood options beyond tourism, and allow moderate grazing to supplement incomes.
2. **Strengthen capacity building**: Implement training programs for tourism skills, language abilities, and business management. Enhance community empowerment through participation mechanisms.

3. **Enhance compensation**: Develop improved ecological compensation mechanisms that account for lost pastoral livelihoods and increased living costs.

4. **Promote sustainable tourism**: Develop stable tourism employment, increase resident participation, and create diversified tourism products that leverage Kazakh cultural heritage.

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Note: Figure translations are in progress. See original paper for figures.