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Contribution of tourism development to protected area management: local stakeholder perspectives

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Ecotourism in protected areas plays an important role in establishing mutually beneficial relationships among local people, the protected area, and tourism that are essential in protected area management. However, to properly manage protected areas, local people should be major stakeholders in order to maximize local economic benefits and obtain support for conservation efforts. This study assesses the current status of local people's economic participation in tourism in the Wolong Nature Reserve using a questionnaire survey. Through evaluation of geographic origin, income, and occupational distribution of operators engaged in tourism-related business, we identified and discussed constraints and opportunities for economic participation of local people. Economic inequity was found among local people, as well as between locals and non-locals, due to limited startup capital and operational skills. At present, only a small percentage of local people receive revenue directly from tourism. In addition, economic leakage and local dependence on natural resources still exist in the study area. To promote ecotourism and sustainable development, the relationships among tourism, local people, and biodiversity conservation in the study area must be strengthened. According to the findings, some suggestions are offered to protected area managers to foster better relationships.

Keywords: tourism development; economic participation; protected area management; stakeholder analysis; Wolong Nature Reserve

Introduction

Ecotourism is advocated for its theoretical harmonious relationship between the natural and human environment. Protected areas are often being considered as destinations because of their naturalness and high-quality tourism-related resources (Boo 1990). It is commonly perceived that ecotourism in protected areas can bring incentives necessary for their management, and has minimal physical and social impact on the visited area. The primary appeal of tourism as a conservation and development tool in protected areas is that it can, in theory, provide local economic benefits while maintaining ecological integrity through low-impact, non-consumptive use of local resources (Stem et al. 2003). Therefore, connection between people, parks, and tourism has received significant attention in recent years, particularly in developing countries, where it has been linked to sustainable development initiatives, protected area conservation efforts, and regional and community development strategies (Ceballos-Lascurain 1993; Nenon and Durst 1993). However, ecotourism is a complex activity, often involving a variety of stakeholders and taking place in environmentally and economically fragile locations (Giannecchini 1993). In practice, it is hard to meet the range of objectives listed in its definition (Wunder 2000), and many kinds of environmental and ecological impact have been reported (Farrell and Marion 2001; Antje et al. 2004; Li et al. 2005). Local communities are also often marginalized from tourism development (Kiss 2004).

The discrepancy between theory and practice of tourism in protected areas confirms the complexity and uncertainty of the protected area management and necessitates evaluation of ecotourism in protected areas to discern the reasons hindering realization of its objectives. However, it is important to select appropriate parameters for evaluation since both natural and socioeconomic systems are involved in protected areas. The local community is seen as a central part of tourism in protected areas in order to maximize their sustainability and economic benefits, strengthen their relationships with the ecotourism industry, and thereby improve conservation efforts (Murphy 1985; Kutay 1992; Simmons 1994; Wild 1994). However, there are often conflicts between the local community and biodiversity conservation in protected area management (Salafsky and Wollenberg 2000). Thus, the local community was selected as the main parameter in evaluation of tourism in protected areas because of its linkage with tourism, biodiversity conservation, and protected area management. Many studies have focused on employment opportunities (Belisle and Hoy 1980; Davis et al. 1988) and revenues derived from tourism activities (Murphy 1983; Davis et al. 1988), and local people's perceptions are often used as the main factor in ecotourism evaluation (Brunt and Courtney 1999; Ko and Stewart 2002; Teye et al. 2002; Sekha 2003; Spiteri and Nepal 2006).

The number of protected area in China increased from 34 in 1978 to 2395 in 2006, accounting for approximately

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15.16% of the territory (SEPA 2007). China's protected areas are mostly in remote and under-developed regions (Han 2000; Liu et al. 2003), with only 60 million inhabitants (Miao 2000) and a population density generally exceeding 60 persons km^{-2} (Wu et al. 2002). As a consequence, the rapid growth of protected areas and the huge pressure from the human population has become a challenge to protected area management in China. Due to exceptional natural resources in protected areas, tourism revenue is the main source of funds for protected area management and improving local people's economic status. But studies on local people's status in tourism are limited, and it is necessary to probe into local people's economic participation in tourism and factors affecting their entry into the tourism industry in order to improve protected area management in general and sustainable tourism development in particular.

The main objective of this study was a site-level assessment to discern ecotourism development and its contribution to the local economy. Unlike other studies, this study focused on tourism operators who voluntarily entered into the tourism industry, and their perspectives of constraints and opportunities for local people's economic participation in tourism. The paper probes the complexity and mutuality between biodiversity conservation, tourism development, and protected area management. Wolong Nature Reserve was chosen as a case study because of its complexity and uncertainty in protected area management (Fu et al. 2004; Lü et al. 2006) and potential conflicts between local

economy, biodiversity conservation, and sustainable development (Xu et al. 2006, 2007).

Methods

Study area

Wolong Nature Reserve is the largest of the 25 nature reserves in China designed for giant panda (*Ailuropoda melanoleuca*) conservation, a flagship species in China for biodiversity conservation. About 100 giant pandas live in the study area, 10% of the total population in China. The reserve was established in 1963 with an area of 200 km^2 , and was expanded to its current size of 2000 km^2 in 1975. It was upgraded to a UNESCO biosphere reserve in 1980. The reserve is in Wenchuan County, Sichuan Province, southwest China ($102^{\circ}2'$ to $103^{\circ}24'E$, $30^{\circ}45'$ to $31^{\circ}25'N$) (Figure 1). It is situated in the transition zone from the Chengdu Plain to the Qinghai-Tibet Plateau. The diverse environment provides a home to not only the giant panda, but 57 other endangered animals and 24 species of rare plants, including the golden monkey (*Rhinopithecus roxellanae*) and the dove tree (*Davidia involucre*).

The reserve is managed by the Administrative Bureau of Wolong Nature Reserve, under which are two township governments, Wolong Township and Gengda Township, with a total of 1097 households in the reserve with a population of more than 4000 in 2002. Although Han constitute the major nationality in China, approximately 70% of local

Figure 1. Location of Wolong Nature Reserve, southwest China. Source: Xu et al. 2004.

people belong to three minorities, Tibetan, Chang, and Hui. There is only one main road connecting local people to the outside.

There are six administrative villages in the study area, each with a committee responsible for management. Four (Gengda Yicun, Ercun and Wolong Yicun, Ercun) are near the main road, and the other two (Gengda Sancun and Wolong Sancun) are far from the main road. Local people mostly depend on traditional agriculture for subsistence. Maize, potato, and cabbage are the main crops, of which cabbage is a major source of income to local people. Other employment opportunities in the reserve include housing construction, transportation, collection of medicinal herbs, forest guarding, and patrolling. But these employments are only occasional.

Since the establishment of Wolong Nature Reserve, many researchers have visited the study area. During the past 20 years, the number of tourists has increased due to its reputation as an attractive destination. In 2003, about 80,000 tourists visited the reserve according to statistic data from the Administrative Bureau. Although there are many spectacular natural landscapes in the reserve, the majority of tourism resources developed and open to tourists are artificial, such as a Chinese garden for giant panda, the giant panda museum, and a museum about animals and plants. However, some natural and human tourism resources are listed in the Master Plan for Ecotourism for Wolong Nature Reserve. From a regional perspective, the reserve plays an important role in tourism development because the giant panda is a tourism symbol of Sichuan Province. Wolong Nature Reserve is also the most famous protected area targeting giant panda conservation in Sichuan Province. In addition, because it is located between the city of Chengdu and Siguniang Mountain (another famous tourism destination), many tourists on their way to Siguniang Mountain stop at the reserve to visit the pandas.

Data collection

This study investigated the relationship between ecotourism business development and local economic development,

especially local people's economic status in the tourism business. Tourism businesses can be grouped into two classifications according to ownership: private and government. The latter concentrates on tourism resources, especially the above artificial tourism resources, where only professionals are needed. Natural tourism resources are less developed. Up to now, there is no economic income distributed to local people from government businesses; therefore, data collection efforts focused on private operators of tourism-related businesses. Questionnaires were administered through personal interviews during the peak tourist months of July and August 2006 to 74 private business owners. To avoid potential bias, it was made clear to participants that the interview was for academic research, without any affiliation to the management authority or any other administrative setup.

The questionnaire was contained fixed response and open-ended questions. The fixed response questions and the possible alternative answers were read to interviewees, followed by the open questions to gain an in-depth understanding of the answers. The fixed response questions covered three areas: (1) general information about the operator, including ethnic group, gender, age, education level, and geographical origin; (2) economic magnitude of business, including total income per year, number of employees, and their wages; and (3) current operation type, perception of future development, and prospects. Informal group discussions were held to probe deeper into the insights and perspectives of local people.

Results

Demographic characteristics

A total of 74 operators were interviewed, of which 27 (36.5%) interviewees were restaurant owners, representing the majority of permanent operators in the reserve. Others were temporary operators who casually engaged in tourism (Table 1). The study identified major demographic differences between permanent and temporary operators. In terms of ethnic group, most temporary operators were Tibetan, while most permanent operators were Han. The age of most

Table 1. Demographic data and characteristics of the sample.

Characteristics	Groups	Temporary operator		Permanent operator	
		Number	Percentage	Number	Percentage
Nationality	Tibetan	36	76.6	10	37
	Han	9	19.1	17	63
	Chang	2	4.2	0	0
Gender	male	16	34	14	51.9
	female	31	66	13	48.1
Age (years)	15~30	12	25.5	10	37
	30~50	25	53.2	16	59.3
	50~80	10	21.3	1	3.7
Education level	Illiterate	19	40.4	0	0
	Elementary	12	25.5	6	22.2
	Junior high school	10	21.3	13	48.1
	Senior high school	6	12.8	7	25.9
	College	0	0	1	3.7

interviewees ranged from 30 to 50 years, but the percentage of temporary operators (21%) in the study group between 50 and 80 years old was higher than that of permanent workers (4%). With regard to education, more permanent operators had received education (junior high school, 48%, senior high school, 26%) than temporary workers (21% and 13%).

Geographical origin of private tourism operators

Original geographical origin of tourism-related private business operators, which determines their residency (local or non-local), was used to address economic leakage. Most temporary operators were from Wolong Town, and most permanent operators were from Gengda Town and outside the protected area (Table 2). The operators' capital holdings and management skills were related to their geographical origin. Residents of Wolong Town obtained less profit from tourism than outside groups because they were mostly retailers with small profit margins. Even local residents with a house near the road, which is more attractive to tourists, lease it to outsiders and receive annual rents.

Income distribution

Ideally, tourism business should provide most employment opportunities and income to local people. However, compared to permanent operators, temporary operators provide less employment opportunities because most of them are small business owners who do not provide employment opportunities to others. According to our investigation, 63% of temporary operators are one-person operations, 28% are two-person operations (always family members), and 7% employ more than three persons. Permanent operators, besides family member participation, often employ helpers, whose numbers and wages vary with geographical origins of the permanent operator (Table 3). Permanent operators from outside the protected area (non-local operator) generally have large operations and hire more staff at higher wages than

operators from within the study area. Moreover, 67% of permanent operators from outside the protected area said that they preferred to employ outsiders rather than local residents, because local residents are difficult to manage due to their familiarity with local surroundings. Thus, most permanent operators employ their own relatives.

In terms of employee wages, differences also exist between local and non-local residents, with non-local employees receiving twice as much as local employees (Table 4). Non-local employees with skills generally outperform local employees. Correspondingly, local employees always pursue simple projects, such as cleaners or waiters; therefore, a lack of training or skills limits local employees' income and job opportunities.

Other possible causes of variations in income distribution among tourism operators were analyzed (Table 5). Most respondents thought that unequal income distribution among operators existed not only between locals and non-locals but also among local residents (77% and 80%, respectively). In the case of local residents, location of their home is the main reason for the income disparity. Residents who live in remote areas, far from the main road, find it hard to reach tourists and do business with them. Lack of startup capital is another reason for unequal income opportunities among local residents. Non-local residents, despite they have no better home location to local residents, rent storefronts from local residents, and have better management and operation skills that enable them to do more business with tourists.

Table 2. Geographical origin of private tourism operators.

	Wolong Town (%)	Gengda Town (%)	Outside protected area (%)
Temporary operator	75.6	6.7	17.8
Permanent operator	22.2	37.0	40.7

Table 3. Number and wage of employees employed by different operators.

Operator origin	Number of employees	Lowest wage (Yuan/month)	Highest wage (Yuan/month)	Average wage (Yuan/month)
Wolong Town	2.00	200	500	300
Gengda Town	1.50	300	300	300
Outside protected area	2.63	300	600	357

Table 4. Wages of employee of different geographic origin.

Geographic origin	Lowest wage (Yuan/month)	Highest wage (Yuan/month)	Average wage (Yuan/month)
Local employee	200	600	320
Non-local employee	200	1100	617

Table 5. Reasons for unequal income distribution

Questions	Answers (%)	Reasons (%)
(1) Is tourism income distributed equally among local residents?	Yes (20.5) No (79.5)	Location restriction (75.0) Startup capital restriction (47.2) Skills restriction (33.3) Age and gender restriction (8.3) Other (0)
(2) Is tourism income distributed equally between local and non-local operators?	Yes (23.3) No (76.7)	Startup capital restriction (60.5) Skills restriction (44.7) Age and gender restriction (5.3) Other (21.1)

Occupation distribution of private tourism operators

In order to understand tourism's contribution to employment in the reserve, occupation distribution of tourism operators was investigated (Table 6), showing that the higher the income, the less local residents were involved, except for taxi drivers. Almost all taxi drivers are local residents because the rough terrain gives them an advantage of familiarity. Most local residents are engaged in souvenir or barbecue sales, which need less startup capital and management technique. People running permanent restaurants and hotel operations receive the highest income, but also need more capital investment and higher management skills. Among the permanent business operators, 59% are local and 41% are non-local residents.

To understand local residents' prospects for employment in tourism, the study asked them about their future job preference in tourism. Nine types of employment were provided to the interviewees (Table 7), and the top two jobs chosen were cleaner and shopkeeper because they do not need any skills and provide immediate income, followed by tour guide. Comparatively, other employment choices, due to differences in location, startup capital, and skills, were only considered as potential occupations by a few local residents.

Discussion

Economic linkage with biodiversity conservation

Economic benefits from tourism development are most important to local residents (Husband 1989; Akis et al. 1996). Economic benefits play an important role in tourism in protected areas because of their indirect or direct relations between local residents and biodiversity conservation. Moreover, such benefits to local residents could lead to them voluntarily abstaining from activities that are harmful to biodiversity and natural resources, or to a shift towards biodiversity friendly activities. Therefore, increased economic participation by local residents is seen as a major characteristic of ecotourism (Wunder 2000). But in this study area, the economic linkage between local resident and biodiversity is poor, and local economic participation

in tourism is limited. Among local residents, those who live far from the main road play an important role in biodiversity conservation and urgently need economic compensation because they suffer agricultural damage from wild animal incursions (Xu et al. 2006). However, locals are marginalized from economic participation in tourism due to the inconvenience of their dwelling location, while non-local residents bear no conservation cost but derive large economic income from tourism. Only a few local people, who have skills, startup capital, and an advantageous location, receive some limited income from tourism. Furthermore, revenue collected from admission charges for using tourism resources is kept by the local government and not distributed to local residents. Thus, economic participation of local residents is limited to a few permanent and temporary operations. In protected area tourism, local residents' economic participation is an incentive for their support in conservation efforts, and limited economic opportunities probably reduce or disable such incentives.

In addition, some natural resources are being explored and developed with the development of tourism. According to our investigation, almost all permanent operators provide wild plants, including vegetables and fungi, on their restaurant menus, and 26% of temporary operators collect traditional medicinal herbs, wild vegetables or fungi and sell them to tourists as the source of family income. Local dependence on wild resources is beyond the scope of this article, but it is believed that the dependence will increase if no alternative resources are developed. Furthermore, non-local residents, who came to the reserve to improve their economic situation, are predicted to be a potential 'time bomb' for biodiversity conservation efforts (Scolte 2003).

Economic leakage

Local economic participation aims not only at an equal distribution of tourism income but also at a maximization of local development potential by reducing import leakage (Cater 1994). Leakage of revenue from the local economy is related to the magnitude of import of goods from outside the

Table 6. Occupation distribution of private tourism operators.

Occupation		Number	Local (%)	Non-local (%)	Average income per year (Yuan)
Temporary operator	Souvenir sale	34	28 (82.4)	6 (17.6)	3567
	Taxi driver	4	4 (100)	0	4833
	Temporary stall-keeper	3	2 (66.7)	1 (33.3)	1833
	Barbecue	5	5 (100)	0	1800
Permanent operator	Restaurant and hotel operator	27	16 (59.2)	11 (40.7)	13900

Table 7. Occupation prospects for local resident in the future.

Occupation option	Tour guide	Kitchen worker	Craftsman	Cleaner	Shop keeping	House rental	Family-hotel operation	Taxi driver	Other
(%)	23.3	10.0	6.7	33.3	33.3	3.0	10.0	16.7	6.7

region, and the level of non-local ownership of tourism-related enterprises. The results showed that tourism income is not shared equitably with local residents, and the disparity is due to location, skills, and capital availability. Hence, local management should establish mechanisms for distributing income equitably. Furthermore, Wolong Nature Reserve is in a remote and undeveloped area, where there are few processed commodities. Even vegetables and rice have to be imported from outside the area because of the climate, and the majority of commodities sold by operators are imported from outside the reserve. Given the large number of outsiders working in the reserve, the linkage between tourism and local development potential is slim, so economic leakage is serious within the reserve. In order to reduce economic leakage, use of local goods and services and employment of local residents, whenever possible, is absolutely critical to generating and retaining benefits within the reserve.

Currently, there are many tourism resources, apart from giant pandas, that have not yet been exploited, such as local Tibetan culture and the natural landscape. Despite good road facilities and reputation, few tourists stay in the study area for more than a day (Lü et al. 2003). Therefore, within the environmental carrying capacity, more tourism resources should be developed and more measures taken to increase the number of tourists and extend their stays in the study area. It is also important to set up a chain to keep a portion of the income in the community through local secondary and tertiary spending.

Limited competence

Employment opportunities can be an important incentive for local people's participation and cooperation in protected area management (Holmes 2003). In the study area, the local labor force has increased more rapidly than the total population. The small cropland holdings and a lack of employment opportunities has led to excess available labor, which is important in relation to natural ecosystem protection and biodiversity conservation (Fu et al. 2004; Liu et al. 1999). Therefore, the problem of insufficient livelihood alternatives and an overstocked labor force need to be addressed in tourism development of the reserve.

Despite the ideal of tourism in protected areas being creation of employment opportunities for local residents, it is difficult for them to enter into the industry in the first place, especially in remote areas. The potential for local residents to participate and secure livelihood benefits depends on a range of factors, in particular, the transferability of existing skills, opportunity to acquire and develop new skills, competitive ability over non-locals, and ability to maintain benefits at the local level. Currently, local people in the study area have no advantages in employment and tend to pursue simple jobs. Limited startup capital and lack of skills are the main factors preventing local resident from entering the tourism industry and competing with non-locals. Tourism is competitive and demanding and takes years to develop, and even those with considerable experience can fail to make a profit (Salafsky et al. 2001; Aylward 2003).

Also, from an economic or human aspect, all local and non-local residents should be treated fairly when confronted with competition. But from an ecological or conservation viewpoint, local residents should be given priority in employment in tourism to prevent them from being marginalized. Therefore, it is up to managers of the study area to provide vocational training and startup capital (such as low-interest loans) to help more local residents enter into the tourism industry and improve their competitiveness in securing employment. As a multi-national and mountainous area, Wolong Nature Reserve has many unique local products features, such as Larou (preserved ham), traditional medicinal herbs, and yak. Simple enterprises and technologies that use existing local skills are more viable (Salafsky et al. 2001). In the long term, it will be difficult for the reserve to accommodate and absorb all the labor required because of the fragile environment and rapid increase number in local labor. Thus, it may be necessary to provide quality education to stimulate local young people to move outside Wolong Nature Reserve to make a living (Liu et al. 1999).

Conclusion

Unlike general tourism, tourism in protected areas aims to establish mutually beneficial relationships between local people, the protected area, and tourism. However, such ideal relationships are hard to realize when confronted with complex, natural, social, and economic backgrounds. The discrepancy between theory and practice of tourism in protected areas can be attributed to limited understanding of local people's status and conditions, their heterogeneity, and relationship with biodiversity conservation. Therefore, the capacity of local people to harmonize livelihoods, development, and conservation needs to be fostered at the local level in the long term. In Wolong Nature Reserve, due to limited competence, local people are being marginalized from tourism. The relationship among tourism, local people and biodiversity conservation is weak and local people still depend on natural resources. The findings of the present paper, typical for tourism development in protected areas especially in the developing world (Bookbinder et al. 1998; Campbell 1999; Ogutu 2002; Stone and Wall, 2003; Kiss 2004), may have wide implications for protected area management and tourism development. Based on the present study, several policy tools can be suggested. First, local capacity building needs to be improved through education and vocational training. Second, ecologically viable tourism products can be diversified based on the natural and cultural characteristics of the destination. Third, financial support and economic compensation mechanisms should be established for underprivileged local stakeholders. Finally, tax leverage may be useful for rational distribution of development revenues and conservation costs. Protected area managers would be better as coordinators in tourism development and general protected area management and should facilitate the establishment of benign relationships among the various actors and stakeholders.

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