



# Environmental impact of sustainable environment policy: A case study from Jiuzhaigou Nature Reserve, China

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## ABSTRACT

**Sustainable environmental management is increasingly highlighted by more and more Chinese Nature Reserves who face pressure regarding environmental protection and economic development. As the first, Nature Reserve applied sustainable environment policy in China and Jiuzhaigou has benefited greatly from it. After 10 years of implementation, substantial impacts on the natural and social environment have emerged. This paper investigated the local residents' perceptions about this policy and its impacts from a sociological perception and provided a new insight into the impact assessment of sustainable environment policy. The researcher conducted a face-to-face questionnaire survey with the local residents in Jiuzhaigou National Reserve through September 2013. Data were collected through in-depth interviews and observations, which were analyzed using content analysis. The results obtained show that local residents, while not always scientifically accurate in their assessments, displayed a high level of understanding of the sustainable environment policy and its impacts in their own way. Cultural contexts of local residents' perception and mistrust between the local community and Jiuzhaigou Administrative Bureau were discussed. The results of the study provide further testimony that mistrust and misunderstanding are caused by poor communication between local residents and environment managers, and recommend that the local environment management department should perhaps be more active in their role.**

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## INTRODUCTION

The number of nature reserves in China has increased rapidly in recent years. From 34 in 1978 (Li et al., 2005) to 2531 in 2012, with 363 as National Nature Reserves (Figure 1). Nature-based tourism, which has received a great deal of attention in recent years (Gray et al., 2003), has been treated as an effective way to ensure sustainable development in nature reserves. Nevertheless, more and more visitors are attracted to these

protected areas nowadays, which not only bring about economic benefit but also adverse impacts on the ecological environment (Li et al., 2005). As a result, numerous Natural Reserves have explored the approach of sustainable nature-based tourism with sustainable environmental management policies.

Jiuzhaigou, as one of the earliest national nature parks in China, led to the development of tourism in the 1970s (Shen et al., 2008) and was designated a World Natural Heritage site in 1992. Meanwhile, it is also the first destination in China where a sustainable environmental policy was implemented, which means that the residents there became the first ones to have engaged in

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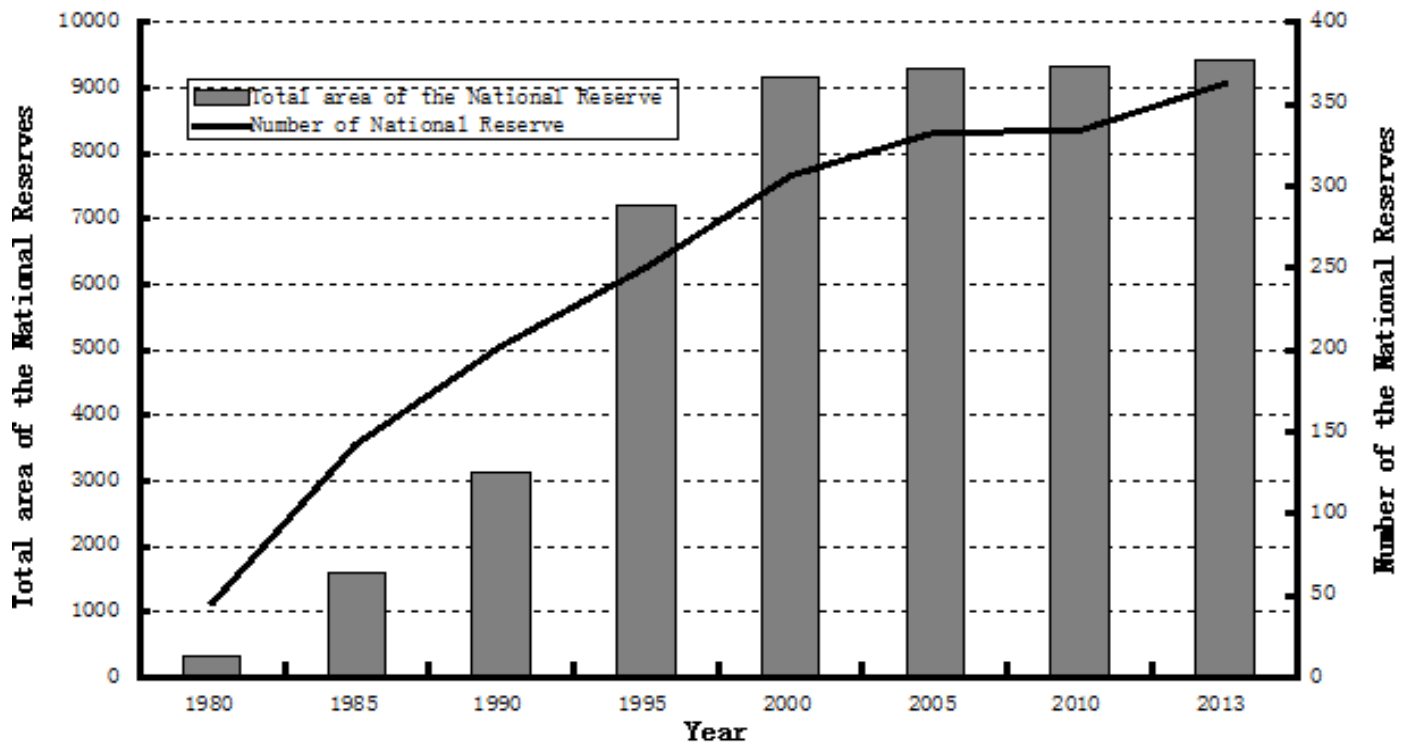


Figure 1. Number and area increasing of natural reserves in China during 1980-2013.

sustainable natural-tourism and to have benefited from it. Jiuzhaigou has become the typical representative of natural-based destinations in China (Gu et al., 2013), and at the same time, it also represents a complex social-ecological system which is characterized by constant interactions between tourism development and the culture and religion that shape the every-day life of local communities (Becken et al., 2013).

Tourism Agenda 21 advocates that the development of tourism industry should consider the interests of the host residents and ensure long-term viability beneficial towards destination community. However there are increasing empirical evidence that the environmental problems are becoming more complicated and will continue to do so for the foreseeable future. Substantial impacts on the long-established ways of life of the local people (Becken et al., 2013) will also occurred, even change host communities' society, economy, culture and environment for the worse (Cooke, 1982). Local communities play important role in environmental management, their involvement is critical to the success of sustainable tourism (Saufi et al., 2013) and environmental management. Because of these, the environment managers begin to emphasize the perception of local communities (Tosun, 2002; Rauschmayer et al., 2009). At the same time, local residents' perception about impact assessment has been

gaining increasing attention in both the tourism and environmental literature (Tosun, 2002; Cheng et al., 2010).

The impacts of tourism have been extensively researched since the 1960s (Lu et al., 2006). The earliest study featured optimism and placed particular emphasis on the positive tourism impacts. In the 1970s, anthropologists and sociologists criticized its negative impacts on the society destinations' and culture. After 1980s, the quantitative research became popular and statistics methods were applied in the tourism research, with the development of single-variable index and multivariable index. Recent years, researchers began to explore comprehensive and interdisciplinary approaches (Tosun, 2002; Niemeyer et al., 2005; Lu et al., 2006; Goebbert et al., 2012; Becken et al., 2013; Di et al., 2013), combined both the qualitative research and quantitative analyze (Lu et al., 2006; Di et al., 2013), and paid more attention on the local community members and their perception on the impacts. Nowadays, the researchers begin to rethink if all the impacts are from the tourism development (Gu et al., 2013). How will the residents understand the casual relationship? What influenced their perception (Cheng et al., 2010)? How did the different impacts contribute to the residents' perception (Li et al., 2005; Lu et al., 2006)? These issues will remain important in future researches.

Rather than standardizing and quantifying the relationship between culture and perceptions, a more complex socio-cultural approach was proposed. 'Thick' descriptions of people's perception and a social constructionist paradigm inform the socio-cultural approach, meaning that all perceptions of impact are equally valid, including those of lay people and experts. The way in which people perceive impacts in their environment is critical for understanding how communities respond to the tourism and environmental management. Thus, studies that value the perceptual knowledge of the non-scientific community are becoming important elements in the field of environmental management (Becken et al., 2013; Seipt et al., 2013).

In order to improve understanding about the impacts on local communities as well as their future adaptation opinions, it's important to study local residents' assessments on natural environmental impacts and integrate their perceptions to other socio-economic impacts. The assessment from the local communities is essential for the development of adaptation policies and measures (Ko and Stewart, 2002). The local community members, although not always scientifically 'accurate' in their assessments, displays a high level of understanding of their local environment (Becken et al., 2013), including the natural environment, social environment and cultural environment.

The development of responsive actions hinges on understanding how people make sense of these impacts and the reasons that triggered them, will further determine if the environment management policy becomes successful. Rooted in the socio-cultural paradigm, perceptions of environmental impact cannot be separated from their social and cultural context (Proctor, 1998). However, many impact assessments still fall short of an in-depth understanding of how local people make sense of the impact and how this shapes their responsive actions (Byg and Salick, 2009). Importantly, and critical to the case study presented in this paper, perceptions of environment impacts and the processing of relevant information are also shaped by cultural dimensions (Whitmarsh, 2011), as well as many factors, such as perceived ownership of the problem, perceived responsibility, various biases, and personal experiences or memories of precious environment (Patt and Schröter, 2008), which is critical to the study of impact assessments.

Taking a case study approach, this study explored local residents' perceptions of sustainable environmental management policy and its impacts in Jiuzhaigou National Natural Reserve, China. The role of the social cultural context as an integral part of people's experiences (Becken et al., 2013) and perception has been given particular consideration. This paper tries to answer two questions: how the local residents and the local authority interpret the concept of sustainable policy,

do they share the same attitude? Whether they perceive, based on their personal experience (Akerlof et al., 2013), that the manage policy brings cumulative impacts on their social-ecosystem.

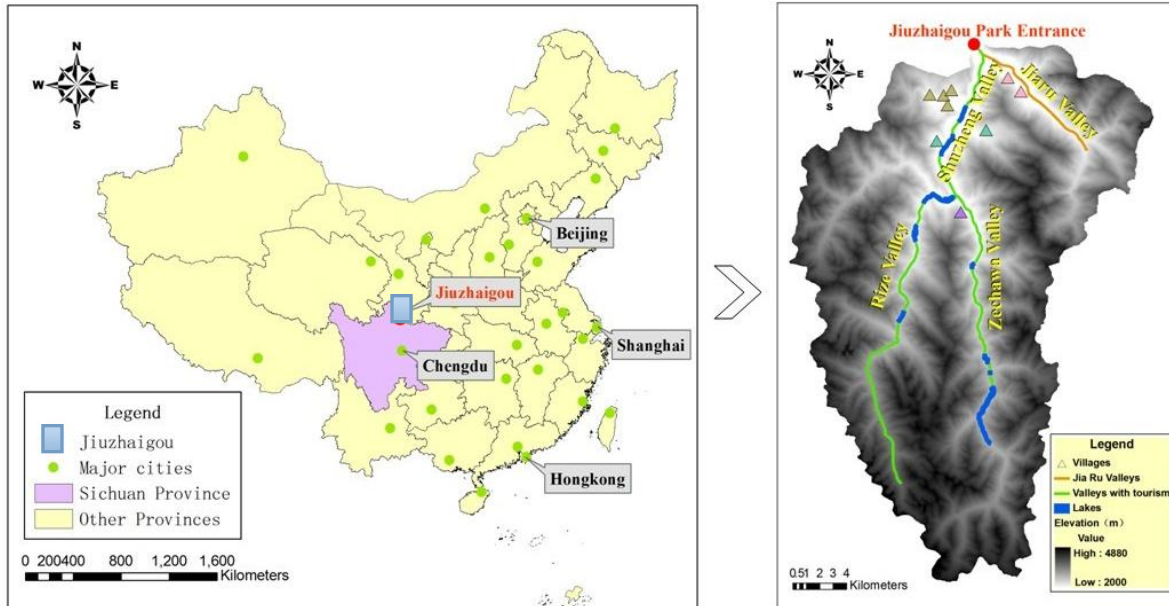
## Research context

Jiuzhaigou National Nature Reserve located in Jiuzhaigou County (previously known as Nanping County until being renamed in 1998), Aba Tibetan and Qiang Autonomous Prefecture, Sichuan Province, China (Figure 2). It has been a national park since 1982 (Gu et al., 2013), and a UNESCO World Heritage site since 1992 (Zhang et al., 2012). Jiuzhaigou means "A valley with high villages inside", covering a land of 651 Square kilometers, is famous for crystal blue lakes, multi-level waterfalls, primeval forest and its rich Tibetan customs. The indigenous people of Jiuzhaigou are Tibetan and are mainly Buddhist, who has lived there for thousands of years as agro-pastoral people with traditional agriculture and animal husbandry.

As shown in Figure 2 the main road in the valley that with tourism is an upside-down "Y" shape with a length of around 60 km, which is used by non-polluting shuttle bus for visitors moving from one scenic spot to another. Along the road, many lakes, waterfalls, Shoal Rivers and other scenic spots are distributed, which are connected by a boardwalk network. Attracted by rapidly increasing income from tourism, most residents residing at a higher elevation have moved to the three villages along the road, namely Shuzhengzhai, Zezhawazhai, Heyezhai. In Zharugou Valley, where not so many tourists visit, lies one community composed of two small villages.

The tourism in Jiuzhaigou commenced in the late 1970s, when it's developed into a national park. Since then the livelihood of the local people had changed from grazing, logging and herbs digging into hotel running and tourism service. With the sharp increase of the tourism development since 1990s, the avenue income of the local people increased from less than 200 RMB/ person 1984, to more than 10000 RMB 2003 and 32760 RMB 2013, which made tourism a major contributor to its economy, providing the major source of revenue for the local government (Gu et al., 2013).

The local administration, Jiuzhaigou Administrative Bureau (JAB), has made great effort (Table 1) to reduce the environmental impacts of tourism (Gu et al., 2013), namely the sustainable management policy, which had greatly reduced the environmental impacts of tourism. Because of the great contribution to the environment management and tourism development, JAB has gained almost all the greatest honors in the field of destination management, and build up Jiuzhaigou the best managed destination in China (Rong-lin and Xiao-qing, 2012; Xianpu, 2012).



**Figure 2.** Location of Jiuzhaigou and the structure of Jiuzhaigou Nature Reserve.

**Table 1.** Timeframe of the implementation of the sustainable environment policies and its environmental benefits at Jiuzhaigou.

Time	Measures and actions	Environmental Benefits
March 1999	Tourist' private vehicles were no longer allowed to enter Jiuzhaigou and shuttle buses are used for the movement of tourists.	It has multiple benefits but a significant reduction in air pollution is most important.
2001	A walk board network of over 50 km was constructed and had expanded to 70 km by 2010.	The walk board reaches each tourist attraction; separates the operation of shuttle buses from tourists; prevents tourists from trampling soil and vegetation; makes an easy path for tourists to walking.
May 2001-2004	All the hotels and restaurants within Jiuzhaigou valley were closed and removed. As a result of "tour in the valley, stay overnight outside the valley" plan.	Decreased all kinds of pollution greatly, such as the water pollution, solid waste pollution and so on.
2004	House building and rebuilding were under strict control, even delivering one bag of cement into the valley should be reported to the JAB, and it would be forbidden without the permission from JAB.	Solid waste pollution was minimized and the cultural landscapes were completely preserved.
2001	Croplands are no longer cultivated and former fields were planted with trees. Animal husbandry and collection of wild medicinal plants were also banned.	Forest coverage has increased to 64% by 2008.
2001	All traditional public toilets were closed down and new toilets equipped with plastic seats on the seat rims were installed. Toilet waste is packed and taken out of the park each day to a waste treatment plant.	Decreased the water pollution and solid waste pollution, saved land and cleaned up the environment.
2001	Use of wood as firewood by the local residents has been greatly minimized with the increasing use of commercial energy, and all local residents use electricity and cooking gas.	Protected the forest and increased the forest coverage; Decreased the air pollution and solid waste pollution.

As one of the earliest national parks in China, the residents lived in the park, with the development of tourism and the environmental management, became the first to get involved in tourism industry and benefited from tourism development, but it also showed the history of adaptation that changed their natural, economic, cultural and event political environments. So it also represents a complex social-ecological system, which is characterized by constant interaction between tourism development that occurs against the background of social-ecosystem that shapes the every-day life of local communities (Becken et al., 2013). How they perceive the “sustainable environment policy” and its impacts on their social-ecosystem is the main interest of the research.

## METHODOLOGY

The research uses a constructive – interpretative paradigm. The case study reported here represents an empirical inquiry of real-life situations as opposed to an experimental design. Constructivism, generally characterized as ‘Verstehen’ in human inquiry research, which emphasizes the importance of both personal knowledge and subjectivity (Becken et al., 2013), and has been discussed in previous sociological research, particularly for understanding cultural and social processes involved in the interpretation of societal awareness and responses (Rosa and Dietz, 1998). The methods were used to investigate community members’ perception about the impacts of Sustainable Environment Policies are articulated in the three sections that follow.

### Participants

This research was conducted involving residents from all four village communities located in Jiuzhaigou Valley, namely Heyezhai, Shuzhengzhai, Zezhawa, Zhargouzhai. At the same time, administrative staffs from the JAB were also involved, including those who used to be local residents and those who were not. To recruit participants, both random and purposive samplings survey were employed. By encompassing a wide range of participants, it is possible to include the diversity of perception about environmental changes and impacts that people experience and perceive.

### Procedures

Primary data and empirical material were collected using a combination of the quantitative questionnaires, in-depth interviews and observations in September, 2013. With a random sampling method, we carried out a face-to-face questionnaire survey to residents of 120 residents from

the 4 villages and 50 staffs from JAB. 94 valid questionnaires were collected from the residents, and 47 from the managers. After making basic statistical analysis of the questionnaire, we took in-deep interviews with 40 (30 residents, 10 JAB managers) participants from them.

One questionnaire was from one household to avoid different people from the same family. This approach ensured that those participating in the research represented a wide range of views, at the same time, ensure the greatest possible amount of information and facilitated access to key people (Becken et al., 2013). The participants who took part in the quantitative questionnaires were asked to show their perception of the attributes listed in the questionnaire according to five ranks: “strongly disagree”, “disagree”, “be neutral”, “agree” and “strongly agree” from scores of 1 to 5. At the same time, questionnaires to the managers from the JAB were designed in the same way but with different questions, and they were distributed to different departments.

After the questionnaire survey, researchers made basic statistical analysis on the completed questionnaires, and then pick up 40 participants to take in-deep interviews with. In-depth interview usually take between 30 minutes and several hours (Veal, 2006) where researchers encouraged participants to express opinions, experiences, and beliefs (Saufi et al., 2013). The lead researcher was involved in every conversation with the participant that took between one and two hours.

Interviews were conducted in Chinese and Tibetan language. This approach allowed participants to express feelings and opinions easily. Actually, most of the interviewees could speak fluent Chinese although they are all Tibetan. With permission, interviews were recorded and coded. Coding was based on the interview location, respondent’s gender and number. For instance, SZZM1 stands for the 1<sup>st</sup> male, from Shuzhengzhai village; JABF3 means the 3<sup>rd</sup> female from Jiuzhaigou Administrative Bureau.

### Data analyses

Descriptive statistics in SPASS 19.0 was used to do a basic analyze on the data from the questionnaire, while in analyzing in-depth interviews, content analysis helped to identify meaning in the words and ideas of respondents (Sarantakos, 1993).

## RESULTS

The results from this study are presented in three sections. Within each of these sections, data from the analysis of questionnaires are presented first, followed by the result from the in-depth interviews, which are

**Table 2.** Residents' demographic property and their support/non-support number (rate).

Characteristics	Distribution	Sustainable environment policies		Tourism development	
		Support (%)	Non-support (%)	Support (%)	Non-support (%)
Gender	Male	30(31.9)	39(41.5)	55(58.5)	14(14.9)
	Female	15(16.0)	10(10.6)	20(21.2)	5(5.3)
Age	≤20 years	2(2.1)	0(0)	2(2.1)	0(0)
	20-29 years	25(26.6)	10(10.6)	30(31.9)	5(5.3)
	30-39 years	9(9.6)	6(6.4)	10(10.6)	5(5.3)
	40-49 years	3(3.2)	12(12.8)	13(13.8)	2(2.1)
	50-59years	2(2.1)	15(16.0)	13(13.8)	4(4.3)
	≥60	4(4.3)	6(6.4)	7(7.4)	3(3.2)
Educational Level	Primary	2(2.1)	19(20.2)	18(19.1)	4(4.3)
	Middle School	6(6.4)	24(25.5)	20(21.3)	10(10.6)
	High School and University	29(30.9)	11(11.7)	34(36.2)	6(6.4)
		8(8.5)	0(0)	3(3.2)	0(0)
Household Income	20000RMB	3(3.2)	3(3.2)	6(6.4)	0(0)
	20000-30000RMB	4(4.3)	6(6.4)	6(6.4)	4(4.3)
	30000-40000RMB	19(20.2)	24(25.5)	39(41.5)	4(4.3)
	40000-50000RMB	13(13.8)	13(13.8)	18(19.1)	8(8.6)
	50000RMB	6(6.4)	3(3.2)	6(6.4)	3(3.2)

discussed in more detail below. Local community members' perception about the implementation of sustainable environmental policy, comparing with their perception about tourism development, are explored first; the second section is about local community members' perception to the environmental impacts and the cause analysis; JAB staff's perception about residents' participate in the implementation of the new policy is also presented within this structure.

### **Perception to the sustainable environmental policy and tourism policy**

Although we listed 5 ranks of "agree" and "disagree", just to clarify, in the questionnaire used the options made by the respondents are scales from strongly disagree to strongly agree and these were translated to support and non-support.

### ***Different perception to the sustainable environmental policy and tourism policy***

The local residents have quite high support rate (79.8%) to the tourism development in Jiuzhaigou, compared with the support rate to the Sustainable Environment Policies,

which is only 47.9% in total. From Table 2, we can find that the local communities have a consistent support attitude to the tourism development, while the attitude to the sustainable environment policies differs from education level and age difference. For example the support rate increased with the education level increasing. The residents with lower education level under middle school, have great nonsupport attitude, the number contrast reached 32:11; while the situation in the residents with higher education is completely opposite. At the same time, the young residents under 29 years show obvious support attitude while nonsupport rate of the ones older than 40 is much higher than the support rate (16%:2%).

Residents in Jiuzhaigou have strong support attitude to the development of tourism in common (Figure 3), while the perceptions to the sustainable environmental management vary from the demographic property. The correlativity between the gender, household income and their attitude is not obvious, there are negative associations between the attitude and age and education level (Figure 4).

According to the tourism dependence hypothesis, which is referred in many western tourism research, with the development of tourism, the community depend on tourism more, the more negative attitude the residents will have (Butler, 1980; Smith and Krannich, 1998).

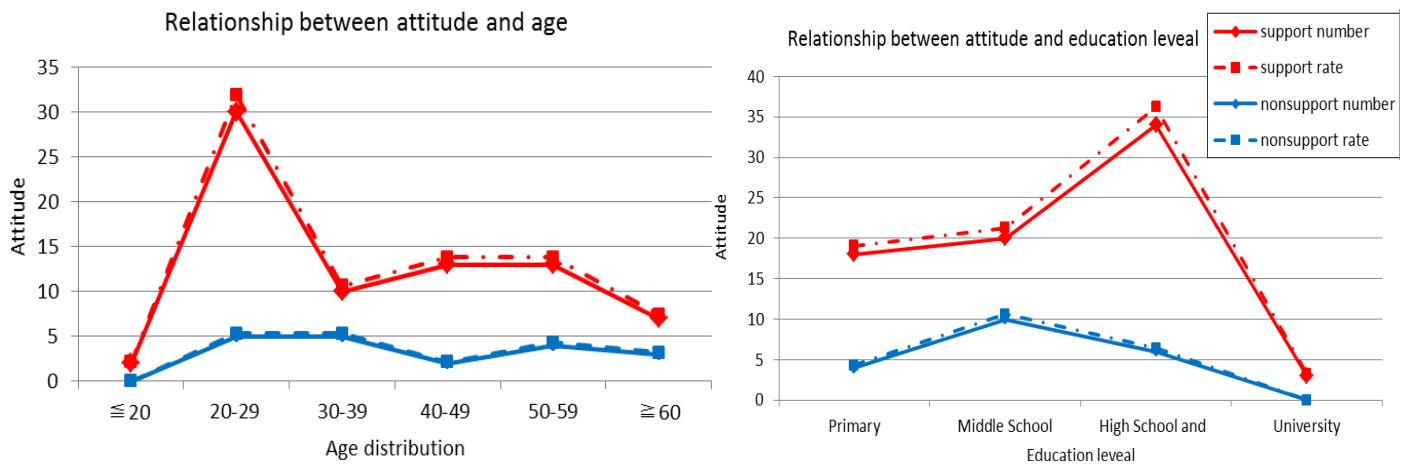


Figure 3. Local community's perception distribution to tourism.

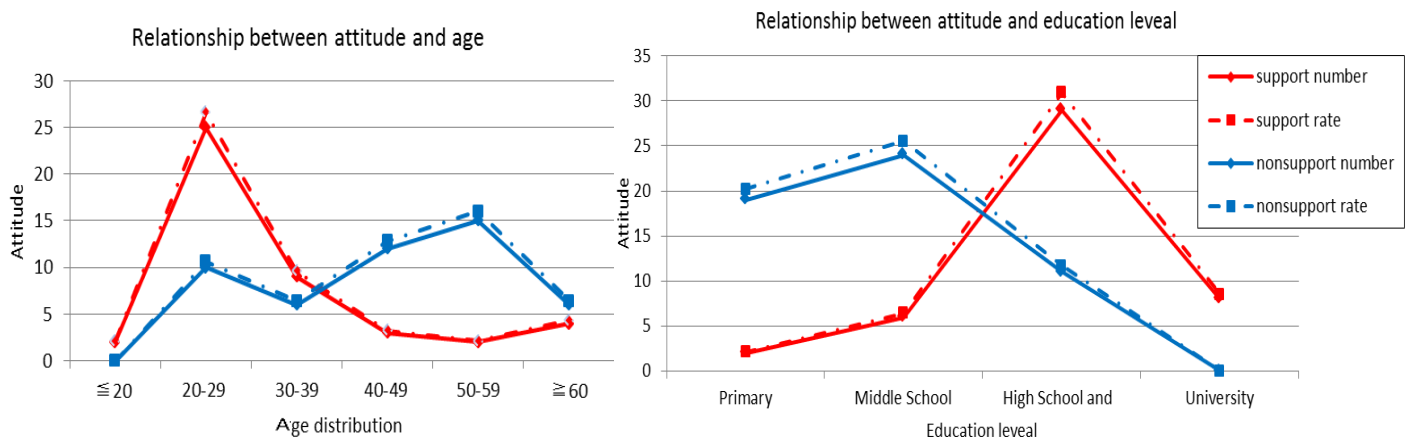


Figure 4. Local community's perception distribution to sustainable environment polices.

Doxey proposed the “angry index” theory to reflect the relationship changing from welcome the tourists to angry with them (Doxey, 1975). For most residents in Jiuzhaigou, tourism is the only one source of income (Table 3), and the tourism in Jiuzhaigou is well developed. Interestingly, the local communities’ residents still have strong support attitude to the development of tourism. In contrast, their attitude to the Sustainable Environment Policies, whose purpose is to decrease the pollution and negative impacts to the environment, is in a low support degree.

**Reasons why residents are against the policies**

After basic analysis of the questionnaire, we interviewed 30 participants who had passive attitudes to the policy,

trying to find the most obvious reasons which make the residents oppose the policy.

We noticed that, generally, most of the residents older than 40 who had the experience of operating hotels or motels before the implementation of the new policy, and they questioned the correctness of the “tour in the valley, stay overnight outside the valley” plan and most of the participants showed that they were not satisfied with the administration of the local authority JAB. The majority of the respondents commented that they were not against sustainable tourism development or environmental protection. They admitted its great achievements in nature protection, but they did not think this environmental policy would lead to a sustainable future for Jiuzhaigou.

The participants showed strong anger about the “tour in the valley, stay overnight outside the valley” plan. Most of



**Table 3.** Comparison of income structures between the residents inside and outside the valley of Jiuzhaigou.

Income structure	Area	
	Inside the valley	Outside the valley
Distribution of the benefits from the tourism development.	Depend on the shares the residents take.	zero
Food subsidies	240 RMB per mu(about 0.165 acre)	240 RMB per mu(about 0.165 acre)
Land subsidies	zero	Depend on different location. 240 RMB per mu(about 0.165 acre) at most.
Income from the tourism	Taking photos for tourist and selling tourism commodity.	Running hotels, restaurants and so on.

the resident participants (23 out of 30) referred to the concept of, an important conception in Buddhism and their culture, to support their opinion. One respondent commented: "I have many relatives who live outside of Jiuzhaigou Park, but just around the main entrance. There is less than 10 km distance between our houses. Why can they run a hotel, but I'm not allowed here? They (JAB) say I pollute the environment here, but how about my relatives? We are in the same (bio-) cycle!" (HYZM2). One participant who had ever operated a hotel stated: "We gave up our businesses, and (now we continue to) protect the environment of the valley, the people outside the park make big money! It's not fair!"(HYZM1).

Some comments indicated a popular perception that the JAB was avoiding taking responsibilities at the expense of local communities' opportunities to benefit from tourism. A participant highlighted his doubt about the necessity of this policy: "We know it's hard to control the pollution if we local residents run hotel inside the park, but we have lived here for generations and will stay here forever. Here is our home, we know what the environment means to us, but the investors from the big cities don't care about it. They just want to make money. Compared with the five-star hotels, who pollutes more? I think they (JAB) should do more, not just close our hotels" (SZZM3).

At the same time, numerous participants referred to the injustice (11 out of 30) they perceived and showed their concern. A respondent commented on inequity in job opportunities: "The JAM promised to offer more jobs if we closed our hotels, try to guess what kind of job they offered? Cleaner! They encouraged us to send our children out to have higher education, but then to be a cleaner? They're toying with us! Who are in the offices? Their relatives!" (ZZWM6). One village leader worried: "Some people are angry with this [unfairness], but it seems that they [JAB] don't care about it at all, and never listen to us" (ZZWM1).

The researchers noticed another phenomenon that many people in Jiuzhaigou, especially the younger residents, were so obsessed with gambling. We found three groups of local residents gambling in Shuzheng

Village one day. The older residents also expressed great concern about this. One elderly participant complained, "The young people are becoming bad...they play mahjong with the Chinese from morning to midnight...it is terribly bad! But the JAB don't care about it and leave it unchecked...They really need to do something about this, but nothing has been done"(SZZM4).

### **Residents' perceptions about the impacts of the sustainable environment policy**

Though the interview, researchers found that although no participant provided a comprehensive account of impacts, a lot of life experience and examples were listed by the participants to explain their perceptions. We concluded in three dimensions: less employment; lower quality of life; worse culture conservation.

#### **Less employment**

Many participants stated that the new policy did not increase the employment, what worse was, it made lot of residents lose their job. One participant mentioned: "I closed my hotel at 2001, and I have not found a better way to make money" (ZZWM3). According to the sustainable environmental policy, the JAB distributes the benefits from the tourism to the local residents (Table 3), but compared with the money they gained from operating hotel, the residents though it was much less. One participant gave an example to prove their economic situation is worse: "I have two daughters, one is 10 and the other one is 15. I send them outside to get education, because the government did not build school here. They live in the homestay near their school, I have to pay at least 8000 Yuan accommodation fee every year per child, and pay all other fees by myself. Here, They (JAB) did not allow us to do anything but take photos for the tourists or taken photos by the tourists!"(HYZM4). As ZZWM6 stated, they are not satisfied with the jobs JAB



offered to the local residents and think there are inequities in job opportunities.

### ***Lower quality of life***

From Table 1, we found that a lot of infrastructure was built in the scenic spots in Jiuzhaigou, but some participants highlighted that their life was still in a low level with great inconvenience. Some participants mentioned: It (the infrastructure) is built for the tourists, not for our residents. The JAB wants to please the tourists only (HYZM11). One participant gave out an example of the new public toilets distributed near the scenic spots and the villages (each village has one public toilet near the main entrance of the village), he joked: "I use the toilet in my yard every morning, but never that 'senior toilet with packet'" (HYZM12). The toilets located quite far from their house to the toilet and each village just has one. And he stated: "Do you know what makes me mad? If my toilet got broken and I want to build a new one, I must write a report to the JAB to get the permission, and then I can buy some bricks and cement (because of the strict management on building inside the Jiuzhaigou). But if they say no, I can do nothing! Except I do it by stealth. So you think it's a good impact or bad one?" (HYZM12). So numerous of the participants thought the infrastructure was "an apple of Sodom" for the communities. These years a strange phenomenon appeared: numerous residents have bought houses in Chengdu or Dujiangyan city for the sake of a "higher level of life". In the summer time, when the tourists come to Jiuzhaigou, the residents live in their villages, but the rest of the time, a lot of residents move to the cities. Actually, there were complex factors interacted together and triggered this phenomenon, but the inconvenient life worked as a key factor.

### ***Worse culture conservation***

During the interview, researcher found that most of the local residents, especially the young generation, could speak fluent Chinese, and tended to have much better communication ability than other Tibetan people in China. But the old residents showed their worries about this phenomenon, and paid more attention on their declining traditional culture which they blamed to the lack of school in their villages. All of the participants older than 60 years old (6 person in total) stated that their children's Tibetan language is getting worse. One participant who has 5 children and 9 grandchildren commented: "I have five sons and daughters, all of them can speak and write Tibetan, but my oldest grandson and granddaughter, both of whom are in their 30s, can just speak Tibetan. As to the other 7 grandchildren, the younger they are the

poorer they speak Tibetan" (ZRZF6). They blame the degradation of their Tibetan to the absence of school in their communities. One participant commented, "My daughters study in a middle school in Chengdu, they stop their Tibetan learning since the day I sent them out. Because there is no Tibetan course or friends in their school, and they are busy learning other courses, so they don't have many chances to speak Tibetan, I noticed that their Tibetan language is getting worse and worse" (HYZM4).

### ***Environment managers' attitude toward the residents' participation***

Public participation is critical to the success of sustainable environmental policy and a successful management must lead to a better relationship between the managers and the managed. As the implementers of the environmental policy, environment managers' attitude to the local residents and their participation would influence both the success of the management and local residents' perception and attitude. But, based on the in-depth interview and observation, it seems that more and more mistrust between the local residents and the JAB appeared after the implementation of this sustainable policy.

Compared with the residents, the staffs from JAM showed an opposite attitude to the impacts with the residents, on the other side, some of the staffs stated that they should not trust the residents. One participant commented: "They never feel satisfied, maybe they are the richest Tibetan in China, but what they want is more and more. They think we JAB impeded them making more money(JABM2)" One participant commented: No matter how much benefit they gained, they never feel satisfied, (JABM4), Another respondent who has worked in JAB more than 20 years commented: If JAB just asked the residents move out of the park that year (2001), there would be not so many troublesome problems (JABM2). They will not send their children to the local school, because they think they are rich, they prefer better school outside (JABF2).

No communication activities (for example, training course, workshop, survey), between the local residents and JAB were held in recent 5 years. When researcher asked about the reasons, one participant explained: They (the residents) are busy to earn money, no one will join (these activities). If they have any problem, they can report to the Residents Committees' Office of JAB (JABF3). Some participants stated that no instructions were emitted from the higher organizations to do these (trainings).

We observed that most of the cleaners in Jiuzhaigou Park are hired from faraway areas outside the valley where tourism is not developed. One participant from

JAB commented, "The local are rich and vain, they will not take this kind of work. But it's impossible for everyone to work in office equipped with air-condition" (JABF1).

## DISCUSSION

The research findings show that the local residents in Jiuzhaigou hold quite different views with the local authority JAB about the new sustainable environmental policy and its impacts. Despite the lack of detailed knowledge regarding the environmental impact evaluation, it would be inaccurate to conclude that people in Jiuzhaigou have right or wrong understandings of the impacts. Therefore, the purpose of our study is not to prove how right or wrong their attitude is, but to show that local people's perceptions are not necessarily to be taken as misconceptions (Becken et al., 2013), but as important indicators of how the local people, especially the Tibetan people, process and make sense of the implementation and what it brings to them. In addition, we argue that without understanding, trust and communication, even an environment policy aimed to a sustainable social-ecosystem development would lead to unsustainable.

### **Analyses on the culture context of local residents' perception**

In the interviews with the participants, they raised numerous reasons and impacts to explain their perceptions of the new policy, the researchers tried to identify the inner correlations and two main correlations were concluded as worries on the traditional culture and awareness of participation.

With the implementation of sustainable environment policy, all the hotels were closed and removed from Jiuzhaigou, new roads and shuttle buses were adapted. These measures have separated the villages from the tourists, which means that the villages have become "pure communities", for local residents only, and are no longer accommodation providers for tourists. However, essential infrastructure for residents of the local communities, such as schools, hospitals and shops, have not been built and the infrastructure for tourists cannot meet the local residents' needs.

As effective environmental policy for sustainable development should be based on an analysis of actual and potential environmental, social and economic conditions and on the needs of local communities, without this, the policy would trigger not only inconvenience to live in their communities, but also serious problems.

Quite a number of local participants commented their worries about the cultural degradation, especially their language, which helped maintain culture and place

identity. This was particularly noted for the old participants ( $\geq 40$  years) in this study who had more awareness of their tradition and culture. They blamed the cultural degradation on a lack of essential infrastructure in their villages, which was ignored during the processing of implementation.

They stated that as there are no schools in their communities, most parents have to send their children away to receive an education; and numerous residents have bought houses in Chengdu or Dujiangyan city for the sake of a higher level of life. As a result, their living cost has increased, and what is worse is that the younger generation has lost their chance to study the Tibetan language, and most of the residents have lost their traditional life, which contains almost all of their culture. So the underlying cause for residents' passive attitude was worries to their social-culture context and the residents' anger to the JAB also showed their deep worries about the culture shock under current social context.

At the same time, the great gap between the residents' occupational expectation and the jobs offered by the JAB, indicated that there exist unfairness during the progress of job distribution. While their anger with the unfairness of job distribution, showed the resident's traditional expect to an 'Iron rice bowl', which means a secure, decent and respectable, on the other side, also job shows their awareness of participation and sense of fairness. After more decades developing, they are forming the modern citizens' consciousness with great concern of tradition culture.

### ***Mistrust between the residents and the Jiuzhaigou Administrative Bureau***

Comments from the participants pointed to a low personal satisfaction to JAB for the unfairness during the process of policy implementation. Due to the lack of construction of basic infrastructure and the inequities in job opportunities, the local residents feel that they have been ignored and treated unfairly, all of these lead to the residents' mistrust of the JAB. Although many other Chinese citizens increasingly assert their participatory and transparency right by appropriating instrumental good governance policies to their own advantage, the local residents in Jiuzhaigou are in the beginning stage to learn how to express their appeals and assert their right in their own way.

At the same time, most of the staff from the JAB, they thought the benefits from the development of tourism were distributed equally and in the best way, while the residents wanted to gain more from the tourism. The JAB staff treated the local residents are greedy and refuse to understand the residents' culture and thinking. What make the relationship worse is the JAB recognized these

negative emotions, but chose to ignore them and keep silent, which in China, is the most common way to respond to community concerns such issues.

During the past decade, China's Ministry of Environmental Protection has pursued a strategy of extending governance to the public by creating formal public participation channels and promoting environmental transparency, meanwhile, the central government has introduced laws and regulations that provide legal channels for public participation and information disclosure as part of a public supervision mechanism. But for most local officials, it still need a long time to change their attitude, perception and the way deal with the local residents, especially the ethnic groups.

The importance of communicating with local residents should be recognized and emphasized by the local official, including the benefit of consulting with local stakeholders and involving them in the development in order to highlight new perspectives about the local situation. This is because their opinions about possible measures of management are valuable and should be taken into account for the evaluation of impacts and local development (Garmendia and Stagl, 2010). However, during the implementation of the environmental policy in Jiuzhaigou, the managers' passive attitude has led to the suspension of the participatory process. According to the principal of sustainable development, the implementation of an new policy has to be monitored over time to assess the impacts on the local environment and to plan future steps to be taken in order to continuously improve the environmental and sustainability performance of the area. At the same time, we noticed that the communication and interaction is also the most one JAB ignored.

## Conclusion

Although formal channels for soliciting public comment in planning decisions have been established, more regulations are needed during the process of implementation. Our research indicates that the current practices being implemented to engage with local communities may not suffice to deal with the extent of the sustainable environmental development anticipated in the future. Fairness was not only the subject of a formal evaluation by project staff but also by the local residents. The importance of culture, and how it is intimately interwoven with nature and the economy, has been reinforced through the observations of this study. On reflection, it has become very apparent that any impacts would only be relevant to the local people when grounded in their day-to-day experience and clearly connected to their practices and culture. It is also important to note that sustainable development must be based on both the results of the analysis of local contexts and conducting process with local stakeholders.

As many researchers have emphasized, sustainability is not a universal concept as it can be influenced by local environmental, social and economic contexts which may require more attention to be paid to specific aspects over others. As for developing countries and ethnic areas where local people have specific attitudes toward their culture, language and religions, understanding these grassroots' perspectives is very important for policy makers, environmental managers and researchers.

From a tourism perspective, their language, alongside their beliefs, rituals and many other traditional practices, contribute to the richness of the Jiuzhaigou cultural landscape, which is what attracts tourists to visit. Loss of these traditions may therefore not only undermine cultural resilience, but also decrease the attractiveness of the destination (Becken et al., 2013). What is perceived by the locals is that the residents have become the "Tibetans who can't speak Tibetan" and their culture is "on the way to becoming a dead culture", as the losing of language and traditional way of life is the main thread of their culture.

The local residents who participated in our study, while not always scientifically accurate in their impact assessments, were generally aware of the sustainable environment policy in Jiuzhaigou, which had brought great changes and impacts to their daily life, including natural impacts, economic impacts and cultural impacts. Ultimately, with Western development and the tourism development in China, more and more nature reserves and ethnic minority communities will be involved in tourism development. Ethnic communities that are closely related to both the natural environment and tourism, such as those living in Jiuzhaigou, may provide useful insights for environmental protection and tourism development in China.

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