
From experiences to institution: the management of Jiuzhaigou Valley Biosphere Reserve faced with institutional transformation and upgrading

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Abstract: Unlike most biosphere reserves in China, Jiuzhaigou Valley Biosphere Reserve (JBR) has achieved immense success in natural resources protection and economic development given the difficult conditions such as modest government appropriation for protection, a serious shortage of investment funds in the initial development stage and a flawed legislation and regulation system. Its successful experiences are therefore particularly valuable to other biosphere reserves, which encompass three principal aspects that include the notion of landscape protection and improved livelihoods for local residents; coordinated and unified management; and the combination of the biosphere reserve and the World Heritage site concepts. However, with the development of JBR and the change of external conditions, the unified management model targeted to solve the problems in the initial period is facing fresh problems in its future development, and which urgently requires institutional transformation and upgrading in Jiuzhaigou Reserve Administration (JRA). Based on SWOT analysis, this paper analyses the scenarios in the different combinations of strengths, weaknesses, opportunities and threats, and then presents some suggestions for the adjustment of strategy in order to further achieve the multiple functions of biosphere reserves in dealing with the new challenges faced by JBR.

Keywords: biosphere reserve; world heritage; tourism; local participation; coordination; strategy adjustment.

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1 Introduction

There are 28 Biosphere Reserves in China in 2007 most of which are located in remote and impoverished areas. One of their main objectives is to conserve natural resources; however, this tends to bring about limitations on the economic development of the local community and can result in major conflict between the reserves and their surrounding areas. Furthermore, due to modest government appropriation and a flawed law and regulation system it is very difficult for the biosphere reserve administration to achieve their goal of natural resources conservation. However, despite these adverse conditions, Jiuzhaigou Biosphere Reserve (JBR) has been successful in achieving this goal through the development of tourism and local participation and this has provided valuable experience for other biosphere reserves to conquer the difficulties mentioned above.

2 The implementation of the biosphere reserve concept in JBR management

Jiuzhaigou Valley is located in Sichuan Province in China and as with most biosphere reserves of China it is located in remote mountainous area. It became a biosphere reserve in 1997. Prior to 1984, when tourism was totally new to the local residents, their income was sustained from plantations and animal husbandry with an annual income of \$30

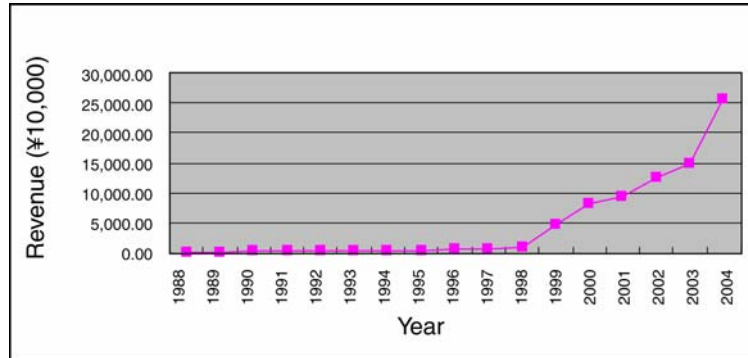
USD. Moreover, the government's capacity to invest funds in Jiuzhaigou was low except for an annual \$24,700 USD from the Forestry Department of Sichuan Province during the period 1978–1992. With this background, the JBR was successful in achieving its goal of natural resources conservation by applying the biosphere reserve concept, which can be summed up in the following three aspects.

2.1 To balance economic development and natural resources conservation through the notion of 'protect the scenery and enrich local residents'

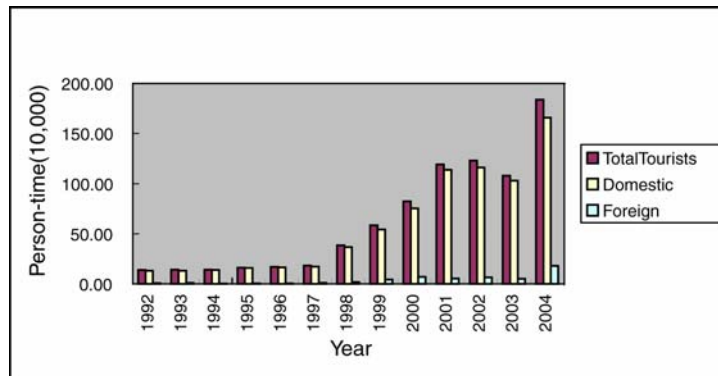
Through the efforts of many people from different fields, Jiuzhaigou was saved from the perils of massive deforestation. For several years after 1968, Jiuzhaigou provided timber (over 100,000 trees per year) for industrial development in Southwestern China. If the reserve had not been established, the entire forests of Jiuzhaigou would have been destroyed by 1984 (Sichuan TV Station et al., 1999). During that period, the local residents were unable to obtain any profit from forestry. Moreover, the natural resources on which they depended were threatened by felling. It was at this critical moment that the establishment of Jiuzhaigou Nature Reserve saved the beauty of Jiuzhaigou, and more importantly, the potential for development of the local residents. When the reserve was newly established, Jiuzhaigou Reserve Administration (JRA) and the local government realised that the local residents were not in fact a burden but the guardians of conservation. The conservation of the natural resources was the main objective of JRA but the living standards of the local people had to be improved as urgently as possible, which could not be influenced or hindered by conservation in any way. This was precisely the notion of the biosphere reserve concept. The establishment of the biosphere reserve brought some limitations to the traditional agricultural activities of the local residents, for example, the control on livestock population of households and the decrease of firewood collection. As compensation, JRA explored a number of options for improving the livelihoods of the population such as clearing timber and gaining employment in the conservation effort. Moreover, JRA attempted to find alternative ways to substitute their traditional low-profit production so as to eliminate conflict between development and conservation.

From 1984, tourism development became the suitable way to meet the requirements of both natural resources conservation and local participation in economic development as well as achieve sustainable development in Jiuzhaigou. The beauty of Jiuzhaigou attracted an increasing number of visitors from 2000 in 1981 to 385,000 in 1998 (Figure 1). Correspondingly, the JRA profit from tourism development increased greatly (Figure 2), which provided strong support for achieving JRA's goal of natural resources conservation as well as providing the conditions for JRA to switch from an administration supported by government appropriation to a self-sufficient Public Service Unit in 1992.

For the local residents, making a profit through tourism development principally meant participation in the family-run hotel business, which was also a good opportunity for the local residents to explore their development potential and organise themselves and improve their management capability. The annual income from family-run hotel business increased from \$32 USD per capita in 1983 to \$1856 USD in 2004 – almost 57 times as much. Compared with the surrounding villages where, for example, the annual income of Zhongcha Village of Zhangzha County was \$173 USD per capita in 2004, it is one-tenth of the income in Jiuzhaigou.

Figure 1 The revenue of JRA (1988–2004) (\$100 = ¥808)

Source: JRA.

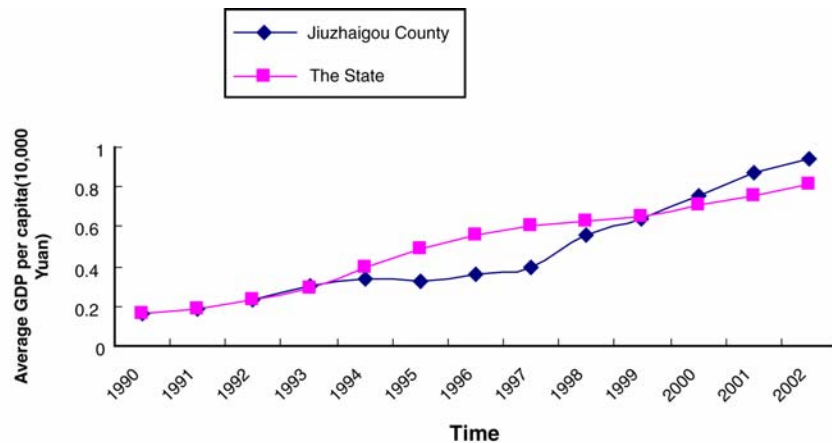
Figure 2 The tourist number in Jiuzhaiguo (1992–2004)

Source: JRA.

The first family hotel in Jiuzhaigou was opened in 1984 and developed quickly. In 1999, the number of family hotels increased to 134 and provided lodging for 7000 tourists. In 1984, JRA and the local government encouraged Zeliwangxiu, a resident of Shuzheng village, to build the first family hotel with a bank loan. In 1989, all the hotel managers in Shuzheng village organised themselves to consolidate all the family hotels and establish the Jiuzhaigou Shuzheng Joint Stock Company with the purpose of eliminating fierce competition between the different family hotels. The residents could become shareholders depending on the number of beds in their hotel. They set up one reception desk and harmonised quality standards for the tourist services. This mechanism provided the model for subsequent consolidated management throughout Jiuzhaigou. During the development of the family hotels, the managers continually insisted on democratic decision making and self-organised learning to consistently improve the quality of the service. Moreover, local residents have been very enthusiastic to join JRA management. In JRA, there are 183 staff members from the local community of which seven are managers of the different departments while the others work as rangers and caretakers in the valley.

Tourism development has also played a role in driving the economic development of the entire Jiuzhaigou County. Compared with the national level (see Figure 3), the average GDP per capita of Jiuzhaigou County has exceeded the state level since 1999. In addition to the increase in income, the local area has also gained benefits from the transfer of experienced managers from JBR to other reserves and from the expansion of the tourist industry which is driving regional economic development through the ‘Grand Jiuzhai Tourism Loop’ (Li et al., 2005).

Figure 3 Comparison of average GDP per capita between Jiuzhaigou county and state (10,000 RMB)



Source: Li et al., (2005).

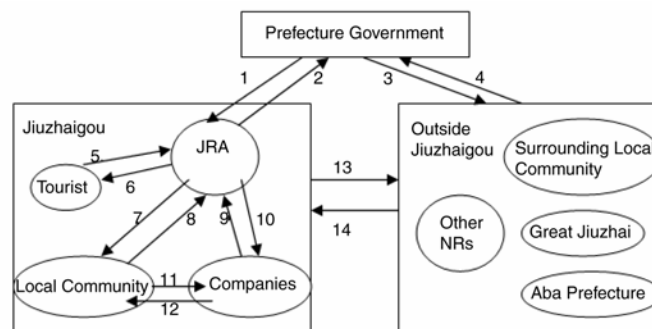
With more and more tourists visiting Jiuzhaigou in the late 1990s, some environmental problems did occur. From 1998, the number of tourists rose by 68 % annually during the period 1998–2000. Faced with this pressure, the JRA began to prepare from the beginning of the 1990s. The main measures carried out included the construction of roads and tracks, mud-rock flow control, the establishment of the Green Sightseeing Company and the Digital Jiuzhai Network, which had the effect of unifying the management of tourists and vehicles and thus improve the carrying capacity of tourists in the valley by providing the necessary infrastructure and improving management techniques. However, the pressure of 7000 tourists living in Jiuzhaigou Valley was too much to protect water quality and other natural resources. Therefore, JRA decided to carry out the policy of ‘sightseeing in the valley but living outside the valley’ to freeze the construction of new family hotels and to gradually close down the hotels already present. Although local residents were given some compensation, their income had been dramatically affected. In order to maintain the actual living standards of the local community, JRA tested various options to find new income sources including: an allowance from entrance fees to cover basic living costs; the distribution of stalls in Nuorilang Center; the distribution of stock bonuses in the Joint Stock Company and the traditional businesses of renting clothes and taking photos. Due to these efforts, the income of the local residents has increased particularly in the village that did not earn profits from the hotel business because of its unfavourable location of Zhuru village. As a result, the gap between the different villages has decreased, which can be expressed by

the change of the income ratio among the three villages. The income ratio among Heye, Shuzheng and Zharu villages was 4.3: 4.6:1.0 in the period 1993–2001 but became 1.9: 2.5: 1.0 in 2004 (Li et al., 2005).

2.2 To balance the relationship of different stakeholders by coordination and unified management

There are many stakeholders in Jiuzhaigou and their relationship is extremely complicated (Figure 4). JRA achieved success in the last 27 years by carrying out coordinated and unified management with the mechanism ‘two entitlements but one group’ – the two ‘entitlements’ are Jiuzhaigou Nature Reserve Administration (JNRA) and Jiuzhaigou Scenic Reserve Administration (JSRA). In fact, the new entitlement has continued to increase with the development of Jiuzhaigou. ‘One group’ means that only one staff group plays the role of both JNRA and JSRA (a unified management body for both JNRA and JSRA). ‘Unified management’ is a mechanism whereby different objectives of the entitlements are achieved by the effort of one staff group. This mechanism may eliminate the possibility of natural resources damage caused by conflicts among the different stakeholders (and hence reduce conflicts). Therefore, one staff group guarantees to carry out unified management and can adjust its strategy according to changes in conditions and requirements because it maintains consistent bottom-up decision making.

Figure 4 The relationship between different stakeholders in Jiuzhaigou



Note: 1: Administrative management; 2: Tax; 3: Appropriation support; 4: Requirement for development; 5: Revenue and pressure; 6: Service and management; 7: Bao Jing Fu Min; 8: Under management institution; 9: Welfare and development; 10: Control as the biggest stockholder; 11: As a stockholder; 12: bonus from stock; 13: Output of managers and management experiences; 14: Employment chance and cooperation of protection.

Firstly, unified management excludes external managers coming into Jiuzhaigou and thus prevents natural resources damage that may occur due to their short-term vision. Prior to the establishment of ‘Jiuzhaigou Shuzheng Joint Stock Company’ in 1989, some family hotel managers contracted out their hotels to outsiders. Because these outsiders paid more attention to short-term profit they competed for tourists by forcing sales and cheating on services, which incited conflict among different family hotels and villages. Moreover, during the period from 1984 to 1992, businesses in Jiuzhaigou was divided up and managed by different departments such as the Business Bureau and Tourism

Company of JRA, which made it difficult to control their influence on natural resources and coordinate their relationship. Through efforts to solve these problems, Jiuzhaigou achieved unified management and established the mechanism of 'two entitlements but one group' in 1993.

Secondly, the most important part of coordination and unified management of JRA is the harmonious development of both JBR and the local residents. In 1984, the family hotel business could not develop without the valuable support from JRA. By 1992, with the support of the coordination from JRA, all the family hotels in the three villages began to manage their businesses in a united way, which had eliminated fierce competition among villages. From 1998, when family hotels were closed because of environmental pollution, the Resident Management Office (RMO) of JRA tried to find ways of generating alternative income for the local residents as a substitute, such as providing positions in JRA and opening stalls in Nuorilang Center. Moreover, when local residents moved from rural residency to urban residency, the Jiuzhaigou County Government entrusted the administrative management of the local community to JRA, which made it easier for JRA to coordinate its management.

Thirdly, united management has been supported by local government. On the one hand, it was essential for JRA, in its initial development stage, to obtain the appropriation of \$24,752 per year as well as other infrastructure from local government. On the other hand, the local government encouraged local residents to develop family hotels by supporting the initiatives through policy and providing them with loans.

Finally, JRA also conducted coordination and unified management in JBR for both tourists and companies. Following the crowding accident in October 1998 (e.g. the heavy block of road traffic inside the reserve), JRA established the Green Sightseeing Company to divide vehicle and walking visitors so as to prevent traffic jams and air pollution. Moreover, because of the establishment of the Digital Jiuzhaigou Network, the cost of visitor management decreased and the natural resources could be protected from the pressure of greater numbers of visitors. Moreover, JRA coordinated the business of the different companies in JBR by controlling more than half their stocks. The Director General of JRA is Chairman of the board of these companies, which therefore gives JRA power to decide on the scope of the businesses concerned and improve management efficiency in these companies.

2.3 To complement the lack of local participation through the implementation of the BR concept

There are many scenic nature reserves or World Heritages sites in China that excludes local participation, because they do not have the associated institutions, and which ultimately arises in damage to the natural resources and unfairness in the development of the local residents. However, JBR prevented this problem from occurring by implementing the BR concept. As mentioned above, there are many entitlements in JRA, which have their own specific objectives. Nature reserves emphasise natural resources conservation; scenic nature reserve focuses on tourism development; biosphere reserve has three main functions of conservation of biological and cultural diversity, land management and local community development, and as a base for scientific research, monitoring and training and World Heritage sites pay much attention on the conservation of non-use value of natural resources. If these entitlements are managed by different independent offices, conflicts between departments will inevitably arise and ultimately

cause damage to the natural resources. For example, because of its worldwide reputation, World Heritage sites attract large numbers of tourists but there are often no institutions involved with the local community that allow them to benefit from tourism development. Fortunately, the function of local participation is implicit in the biosphere reserve concept. JRA therefore adopted unified management in order to coordinate the different objectives and thereby guarantee the management of Jiuzhaigou according to its highest level requirement and thus achieve sustainable development in Jiuzhaigou.

Through coordination between the different departments within JRA complementing the different entitlements has been achieved. For example, in the case of coordination between tourism development and natural resources conservation, equal powers were bestowed on the Protection Office (PO) and the Marketing Office (MO) of JRA. The MO is responsible for the development of tourist activities while the PO is responsible for monitoring any damage to the ecosystem. For example, the MO had proposed an activity for visiting VIPs – a night party in the valley. The PO however rejected this activity because of the possible impacts on the natural resources: the illuminations, noise and waste disposal were some of the cited problems. JRA held a meeting on this proposal and decided to carry out the PO's suggestion and cancelled the event. In general, the PO can solve the problems at once, but for more important and complicated situations, a report will be sent to the most responsible person. He will initiate discussion among the general director, the deputy director and the managers of the different departments to make the decisions.

3 The challenges of Jiuzhaigou Valley biosphere reserve in future development

The implementation of the 'Bao Jing Fu Min' concept as well as the coordination and unified management of JBR has shown to be a success because it has evaded many of the problems seen in other reserves in China such as multidepartmental management, the exclusion of local participation and economic development at the expense of natural resources degradation. It was essential that JRA took advantage of the unified management concept to solve the problems encountered in its initial development stage, especially when the legislation and regulation system during this transition period was not perfect. Without these resolute rules on unified management JBR could not have performed so successfully. However, as appropriate laws and regulations are improved in China, the unified management pattern in JBR, which aimed to solve problems in the transition period, is challenged by new problems.

In the last 15 years since 1992, JRA had not get any appropriation from the state, and JRA is a self-supporting Public Service Unit (PSU). Such a system compels JRA to combine government functions with business management. This kind of operation model is obviously unreasonable in terms of conservation of the reserve, which is both a public asset and a World Heritage site. Some of the pressures faced by JBR are outlined below:

- The present operational model renders the balance of environmental protection and economic development difficult because the entrance fee goes towards the maintenance of JBR itself, with some part going to local government, but it is not used for natural resources conservation. Moreover, compensation given to local residents following the closure of the family hotel businesses also comes from entrance fee revenue. This all adds to the pressure of JRA to increase revenue.

- In the present model, both government functions and market tools are mixed in JRA operation. On the one hand, local government and JRA are taking some entrepreneurial responsibilities to achieve profit in JBR while on the other hand local participation in the tourism business is shrinking under the ‘Sightseeing in the Valley but living outside the valley’ policy. Meanwhile, the residents are sustained by entrance fee revenue.
- Tourism development is only focused on the increase of tourist numbers and entrance fee rate, which restricts the application and development BR concept in JBR.
- JBR is subjected to much pressure by local government to promote local economic development. Moreover, development is only achieved by increasing entrance fee revenue in the JBR, which has distorted the functions of the nature reserve and the World Heritage site to some degree.
- Although JBR managers have tried their best to reduce the need for artificial constructions, the rise in visitors requires greater infrastructure which threatens the maintenance and appearance of the World Heritage site. Meanwhile, the underdevelopment of scientific research and monitoring makes it increasingly difficult for managers to judge the status of environment biodiversity and take corresponding measures.
- The establishment of JBR, in order to protect the beauty of JBR, has greatly changed the traditional mode of life and production in the local community. For example, the policy to return cropped land back to forestry compelled local residents to give up their traditional agriculture and husbandry. During this process a lot of traditional cultures were lost, which did not receive much attention from the related authorities. Compared with the modern lifestyle brought about by tourism development, traditional culture is regarded as unenlightened, which does not encourage the local community youth to maintain these traditions.
- Even though the living standards of local residents have greatly improved since the establishment of the reserve, complaint have also increased. On the one hand, their capacity for creation and self-organisation, developed during the initial stage of the family hotel business development, was constrained. On the other hand, their demands on the development of spiritual needs and democratic participation combined with economic development cannot be fulfilled.

4 The suggestions for strategy adjustment of JBR

Upon its establishment, JBR set itself the task of ‘protecting the scenery and enriching local residents’ as its management goals and achieved much progress in this regard. As it developed, however, more and more people began to complain. The contradictory nature of the complaints continued to perplex the administrators. One of the underlying reasons was the rapid rate of development that led to the single pursuit of GDP. It is therefore necessary to reexamine Jiuzhaigou’s development strategy. We need to discuss and determine the future development strategy of Jiuzhaigou before we can propose suggestions on reshaping the system.

In order to diagnose problems in JBR, we examine and restructure the SWOT analysis of this scenic area. According to the SWOT analysis, we suggest that Jiuzhaigou undergoes suitable strategic adjustment, that is, from the present strategy that stresses GDP development to the future strategy that focuses on harmonious multiple development.

When its strengths meet outside opportunities, the following should be considered: to immediately grasp the opportunities and upgrade the development strategy based on its strengths we believe JBR could and should make upgrading or changes in three aspects:

Firstly, establish a brand strategy featuring the World Heritage site and biosphere reserve status. Jiuzhaigou has been recognised by UNESCO as a World Heritage site and a biosphere reserve. The global recognition clearly distinguishes Jiuzhaigou from other scenic areas. It can develop tourism but not simply tourism. In addition to economic profits, Jiuzhaigou also brings ecological, social, political and cultural significance to the local area. Therefore, Jiuzhaigou is an important 'brand' and can upgrade its regional image to promote local development.

Secondly, modify the pace and quantitative development into qualitative development. This implies switching from the former passive development model of meeting visitors demand and supplying basic services to an active development model that can lead, control and provide high-quality services.

Finally, besides classic sightseeing, develop special tourism activities such as ecological and cultural tourism. The special tourism activities not only meet the various requirements of visitors but also bring out the advantages of the local people thereby realising the policy goal of 'enriching the people'.

When its weaknesses meet outside opportunities, JBR should use the opportunities to loosen restrictions on further development otherwise it will fail in the future. The most important is to grasp the opportunities in order to change its innate system and the weaknesses of its mechanism, which is a key step towards the sustainable development of JBR.

Firstly, grasp the opportunity to reform the system. Today, favourable conditions can be expected as the central government has put forward a policy of scientific development and the development of a harmonious society. If the government underestimates the transition period and deviates from its function this could result in greater confusion in JBR. So the priority for JBR is to settle its own system.

Secondly, change the unique profit-making pattern. The sole profit-making activity – the entrance fee – has determined the simple sightseeing model. The growth of leisure and specialised tourism provides the favourable conditions needed by JBR to turn the sole revenue source from the collection of entrance fees into various profit sources.

Finally, strengthen capacity building. It is urgent to change the present situation whereby sales outweigh scientific research and there is a shortage of human resources. In addition, JBR should actively pursue international cooperation in scientific research programmes, which will on the one hand provide a basis for its management and on the other improve the capabilities of its own staff.

When its strengths meet external threats, JBR should actively employ its strengths to prevent and eliminate external threats thus ensuring its safe and steadfast position. In its development process, JBR should not go beyond external threats. Tourism is a 'two-edged sword' with both positive and negative influences. The decision makers in JBR must always consider preventing negative effects.

Firstly, recover the government's functions. If a government over-prioritises economic development it will lose orientation and increase concern for many public affairs. In the last 20 years or so, Jiuzhaigou has experienced rapid economic progress but it has also witnessed imbalance in ecology, culture, tradition and justice. Only the government can assume responsibilities beyond economic development; the market cannot adjust or solve these problems on its own.

Secondly, carry out a harmonious people-oriented development strategy. Compared with the historical past, the local residents of Jiuzhaigou are getting richer but they are also complaining more. Some administrators find it hard to understand such a phenomenon. In fact, people make many demands depending on economic input such as justice, democracy, freedom, dignity, spirituality, morality and beliefs. To solve this problem, the principal idea is to modify the strategy from simple economic development into people-oriented development, which is exactly in keeping with the core concept of the Man and Biosphere Reserve Programme.

Finally, set up a decision-making system with community participation. Faced with the increasing complaints, the JRA needs another greater transformation, that is, transforming decision making for the people into inviting people to participate in decision making thereby endowing them with the right of self-determination. This will be the foundation for reducing complaints and achieving the biosphere reserve objectives.

When its weaknesses meet external threats, the strategy framework must carefully avoid the combined negative effects of both sides otherwise it will face one misfortune after another. Jiuzhaigou obviously has its weaknesses and limitations in terms of resources so we should not be blinded by economic development and exaggerate the successful accomplishments based on the notion that development has no limit at all.

Firstly, set up suitable and moderate development goals. The restricted scenic area, the limited resources and the fragile aquatic resources should restrict further development of tourism in Jiuzhaigou. The sharp increase of artificial facilities in the scenic area and the rise in complaints from people who are forced to give up their family hotel business can both be attributed to rapid development. Therefore, JBR managers should set up a suitable and moderate development strategy.

Secondly, provide a development model rather than funds to neighbouring areas. The Jiuzhaigou scenic area, with limited acreage and resources, has to shoulder the burden of promoting local economic development while earning money for its own conservation. As a World Heritage site and biosphere reserve, Jiuzhaigou leads local economic development. It is also responsible for the economic development of neighbouring areas and even the entire Aba Prefecture. What's more, the pressure is doubling all the time. However, its leadership should be represented by providing a development model and its own experiences to neighbouring areas rather than simply providing money. If fund provision continues, the future of Jiuzhaigou will be in danger.

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