CREATING POSITIVE SYNERGIES IN MOUNTAIN-BASED ECOTOURISM DEVELOPMENT: CASE STUDIES FROM THE YUNNAN GREAT RIVERS PROJECT

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ABSTRACT

Around the world, tourism is often viewed as a "win-win" solution for local communities and the environment, but in reality it is often a "lose-lose" proposition, especially in mountain areas. Several examples of these negative situations will be presented in order to demonstrate the challenges facing local people and conservationists during the process of tourism development. The Nature Conservancy has been working with local government agencies and communities in northwest Yunnan Province in an attempt to create models of green tourism and ecotourism that avoid the pitfalls of conventional tourism development, and progress thus far at our project sites will be summarized. The positive synergies that can be created between indigenous and scientific knowledge systems and between globalization and the interests of local communities will be explored in detail, and useful ecotourism planning and development methodologies will be summarized as well. The broader implications of ecotourism on the multi-functionality of mountain ecosystems will also be discussed in light of our experiences thus far in northwest Yunnan.

TOURISM: A PANACEA OR PANDORA'S BOX?

Tourism is often lauded by development organizations as an industry with great potential for helping to reduce poverty worldwide. The United Nation's World Tourism Organization, for example, states on their website that tourism provides important global benefits in the form of export earnings, employment, rural opportunities, infrastructure investment, and contributions to tax revenues and Gross Domestic Products. They claim that "foreign currency receipts from international tourism reached US$476 billion in 2000" and "tourism jobs and businesses are usually created in the most underdeveloped regions of a country, helping to equalize economic opportunities throughout a nation." The organization also believes that tourism has the potential to meet economic, social and aesthetic needs "while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems" (World Tourism Organization 2002). The World Travel and Tourism Council (WTTC), an industry trade organization, claims that "Travel & Tourism [has the potential] to generate almost 60 million new jobs or 252 million jobs by 2010 across the world economy" (World Travel and Tourism Council 2002).

While tourism definitely can create job and economic growth, the full picture of tourism's impacts is slightly more complex than these lofty statements, especially in mountainous areas where communities can be isolated and ecological processes are particularly fragile. The environmental impacts of tourism on mountains have been documented around the world—for example, tourism has stimulated population growth in the European Alps (where settlements have quintupled within the last 50 years) and the construction of over 600 cable cars and ski-lifts that have caused scarring of the landscape, noise and air pollution and problems with waste management (Zimmerman 1996 in East et al. 1998). At Mount Everest in Nepal, Sherpa teams have collected over 1,000 bags of garbage along the national park's hiking trails, and on Africa's Mount Kilimanjaro, 4,500 pieces of trash were found along a ten kilometer stretch of trail (Richter 1989 in Weaver 1998:148; Harcourt and Stewart 1993 in Roe et al. 1997, Box 3.5). Lama and Sherpa (1993 in East et al. 1998) estimate that an average trekking group of 15 people generates about 15 kilograms of nonbiodegradable and noncombustible garbage in about 10 trekking days. Tourists in cold mountainous areas require huge amounts of fuelwood to keep warm—one study estimated that an average trekker in Nepal requires 138 kilograms of fuelwood, varying from 55 kilograms for an individual trekker, 186 kilograms for an agency trekker, and 1,116 kilograms for a mountaineer (East et al. 1998). In the United States, tourism at places such as Alaska's Denali National Park has generated food litter that has attracted bears and conditioned some to search out human settlements for food (Albert and Bowyer 1991). The National Park Service's policy is to destroy animals (even those that are endangered) that repeatedly visit developed areas and endanger tourists. On a more general level, the National Park Service and many organizations frequently point to the danger of "loving our parks to death." Inadequate planning for large numbers of visitors in national parks has resulted

in crowding, water and air pollution, and negative impacts on the visitor experience. Generally gateway communities to these parks are poorly planned and managed. In China, road construction is often catalyzed by hopes of tourism profits, but in the process poor construction techniques result in hideous scarring of entire mountainsides and increased erosion into waterways—the superhighway construction between Dali and Baoshan is one of many examples of this type of impact in Yunnan. The cable car scaling Jade Dragon Snow Mountain in Lijiang pierces into the core area of the nature reserve and may encroach upon important habitat for alpine wildlife species. At Yunshanping, hats made from red panda fur, a threatened species protected by Chinese law, are rented to tourists to pose for photographs, and at Maoniuping, the rampant selling of souvenirs has severely impacted the visitor experience and discouraged many groups from returning.

The claim that tourism necessarily benefits local communities is also disputable. In Nepal and the Dominican Republic studies have shown that the real incomes of local people may have actually decreased as a result of tourism because of local commodity inflation and increased land prices (Stevens 1988; Freitag 1994). It is often non-locals who benefit the most from tourism development—in the Gambia and Tanzania, 55 percent and 60 percent of tourism earnings were used to purchase imports and pay expatriate managers, respectively (Farver 1985; Cater 1987 in Ankomah 1991). In Lijiang, while the increase in tourism in recent years has benefited the investors in modern hotels and large-scale tourism operations, many of the local Naxi people have been forced to change their traditional customs (such as selling food in the town square) and have moved away from their traditional neighborhoods (Peters 1999).

THE NATURE CONSERVANCY AND TOURISM IN NORTHWEST YUNNAN

In recent years, the Yunnan Provincial Government has recognized these potential negative impacts of tourism. A Tourism Master Plan for the province that was recently completed by the World Tourism Organization, and the Yunnan Provincial Tourism Bureau states that "high volume and uncontrolled visitor activities and related developments have had adverse site impacts on water resources, flora, and fauna" and emphasizes the need to "plan and develop tourism in a sustainable manner that conserves and, where needed, enhances the natural and historic/cultural resources of tourism, does not generate serious environmental or socio-cultural problems, [and] improves overall environmental quality…" (World Tourism Organization 2001).

Northwest Yunnan is particularly rich in biological and cultural diversity that has yet to be significantly impacted by tourism development. In 1998, The Yunnan Provincial Government invited the Nature Conservancy (TNC), a

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Box 1. So Why "Green" Tourism Planning?

Green Tourism is based on the principles of sustainable development—it is tourism that has a net positive benefit on the conservation of natural areas, the preservation of indigenous cultural heritage, and the livelihoods of local people, and Green Tourism Management Plans should therefore ensure that tourism not only controls its negative impacts but also provides positive contributions to conservation and communities. In more ecologically sensitive areas, plans can encourage a particular type of green tourism, *ecotourism*, which is "small-scale green tourism that provides visitors with an opportunity to directly experience the unique natural and cultural resources of pristine areas in a small group environment." For a more in-depth discussion of green tourism and ecotourism, see Bullock (2000).

U.S.-based international non-governmental environmental organization, to assist in identifying mechanisms to protect the heritage of the area. The result of this collaboration was the Northwest Yunnan Conservation and Development Action Plan, which outlines a wide array of strategies to both conserve the area's resources and improve the livelihoods of local people. This action plan has been approved as part of China's Tenth Five Year Plan, and one of its highest priority strategies is the promotion of green tourism and ecotourism as an alternative to unplanned and unregulated mass tourism. Staff of the Nature Conservancy are now working with government agencies, scientific institutions, and local communities in implementing this strategy at action sites across the region.

Significant progress on green tourism planning and ecotourism development has been made at our first action site, the Lashi Lake Watershed in Lijiang County. This paper aims to present some of the lessons learned thus far at this site in the context of the three themes for the III Montane Mainland South East Asia (MMSEA) Conference—Methodology of Research and Development, Indigenous Knowledge Systems vs./or/and Scientific Knowledge Systems, and Globalization vs./or/and Localization. Insights on one of the conference's six sub-topics, the multi-functionality of mountain ecosystems, will be discussed as well.

METHODOLOGY

At each of our action sites, green tourism and ecotourism are considered within the broader context of the integrated management of the natural and cultural resources of the

Fig. 1. **The Lashihai Ecotourism Working Group**

area. Conservation scientists from the Nature Conservancy are working with local authorities to identify each site's priority conservation targets, critical threats to those targets, and the most important strategies to abate those threats. They have also been identifying sensitive ecological areas and suggesting management prescriptions for those areas. Because ecotourism has been identified as a priority strategy at Lashi Lake, the staff of the Nature Conservancy's Yunnan Great Rivers Project have begun implementing a Green Tourism and Ecotourism Demonstration Project at the site. This project includes four primary components, including Green Tourism Planning, Community-Based Ecotourism Support, Visitor Impact Management, and Ecotourism Information Services.

Our Green Tourism Planning component provides an umbrella framework for the other project components by bringing together various stakeholders to create a tourism management plan for the site that sets clear goals for local tourism development and recommends specific management mechanisms to guide and regulate that development. To complete such a plan for Lashihai, an Ecotourism Working Group was created consisting of representatives from the Lijiang County Tourism Bureau, Lashihai Nature Reserve, Lashi and Baisha Townships, the Nature Conservancy and administrative villages from within the watershed (fig. 1). The group met in April 2001 to discuss the scope of the work and finalize a work plan for the completion of this plan by August 2001. The working group also completed a preliminary site evaluation of ecotourism potential in the Lashihai watershed at this meeting. The working group established a three-person planning team consisting of representatives from the Lijiang County Tourism Bureau, Lashihai Nature Reserve, and the Nature Conservancy to implement the work plan and present a draft document to the group for review. A full site evaluation, consisting of field surveys, tourist surveys, international and domestic tour operator surveys, and collection of existing tourism and resource information, was completed by the planning team and serves as the basis for the man-

agement plan. The plan was reviewed by both the working group and an advisory committee consisting of stakeholders related to tourism development in Lijiang, including research institutions, government agencies, and tourism operators. The draft's contents were also presented to and discussed with a large group of village representatives from the area (Lashihai Watershed Green Tourism Management Plan 2002). This planning process is based on the Nature Conservancy's experience in ecotourism planning in other countries around the world (Drumm and Moore 2002).

Green tourism management plans should provide a framework for zoning, regulations, and policies and programs that will guide later green tourism development plans, and they should limit sustainable mass tourism development that involves larger numbers of visitors to previously developed or damaged areas as well as encourage ecotourism that involves fewer visitors in more pristine and ecologically sensitive areas. The Lashihai plan recommends the creation of a green tourism management committee that will have authority to manage all aspects of tourism development within the watershed according to the principles of green tourism and ecotourism. This committee would be led by the Lijiang County Tourism Bureau and would include representatives from the nature reserve staff and townships and villages within the watershed. Ultimately, however, management of this committee should be shifted to the Lashihai Nature Reserve as its status and authority is increased. We are in the process of working with local government agencies to officially create such a committee.

Our green tourism planning process was implemented following six guiding principles that state that the plan should be as community-based, conservation-oriented, participatory, collaborative, and market-driven as possible. The planning team worked closely with all stakeholders, especially local villagers, and focused on orienting tourism to support conservation in the area. However, no tourism plan will be successful if it does not take into account market feasibility, so we also analyzed visitor interest in proposed activities as well. It is also important for the plan to be based on reliable and detailed information, so we spent considerable time completing detailed assessments of the area's tourism resources, tourism markets, and local management capacity, which added greatly to the comprehensiveness of the final plan.

We have found that this multi-faceted approach was quite effective during the planning phase, and we have attempted to use it during the execution of the plan as well. Once the plan was completed, we began implementing many of its specific recommendations related to visitor impact management, community-based ecotourism development, and ecotourism information services. Some of these activities will be used as examples in the discussion below.

Fig. 2. **Wenhai Eco-Lodge under construction**

INDIGENOUS AND SCIENTIFIC KNOWLEDGE

During the implementation of our project thus far, we have found that if an inclusive and participatory approach similar to the one described above is used, indigenous and scientific knowledge can complement each other in the planning and development of ecotourism. Often, indigenous and scientific understanding is presented as inherently in conflict, and while we have seen areas of disagreement, the inherent message has been that, at least in the realm of ecotourism, they more often than not lead to similar conclusions, and if not, there is usually room enough for both. Three specific examples are presented below to demonstrate this point:

Resource Zoning: At Meili Snow Mountain, our second project site, field teams have been researching and mapping both cultural and biological resources and values in order to determine the most important areas for protection. As Bob Moseley, conservation science director for the Nature Conservancy's China program, describes, cultural values often have a very different quality from scientifically-defined biological ones.

> [The village leader] was describing to us a landscape different from anything I'm familiar with. As a biologist, I catalog and map things that are visible, but Amu conjured a multidimensional world that reaches beyond the tangible. To him the landscape before us represented both the inner and outer worlds of his strong Buddhist beliefs. [The Nature Conservancy 2002]

Nevertheless, Moseley and his team, which included both anthropologists and natural scientists, found that cataloguing these different types of values and resources could be done with the same methods—using Global Positioning System (GPS) units to identify their locations and da-

tabases to catalogue their qualities and attributes. Many of the beliefs of local people are tied to specific geographic features, such as a "leaning boulder that represents a doorway between the inner and outer worlds of Buddhism and to landscapes covering thousands of acres" (The Nature Conservancy 2002). Moseley also found that there is often overlap between areas of biodiversity and cultural importance—areas considered sacred by local people, for example, often are pristine forests that provide important habitat for wildlife. Ultimately these areas can be designated as important conservation zones in order to protect their natural and cultural resources and limit the types of tourism and number of tourists allowed in the area.

Design of Interpretative Tours: In designing interpretative tours for visitors to Lashihai, we used a variety of both scientific and indigenous sources of knowledge. In a month-long guide training course for 28 local people, trainers included both biologists, who taught teach the students about the ecology of the lake and the natural histories of birds and plants who inhabit it, as well as a leading scholar on the culture of the area who discussed with the students the many legends and folktales that relate to the lake and its surrounding villages. Over the last several months, several of the course's graduates have been working with our staff to design an interpretative tour around the lake that introduces both cultural and scientific perspectives in interesting and dynamic ways. While the guides are just getting started and are continually improving their interpretative skills, the tours already present a good balance of both worldviews, which enables visitors to gain a much more in-depth knowledge of the place they are visiting as well as a greater appreciation for the full breadth of human understanding.

Ecolodge Renovations: In 1995, the Ford Foundation provided funding to a local cooperative in a remote upland community, Wenhai Village, to purchase a house from one of the villagers so they could convert it into a trekking lodge. Because of a lack of marketing and connections to tourism markets, they only had 152 guests between 1994 and 2000 and therefore have generated very little money for building maintenance and improvements (Mu 2002). The cooperative leaders asked us if we could help find capital to improve their lodge, and in early 2002, we received a grant from the Japanese government to help them complete a major renovation project (fig. 2). The project has three primary goals in creating accommodations that are (1) environmentally friendly, (2) harmonious with the local architecture and (3) comfortable for visitors in any season.

In order to meet these three goals, we first invited a well-known local Naxi architect to visit the lodge and draft

design blueprints for the renovations. We then held a bidding process for the contract, and ultimately chose a Bai contractor from nearby Heqing, an area known as home to builders in the area (Goodman 2000). Other contractors were identified to install a variety of alternative energy technologies—a biogas-greenhouse 4-in-1 unit, a solar water heater for showers, and a micro-hydro electricity generator. The 4-in-1 unit (bathroom, pig sty, biogas pit, and greenhouse) will provide biogas for a kitchen stove, a closed system to manage both human and livestock waste, and vegetables to feed visitors to the lodge. While these modern technologies will help make the lodge more environmentally sustainable, the overall lodge renovations have focused on maintaining and enhancing the vernacular architectural style of the village. By improving the insulation, upgrading the floors and walls, and installing modern lighting fixtures, the comfort

Fig. 3. Zhang Wenqiong, a local guide from Lashihai, leading an intepretative tour around the lake

level of the lodge is also being increased. Our process has attempted to take into account the perspectives of as many stakeholders as possible—villagers, architects, cultural specialists (a member of the Dongba Institute is helping coordinate the project), and technicians—and it is hoped that the final outcome will be a positive synergy of both scientific knowledge (e.g., the alternative energy technology and modern renovation techniques) and indigenous knowledge (e.g., the vernacular architectural style).

GLOBALIZATION AND LOCALIZATION

In addition to the question of types of knowledge emphasized in the process of development, the question of power and decision-making in that process is also critically important. This second question leads us to the second theme of the conference—globalization and localization—that can perhaps be considered a question of "the geography of power." This question is related to but independent of the question of knowledge—there can be global forces that emphasize indigenous knowledge while there can also be local forces that emphasize scientific knowledge. Arguably, however, the general trend is that global entities and scientific knowledge are teaming up to overwhelm local entities and indigenous knowledge. To combat this trend and give more power to these local entities and more voice to indigenous knowledge, we have been working with our local partners to give them the skills they need to interact with a global marketplace while not changing them in any fundamental ways. Below are a few examples of attempts we have made to meet this goal:

Guide Training: As mentioned above, in cooperation with the Lijiang Prefecture and County Tourism Bureaus, we initiated a guide training course for 28 local people from within the Lashihai watershed. The course was one month long, and included components on interpretative

techniques, basic biology and ecology, ornithology and botany, and cultural heritage. The course, however, was as much about content and information as it was about giving the participants the tools and confidence to act as representatives, as "ambassadors," of their communities to the outside world. Communities in Lashihai now do not have to depend on outside guides from large non-local tour agencies to bring tourists to their villages and introduce the local sites to them—they have their own team of local guides that are capable of guiding such tours themselves. This puts the power of interpretation and regulation of tours in the hands of local people who are more knowledgeable about the area and more sensitive about its local traditions and taboos (fig. 3). Because the English speaking abilities of these local guides is still limited, we are developing partnerships with regional guides who speak good English to help guide foreign groups—that is, the regional guide provides English language translation for the local guide during the tour. We are in the process of developing an English language course for these local guides so that in the future they will be able to guide foreign groups without such translation, but that is a long-term goal.

Training in Business Planning and Management: While local villagers are usually incredibly enthusiastic about getting involved in tourism (for example, starting a homestay), unfortunately they just as often lack the business skills to make such a venture financially viable. Tourism is a business, and running a successful tourism business is a complex affair—it requires long-term investments, marketing, high-quality services, attention to safety and sanitation, reliable cash flow, smart planning and efficient organization. Many community-based tourism enterprises fail because of a lack of attention to the business side of tourism, especially marketing (Wood 1998), and so our project has strongly emphasized the importance of sound business planning and management. We drafted full busi-

ness plans for the community-based ecotourism enterprises we are working with in Lashihai, and then organized a Business Planning and Management Workshop for villagers involved with these enterprises. The first day of the workshop provided a broad overview of the principles and practices of planning and operating a business, while the second and third days were used to review the draft business plans with the villagers and give them an opportunity to make changes to the content and projections (fig. 4).

While definitely helpful, such short workshops are usually insufficient for fully building the capacity of these local enterprises, so we have continued to work with them on a regular basis in the months following this workshop. We have helped design specific operational plans and management methods for once the visitors begin arriving, including plans for labor rotations, investments in renovations and materials, and distribution of profits. We held a one-day mini-workshop on financial accounting for the Wenhai cooperative (fig.5) and helped them set up a new record of accounts based on standard accounting practices (they had previously kept only a record of costs and revenues without differentiating capital investments from their operating expenses, so they had no way to accurately calculate their annual profit). We also organized a one-day training in homestay management by local guesthouse managers for five Wenhai households who are planning to turn their homes into homestays. The villagers actually stayed at one of the guesthouses and learned directly from the staff about cooking, hospitality, sanitation, and other aspects of operating a homestay (fig. 6). By providing these villagers with these business planning and management skills, we hope to enable them to both collaborate with outside tour agencies as well as compete with larger, non-local tourism enterprises in the area.

Codes of Conduct: In addition to developing ways for communities to directly profit from tourism, it is also important to identify mechanisms for communities to control the negative impacts of tourism. One of the most common approaches is Codes of Conduct, and we have been working with our local partners in developing such codes for visitors, guides, and tour operators who come to the Lashihai watershed. These codes aim to reduce undesirable behaviors (e.g., not encouraging begging by giving candy to children or not throwing trash along the trail) as well as encourage desirable actions (e.g., taking an active interest in local traditions, making a contribution to the local Conservation and Community Development Fund), and if designed and distributed effectively, they can be a valuable way for commu-

Fig. 4. **Villager break-out group during the Business Planning and Management**

Fig. 5. **Accounting mini-workshop**

Fig. 6. **Guesthouse host explaining the importance of kitchen sanitation to Wenhai**

Table 1. Knowledge/Power Complexes

Power		Indigenous	Scientific
Global		TNC Photovoice Project CBIK ethnobotany surveys	Tourist forest treks AMATA Ski Resort feasibility study TNC Field Surveys
Local		Local villager collection of medicinal herb Local villager charcoal production	Lijiang Alpine Botanical Institute field surveys Local villager chainsaw-cutting
		Indigenous	*Scientific*

Knowledge

nities to educate outsiders about responsible tourism and reduce tourism's negative impacts.

Marketing Assistance: As mentioned above, marketing is one of the most important "keys to success" for community-based tourism enterprises, and so in order to help ensure that the enterprises we are working with do indeed get enough market exposure, we are in the process of creating the Northwest Yunnan Ecotourism Association, a non-profit organization dedicated to promoting true ecotourism in the region. This association will ultimately be able to provide marketing services to community-based ecotourism ventures throughout northwest Yunnan, although initially it will focus on enterprises in the Lashihai watershed. Services will include promotion to local and international tour operators, online marketing (a website has already been launched at http://www.northwestyunnan.com), sales and reservations, brochure and trail guide development, and promotion at tourism fairs. By pooling their resources through such an association, communities will be able to achieve the benefits of scale that larger tourism corporations possess through their sheer size and thus will be better positioned to compete with these corporations in the global marketplace. Such an association can therefore give power and voice to the local ecotourism entities of the region by utilizing some of the powerful tools of globalization. In this sense, localization and globalization are trends that can overlap and even complement each other.

MULTI-FUNCTIONALITY OF MOUNTAIN ECOSYSTEMS

Regardless of whether knowledge is scientific or indigenous, or power is local or global, mountain ecosystems require that if a certain type of knowledge or power is going to be used within their boundaries, it should meet certain requirements of sustainability. In this context, it may be useful to view all human activities as complexes of knowledge and power—knowledge being applied by a particular source of power. The activity of "chainsaw cutting by a local villager" would be one such "complex"; the villager is using a type of scientific knowledge (the use of a chainsaw) in the application of local power (his ability to cut down trees in a certain forested area). Four main types of knowledge/power complexes can be contrasted—local indigenous, local scientific, global indigenous, and global scientific (Table 1). A few examples of each type are provided for illustration, although the degree of local versus global power and indigenous versus scientific knowledge of course depends on the specific context involved (see Table 2 for more detail).

Whether or not these complexes are sustainable must be determined by an evaluation of many different factors—for the chainsaw example, the area of forest, the rate of cutting (both present and future), and the rate of forest regrowth must all be determined. Through such analysis, an "index of sustainability" can be produced for these knowledge/power complexes, which can then lead to a better understanding of the multi-functionality of mountain ecosystems (Figure 7 provides a hypothetical example of such a sustainability index).

While a comprehensive and systematic analysis has not been done for all such "complexes" in mountain areas, evidence shows that at least in northwest Yunnan unsustainable complexes are seeming to win the day. The Northwest Yunnan Conservation and Development Action Plan (2001), for example, concludes that:

Conflicts between the region's population growth and accelerated utilization of natural resources are intensifying to a degree greater than ever before … [This] population growth and a lack of arable land in Northwest Yunnan has resulted in years of rampant logging.

Table 2. Descriptions of Knowledge/Power Complex Examples

Knowledge/Power Complex Example	Description
Local Indigenous	
Local villager collection of medicinal herbs	Villagers who collect medicinal herbs usually depend on knowledge passed on to them by family members, and their range of collection is generally localized to the forests around their village.
Local villager production of charcoal	Villagers who produce charcoal usually use methods they have developed locally and use wood from local forests.
Local Scientific	
Local villager chainsaw-cutting	Villagers who use chainsaws are using skills and technology introduced from outside their community
Lijiang Alpine Botanical Institute field surveys	This local organization often conducts scientific surveys of the forests of Lijiang, using modern classification and collection techniques.
Global Indigenous	
The Nature Conservancy's Photovoice Project	The Conservancy Photovoice Project provides cameras to local villagers so they can "document" their lives in an interesting and dynamic format. Stories and issues raised through the process are told to larger audiences that include policymakers through publications, reports, and exhibits
CBIK ethnobotany surveys	CBIK, the Center for Biodiversity and Indigenous Knowledge, often conducts ethnobotany surveys that focus on local uses of plant species for medicines
Global Scientific	
Tourist Forest Treks	Tourists trekking in forests often come from a scientific world view and are by definition non-local.
AMATA Ski-Resort feasibility study	AMATA, a Thai development company, completed a professional feasibility study for a ski-resort on Yulongxueshan in the late 1990s, which concluded that the mountain was not suited for skiing.
The Nature Conservancy's surveys	The Conservancy conducts scientific field surveys to determine the levels of biodiversity at its project sites around the world

In addition, cropland cultivation and livestock grazing has taken place at the expense of the region's natural forests and alpine meadows. These activities cause erosion and pollution and further contribute to environmental deterioration in the region. [The Nature Conservancy and Yunnan Provincial Government 2001:9–10]
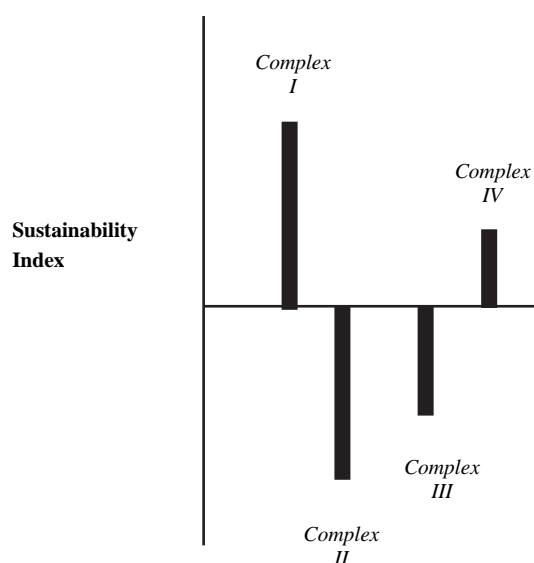
Fig. 7. Index of sustainability

By looking at the primary human activities in the area and different functions that mountains serve more closely, we can begin to understand the underlying causes of this bleak picture. Various mountain functions are listed in Box 2 and divided into extractive and non-extractive uses. Arguably, local communities in the past probably lived in more "harmony" with their environment than they do today, and these extractive and non-extractive functions were probably in general equilibrium and balanced each other out. Social and religious taboos were probably strong enough to prevent over-exploitation of local resources and ensure that people lived more sustainably, although admittedly this may not have always been the case. If we assume, however, that it was the *general* case, what caused a departure from this equilibrium?

There are undoubtedly a plethora of reasons, but one of the most probable is the growth of a robust and accessible cash economy in the region. By engaging in cash economies, local communities exposed themselves to an entirely different value system. This new and powerful system may not have taken into account all of their original values, especially those that are based on their ethics or religion and not their daily economic needs. In cash economies, tangible objects such as food or wood generally have a greater value than intangible ideas such as traditions or beliefs. It is much easier to put a dollar figure on a stack of lumber than on the religious sacredness of an old-growth forest, for example, or the long-term value of

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│          Box 2. Mountain Functions       │
│                                          │
│  Mountains provide:                      │
│                                          │
│  Extractive Functions   Non-Extractive Functions │
│                                          │
│  Food                  Religious Inspiration │
│  Water                 Wildlife Habitat  │
│  Timber for House      Scenery for Tourists │
│  Construction                            │
│  Fuelwood                                │
│  Non-Timber Forest                       │
│  Products (NTFPs          ·        ·     │
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the biodiversity found in that forest. Part of the reason is that cash economies often emphasize short-term benefits over long-term benefits. This issue can be understood in the context of different types of "values":

· **Commodity Value:** The value of something "if it can be made into a product that can be bought or sold in the marketplace"
· **Amenity Value:** The value of something "if its existence improves our lives in some nonmaterial way"
· **Moral Value:** The value of something independent of any use to which we put it; that is, its value in and of itself
· **Option Value:** The value of something's future potential to become useful to humanity (Norton 1988)

It is relatively easy for people to calculate the commodity value of goods in a cash economy, but it is more difficult for them to estimate amenity, moral, and option values. Commodity values and commodities themselves therefore tend to dominate cash economy societies. For mountain communities newly exposed to cash economies, the impact can be quite intense as they are introduced to an incredible array of new material choices, from televisions to refrigerators to Land Rovers. With all of these new choices available, mountains take on a new function—the production of cash to buy these new products.

This new function of cash production can quickly overwhelm other functions and become a major driver of environmental deterioration. It is within this context that tourism has the potential to make a contribution to sustainable development and somewhat balance out the equation between extractive and non-extractive functions. Tourism is relatively non-extractive itself, but unlike other non-extractive mountain functions such as sacred forests or wildlife habitat, tourism can make money. Tourism therefore enables communities not to have to rely on extractive activities—logging, hunting, etc.—to participate in the cash economy. Additionally, because many tourists are interested in the non-material aspects of mountain communities—cultural traditions, religious beliefs, etc.—that en-

courage respect for nature, tourism also can help reinforce the amenity and moral values of these communities.

As pointed out above, of course not all type of tourists show such interest and not all types of tourism provide direct economic benefits to communities, and in these cases tourism either has a neutral or negative impact on the environment and cultures of an area. By implementing some of the activities outlined above that the Nature Conservancy has been working on in northwest Yunnan, however, we believe it is possible for tourism to play this hoped-for role of support for mountain communities. One specific mechanism we are implementing is the above-mentioned Conservation and Community Development Fund concept. Approximately 50 percent of the recently created Lashihai Fund will go to conservation activities (such as reforestation or wetland restoration projects) while the other 50 percent will go to community development activities (such as school renovations, educational scholarships, etc.). All of the community-based ecotourism enterprises we are working with in Lashihai have pledged to give 10 percent of their profits to this fund, and visitors are encouraged to make additional donations as well. Although we have only had a few tours to the area thus far, visitors have already donated almost RMB 1,000 to the fund voluntarily.

If we take a step back, we can see this fund has further significance. Looking back at the list of mountain functions in Box 2, it is clear that many of these functions are enjoyed by both downstream and upstream populations. Thus far in this paper, multi-functionality of mountain ecosystems has only been discussed within the context of upstream communities themselves, but it also applies to the relationship between upstream and downstream areas. Also because of the limitations of cash economies, people living downstream usually do not pay for the services they enjoy from mountains, water quality and flood control being two of the most obvious. Since tourists to mountain areas are most often from more populous lowland areas, tourism receipts can in one sense be viewed as surrogate payments for the watershed and other services that mountains provide to downstream populations.

CONCLUSION

Tourism is obviously a complex enterprise that can have both positive and negative impacts on the environment, cultural heritage and local communities. A Chinese proverb perhaps provides an apt metaphor for the industry: *"Shui neng zai zhou, ye neng fu zhou"* [Water can both sustain and sink a ship]. Tourism can help keep local communities and their environments and cultures afloat, but it can also contribute to their deterioration and ultimate disappearance. Organizations such as the Nature Conservancy are working to ensure that tourism does indeed contribute to the conservation of natural and cultural resources and

the improvement of local communities' livelihoods. From our work thus far in northwest Yunnan, we have found that green tourism and ecotourism development does indeed have the potential to achieve this goal by creating the types of positive synergies between indigenous and scientific knowledge and the forces of localization and globalization discussed above. Income earned directly by villagers and through a Conservation and Community Development Fund can also provide more support for the non-extractive, long-term, amenity and moral-based functions of mountainous areas, which are critical for maintaining the quality of life, in the broadest sense of the term, of both upstream and downstream communities.

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