



Changbaishan Nature Reserve, Jilin Province. Photo by Shen Xiaohui

# PART 3: LAND PROTECTION IN PRACTICE

# I. TOOLS & STRATEGIES

As Part 1, Lay of the Land, describes, China is a mega-diverse country and is home to more than 10% of the world's plant and animal species. At the same time, biodiversity is under increasing threat from the rapid conversion of China's rural countryside. With no sign of growth slowing, effective land protection is becoming progressively more important to the persistence of the country's, and the world's, wealth of biodiversity.

Fortunately, China has a history of land protection efforts. Two thousand years ago, the Qin Dynasty (221-207 BCE) protected mountains for imperial hunting grounds (Xu & Melick, 2007). More recently, in the 1920s the government began establishing scenic areas, and in 1956, the government designated the Ding Hushan Nature Reserve in southern China's Guangdong Province as the country's first official protected area. Today, protected areas (particularly nature reserves) are the most widely-recognized and most frequently applied means for protecting land in China. They are not, however, the only means.

While China boasts a relatively extensive protected area network, there is general acceptance that it is not effectively conserving the full suite of species and ecosystems that represent the nation's biodiversity. In the mid-1990s and in response to becoming a signatory to the Convention on Biological Diversity, China developed a Biodiversity Action Plan that recognized the inadequacy of the protected area system at that time (Ministry of Environmental Protection, 1994). Expanding on and updating the first plan, the government released a second national plan in 2010: *The National Biodiversity Conservation Strategy and Action Plan (2011-2030)*. The plan assesses the progress of China's environmental initiatives over the last two decades through the use of systematic planning that incorporates technical support from conservation organizations like The Nature Conservancy. The plan sets forth an ambitious agenda for future conservation, including (Ministry of Environmental Protection, 2011):

- Identifies 35 Priority Areas of Biodiversity Conservation;
- Requires that 90% of China's critical species and key ecosystems be protected by 2015; and
- Requires that China's biodiversity be "effectively protected" by 2030.

Each province in China is developing its own more detailed plan. Sichuan has already done so and aims to add at least five new protected areas and has committed 930 million RMB toward their management (Watts, 2010). Qinghai is in the process of developing a plan and others will likely follow.

Achieving the “effective protection” goal of the Biodiversity Action Plan has been, and will continue to be, a challenge given China’s current land tenure regime and tradition of land tenure reforms (see Part 2, Land Tenure). Effective land protection requires lasting and enforced restrictions on activities that may negatively impact biodiversity. Yet perpetual protection in China is complex because tenure security and enforcement are highly variable, and use rights have limited durations of 30-70 years. Over the last 60 years, tenure security and enforcement have improved, but still vary widely throughout the country. Use rights have been trending toward longer durations and greater enforceability, but there is still limited certainty of stability for the tenure of any one piece of land over time. Even protected areas are vulnerable to withdrawals and illegal developments (see Chapter II, Protected Area Reference Guide). Even within the core areas of nature reserves, which are the most restrictive zones within the most stringent protected areas in China, it is not uncommon to find buildings, resource extraction, or unauthorized tourism. To be effective, future land protection efforts must address these challenges.

There are, in fact, a variety of ways to achieve more effective protection of biodiversity in China. In April 2011, The Nature Conservancy (TNC) held a land protection conference in China, during which participants characterized the conservation opportunities in China as follows:

- Strengthen the management of existing protected areas
- Designate new protected areas, including National Parks
- Support new private tools outside of protected areas

The first opportunity—strengthening the management of protected areas – is well-documented in the literature. The second strategy is currently being tested by provincial governments in Yunnan and Heilongjiang. The third strategy is the least explored and applied on the ground to date. To be successful, all of these opportunities will require public-private partnerships and careful consideration of stakeholder needs.

This chapter explores all of these possibilities with the hope of sparking additional land protection efforts by the Chinese government, NGOs, and/or private developers. Subsequent chapters provide a protected area reference guide and case studies, which offer real-world examples of these tools. The discussion involves broad concepts and ideas, seeking to open the door to conversations rather than to explain in detail how all of the tools might be applied in China.

**Figure 3–1. China has an extensive protected area network, including Sichuan Province’s Wanglang Nature Reserve. Wanglang is one of China’s most famous nature reserves and protects giant pandas. Photo by Jiang Shiwei**



## A. Strengthen the Management of Existing Protected Areas

China’s protected area network covers a wide range of biological values, including terrestrial ecological resources, geological areas, freshwater, oceans, and others (Figures 3–1 and 3–2).<sup>127</sup> The most common types of terrestrial protected areas include nature reserves, forest parks, and scenic areas, which total more than 5,000 units and cover approximately 19% of the country (Table 3–1). Nature reserves are the most common in terms of number (2,541) and area (148 million hectares or 15% of the country). The area covered by nature reserves alone exceeds the global average of 12.2% of land area covered by protected areas (Figure 3–3) (UNEP WCMC, 2008).<sup>128</sup> There are nearly as many forest parks as nature reserves, but nature reserves cover far more area (Table 3–1). National parks were new to China as of 2006. Section II, Opportunities, describes national parks in more detail. There are also two types of international designations designed to protect terrestrial ecological resources: Biosphere Reserves and World Heritage sites. These designations typically overlay other designations in whole or in part. There are 28

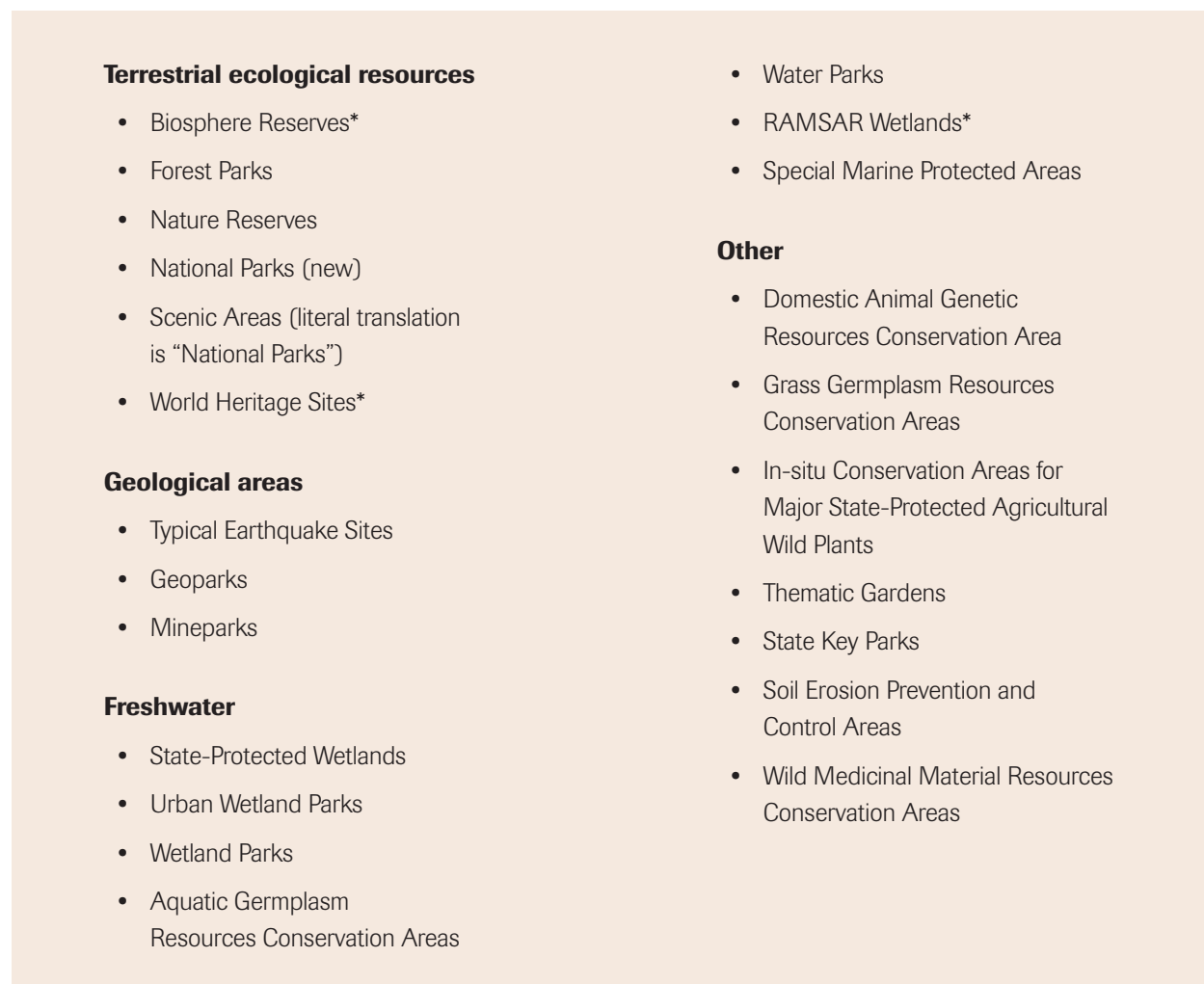
---

<sup>127</sup> A protected area is defined as, “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (IUCN, 2008).

<sup>128</sup> Based on an assessment of 236 countries.

biosphere reserves covering nearly 8 million hectares, and 12 World Heritage Sites designated wholly or partially for natural values (plus 29 additional sites designated for cultural values). These designations frequently overlap with domestic designations, and are thus not counted in the total (see Chapter II, Protected Area Reference Guide).

**Figure 3–2. Types of protected areas in China, grouped by primary resource protection goal.<sup>129</sup>**  
Adapted from (Wikipedia)



\* International Designations

<sup>129</sup> Note that protected area designations can and often do overlap in whole or in part. The overlap is especially true for international designations. Rarely, if ever, does an international designation stand alone without overlying a “Chinese-defined” protected area. For example, the Three Parallel Rivers of Yunnan Protected Areas World Heritage Site encompasses Pudacuo National Park and surrounding areas, and all 28 Biosphere Reserves cover nature reserves. Over time, the government has learned that such overlap creates management complexity. Therefore, overlap is less common now than in the past.

**Table 3–1. Area and number of protected areas for terrestrial ecological resources**

The protected areas are listed in descending order of number by designation type

Type	Number	Thousands of hectares	Percent of land in China*	Source
<b>Nature Reserves</b>	2,541	147,735	15.5%	(Ministry of Environmental Protection, 2009)
<b>Forest Parks</b>	2,458	16,525	1.7%	(Zhang & Long, 2010)
<b>Scenic Areas</b>	906	18,240	1.9%	(Xinhua News Agency, 2009)
<b>National Parks</b>	2	80	0.01%	(MacLeod, 2008) (Wang, 2010)
<b>Total</b>	<b>5,907</b>	<b>182,580</b>	<b>19.11%</b>	

\* Assuming a total land area of 956 million hectares

There are a number of ways to distinguish amongst the different types of protected areas (Table 3–2). For one, they vary by managing agency; for example, SFA manages most nature reserves while the Ministry of Housing and Urban-Rural Development (MOHURD) manages scenic areas. In terms of ease of establishment, which is a fundamental consideration for land protection, it may be easier to create forest parks than the other protected areas because SFA has the independent ability to designate them. Interestingly, perceived popularity of these areas among Chinese vs. foreign tourists also differs. Whereas scenic areas seem to attract the most domestic tourists, it is expected that foreigners may be more attracted to nature reserves and national parks based on name recognition. Such perceptions are important for the revenue-generating potential of an area. Finally, potential for biodiversity protection differs between areas. Ambiguous guidance and illegal development notwithstanding, it is clear that the core areas of nature reserves are designed to provide the most stringent protection to natural resources, followed by the buffer zones of nature reserves. Outside of these areas, the experimental and outer protection zones of nature reserves and all other terrestrial protected area designations are more or less comparable in terms of protection (or lack thereof). This observation is reflected in IUCN ratings that Chinese experts have given to nature reserves, forest parks, and scenic areas (Table 3–3). (The Nature Conservancy, 2007) (The Nature Conservancy, 2008)

**Figure 3–3. Location of nature reserves and the 51 model nature reserves (The Nature Conservancy, 2007) (The Nature Conservancy, 2008)**



- |                           |   |                            |
|---------------------------|---|----------------------------|
| 1. Gaoligongshan (Yunnan) | 18. Neilingding-futian                    | 35. Maolan                 |
| 2. Chongmingdongtan       | 19. Zhanjianghongshulin                   | 36. Dongzhaiganghongshulin |
| 3. Yangzte                | 20. Jinggangshan                          | 37. Bawangling             |
| 4. Songshan               | 21. Fenglin                               | 38. Shimenhupingshan       |
| 5. Wulingshan             | 22. Liangshui                             | 39. Dongdongtinghu (Hunan) |
| 6. Dongzhai niaolei       | 23. Huzhong                               | 40. Poyanghuhouniao        |
| 7. Neixiangbaotianman     | 24. Sanjiang                              | 41. Baimaxueshan           |
| 8. Shennongjia            | 25. Zhalong                               | 42. Xishuangbanna          |
| 9. Dafengmilu (Jiangsu)   | 26. Changbaishan                          | 43. Gansulianhuashan       |
| 10. Shuangtaihekou        | 27. Dalaihu                               | 44. Baishuijiang           |
| 11. Huanghesanjiaozhou    | 28. Helanshanshuiyuanhanyanglin (Neimeng) | 45. Hanma                  |
| 12. Pangquangou           | 29. Zhumulangmafeng                       | 46. Helanshan (Ningxia)    |
| 13. Foping                | 30. Bayinbuluketiane                      | 47. Kekexili               |
| 14. Changqing             | 31. Hanasi                                | 48. Qinghaihuniaodao       |
| 15. Baxianshan            | 32. Jinyunshan                            | 49. Wanglang               |
| 16. Tianmushan            | 33. Maershan                              | 50. Wolong                 |
| 17. Wuyishan              | 34. Fanjingshan (Guizhou)                 | 51. Tangjiahe              |

**Table 3–2. Qualitative comparison of types of terrestrial protected areas (Guangzhi, 2010)**

Type	Primary focus <sup>130</sup>	Managing agency	Qualitative rankings (very high, high, medium, low)			
			Ease of establishment	Potential for biodiversity protection <sup>131</sup>	Popularity with Chinese tourists	Likely appeal to foreign tourists (based on name)
Nature Reserves	Protect ecological values	Usually State Forestry Administration or Ministry of Environmental Protection	Low	Very high	Low	High
Forest Parks	Protect forests	State Forestry Administration	High <sup>132</sup>	Medium	Medium	Low
Scenic Areas	Tourism and protection of beautiful places and ecological values	Ministry of Construction	Low	Low	Very high	Medium
National Parks	Protect ecological values	To be determined	To be determined	High <sup>133</sup>	High	Very high
Biosphere Reserves	Protect ecological values	?	Medium	Very High	Low	Very high
World Heritage Sites	Protect natural values	Ministry of Construction	Medium	Medium	Very high	Very high

<sup>130</sup> While there are some practical variations in the purpose of the different protected areas, is hard to distinguish them based on the Chinese characters in the available guidance.

<sup>131</sup> If managed according to law.

<sup>132</sup> Forest Parks may be somewhat easier to establish than nature reserves and scenic areas because SFA is the sole agency with the authority to establish them. Biosphere reserves and World Heritage sites, the international designations, may also be relatively easy to create because they typically overlap existing designations and do not necessarily require changes of use within them; however, only protected areas with high resource quality may qualify.

<sup>133</sup> At present, there is no national guidance for the creation and management of national parks – only provincial-level (Yunnan). That being said, according to the standard for national parks developed by the Yunnan Forestry Bureau, in theory national parks should have the same status as national parks in the U.S. and be classified as IUCN category II (i.e., high, on this chart). They are expected to offer somewhat more development and therefore somewhat less protection than nature reserves, but less development and more protection than scenic areas.



**Table 3–3. IUCN Categories for forest parks, nature reserves, and scenic areas, adapted from (Rao, 2004) (Jiang, 2004) (Guangzhi, 2010)**

Type of Protected Area	IUCN Category
<b>Forest parks</b>	<b>II, V, VI<sup>134</sup></b>
<b>Scenic areas</b>	<b>II, III, V<sup>135</sup></b>
<b>National parks</b>	<b>II</b>
<b>Nature reserves</b>	<b>varies by type and management zone</b>
<i>Nature reserves by type</i>	
• Natural ecosystems	I, II, V, or VI
• Species	IV
• Natural relics	III
<i>Nature reserves by management zone</i>	
• Core	Ia
• Buffer	Ia or Ib
• Experimental	II or VI
• Outer protection	V

IUCN categories include: 1a—Strict Nature Reserve; 1b—Wilderness Area; II—National Park; III—Natural Monument or Feature; IV—Habitat/Species Management Area; V—Protected Landscape/Seascape; VI—Protected Area with Sustainable Use of Natural Resources (IUCN, 2008).

<sup>134</sup> Rao (2004) identified forest parks as II or VI. Jiang (2004) identified them as III.

<sup>135</sup> Rao (2004) identified scenic areas as V. Jiang (2004) identified them as II, III, or V.

**Figure 3–4. Operational funds in protected areas are often limited, which challenges the ability to prevent poaching. Photo by Xu Jian**



Effective management of protected areas has been a challenge since their inception. “The Chinese government has often been more concerned with the numbers and total area of reserves rather than their effectiveness,” write Xu & Melick (2007). From 1956-1978, under Chairman Mao’s direction, the Central Government designated protected areas according to a national protected area plan, focusing on quantity over quality and providing limited resources for protected area management. Central authorities appointed key staff, and rarely did local governments or local communities actively participate in designation and administration. As a result, there was little local buy-in for these early protected areas, and local governments were reluctant to help manage them. Furthermore, the Central Government was “unwilling and unable” to finance the new protected areas (Jim & Xu, 2004).

Starting in 1978, the Central Government made fundamental changes to protected area creation and management as part of its broader economic reforms. Chairman Deng recognized the revenue-generating potential of protected areas, and pressure was growing internationally and domestically for nature conservation. In response, the government identified quantitative goals for protected area designation which local governments were responsible for meeting.

**Figure 3–5. Conflicting needs for land use in protected areas can result in construction, such as in the Upper Yangtze Fish Nature Reserve below. Photo by Yang Yong**



Unfortunately, although local buy-in was greater for these new protected areas, many were still ineffective in protecting resources. They were designated with limited or no guidance; many were established without a scientific basis, there were significant funding limitations, and unresolved tenure issues abounded (Jim & Xu, 2004).

By the late 1990s, the Central Government reported that at least one-third of protected areas suffered from “the three withouts”: recurrent funding, a management agency, and staff (State Council, 1998). These problems remain today. Other major challenges and associated opportunities are described below (Coggins, 2000) (Ervin, 2003) (Jim & Xu, 2004) (Liu, et al., 2003) (MacKinnon & Xie, 2008) (Protected Areas Task Force, 2004) (Xu & Melick, 2007):

**Increase funding and staffing**—Funding for protected areas has increased over time, but remains inadequate, particularly for operational costs. Protected areas can receive significant funding for their creation, but there is limited funding for ongoing maintenance and basic operations, including patrolling (Figure 3–4). As recently as the year 2000, the funding for China’s nature reserves was approximately 13% of the global average for developed and developing countries combined, and less than the average for developing countries (see Part 2, Land Tenure). Most funds are spent on national-level, high-profile sites while the majority of sites receive next to no funding. Some of the most important protected areas for biodiversity lie in the most cash-strapped provinces and counties, which are responsible for funding operations and maintenance. Where funds do exist, the bulk is typically expended on infrastructure development rather than conservation activities such as monitoring and patrolling. Because operational budgets are often inadequate and staffing is limited, it is not uncommon for profit-making enterprises to be established in nature reserves, legally or illegally.

**Figure 3–6. Logged and grazed area inside Dafengding Nature Reserve, Sichuan. Photo by Steve Blake**



**Resolve tenure issues**—Boundaries for nature reserves are rarely marked on the ground, and are often ignored in practice. As a result, protected areas may not provide any better protection than the areas outside of their boundaries. In some cases, protected areas are established without regard to household use rights or traditional uses, and resettlement is not uncommon. There are even instances when forest bureaus have identified potential nature reserves without actually going to the field to learn about tenure. Furthermore, conflicting needs for land uses may take precedence over nature reserve protection (Figures 3–5 and 3–6). For example, a policy requiring the construction of a road to every administrative village has trumped protected area tenure restrictions in many places. In many instances, intermixed collective and state lands can also challenge reserve management. For example, in Meihuashan Nature Reserve in Fujian Province, the government controls less than 25% of the area within the reserve boundary, while collective land managers control the remainder.

**Improve community support**—Local people living around and, sometimes, in protected areas depend on the resources within them, such as fuelwood, timber for construction, fish, or grazing lands. Therefore, protected areas can effectively conserve nature only with the support of local people. However, rarely are these key stakeholders involved in the identification, planning, or

management of protected areas. Lack of community buy-in can prompt local people to abandon sustainable uses and accelerate natural resource extraction once an area is established as protected, as they fear that their access will be prohibited altogether. Conflicts of interest between the local government, local communities, and the managing agency are not uncommon.

To resolve these challenges, over the last 20 years, the government has started to emphasize the quality of protected areas—not just quantity—through the passage of legislation. For example, the government has drafted (but not adopted) several laws to create a comprehensive “protected area law” that would apply to all types of protected areas (Figure 3–7). Additionally, starting in 1991, the Central Government issued policies to enhance the consistency of nature reserve designation and management.<sup>136</sup>

**Figure 3–7. Sample provisions of the Protected Areas Act (Draft 2006) designed to improve the management of protected areas**

- Included the conservation of biodiversity in the stated purpose: “to strengthen the establishment and management of Protected Areas, conserve natural resources, ecosystems and biological diversity; maintain ecological security; promote harmony between man and nature; and guarantee sustainable economic and social development of China” (Article I).
- Stated that scenic areas and nature reserves are not allowed to overlap, and that planning should be coordinated to address any overlap issues [for already-established protected areas] (Article XI).
- Encouraged the involvement of the public—including “domestic and foreign” persons—in the management of protected areas (Article XII).
- Recommended that protected area managers sign agreements with local people regarding any restrictions of use, and that “reasonable compensation” be provided to any residents who must move out of protected areas (Article XV).
- Allowed nature reserve authorities to accept donations from foreign organizations and individuals for the establishment and management of protected areas.(Article XIV).

---

<sup>136</sup> Examples include: The Application, Assessment, and Ratification Method for Protected Areas Seeking a National Rank; National Principles for Categories and Grades for Protected Areas; and Protected Areas Regional Demarcation Scheme. Note that although the direct translation for all of these titles is “protected areas,” Guangzhi (2010) believes that all of the policies pertain to nature reserves specifically.

**Figure 3–8. The Chongming Dongtan Nature Reserve near Shanghai is one of the 51 model reserves. Photo by nature reserve staff**



Efforts are also being made to strengthen protected area management on the ground. In addition to the government’s issuing of the Biodiversity Action Plan, which is designed in part to strengthen nature reserve management, the State Forestry Administration and TNC created 51 model nature reserves across the country (Figures 3–3 and 3–8) (The Nature Conservancy, 2010). This effort was an outgrowth from a partnership between the Beijing Garden & Forestry Bureau and TNC. In 2007, these organizations began discussing opportunities for “global-standard interpretation” in Chinese nature reserves, starting with **Songshan Nature Reserve** outside of Beijing (see Chapter III, Case Studies). SFA or other agencies could consider expanding the network of model nature reserves, potentially with the continued involvement of TNC and/or other NGOs. The government might also consider private management of protected areas, recognizing that any private party would need to have a vested interest in maintaining the values for which the protected area was established.

## B. Designate National Parks and Other New Protected Areas

In addition to strengthening the management of existing protected areas, the government may designate additional protected areas to reach its goals under the *National Biodiversity Conservation Strategy and Action Plan (2011-2030)* (Ministry of Environmental Protection, 2011). Ideally, such designation would be based on a nationwide and systematic analysis to identify the right places for new protected areas (Niu, 2011). Theoretically, designations may include traditional forms of protected areas such as nature reserves, and could include new types of protected areas such as National Parks.

The National Park concept is relatively new to China. There are two national parks in China at present—**Pudacuo National Park** established in 2006 by the Yunnan Forestry Administration, with the assistance of TNC (Figure 3–9; see Chapter III, Case Studies), and **Tangwanghe National Park** in Heilongjiang Province, which was jointly proclaimed by the Ministry of Environmental Protection and the National Tourism Administration in 2008. These efforts are the same in name only—they were completed by different agencies in different locales and under different guidance. With more than 5,000 nature reserves, forest parks, and scenic areas in place throughout China, not to mention the myriad of other types of protected areas, one might wonder why the government created a new model with national parks. Why not just change the rules governing the existing models in order to solve problems?

National parks provide an opportunity to generate much more income than nature reserves, while protecting biodiversity more effectively than scenic areas. Scenic areas and nature reserves/forest parks are perceived to lie at opposite ends of the conservation and income generation spectrum, and no other traditional Chinese protected area models lie in between. Scenic areas tend to be tourist magnets, especially among Chinese natives. They generate significant revenue and are therefore generally supported by governments and local people. But they typically provide only limited conservation benefits because they emphasize tourism development—not biodiversity protection. At the other extreme, nature reserves can provide much greater protection to biodiversity since no human use is allowed, at least not in core areas, but they can drain local government budgets. With the exception of popular reserves such as those protecting pandas, nature reserves tend to generate little if any income; this is generally true for forest parks as well. As a result, they are often rife with illegal activity and lack the funding and motivation to stop it.

National parks can provide a “middle ground.” They can protect biodiversity and generate substantial income, in part because they offer a fresh new name to attract investment and tourists (Figure 3–10). In recognition of this opportunity, TNC promoted the national park concept to the Yunnan Provincial Government in the late 1990s. In 2006, Pudacuo National

Park opened its doors to the public as China's first national park,<sup>137</sup> generating much revenue in the process—117 million RMB in 2009 alone (up from 6 million RMB in 2005) (chapter III, Case Studies).

Under direction from the Central Government, in 2008 Yunnan was designated as the pilot province for national parks (State Forestry Administration, 2008). Yunnan plans to create 11 more national parks by 2020, the next 4 of which are Meili Snow Mountain, Lijiang Laojun Mountain, Xishuangbanna, and Pu'er (State Forestry Administration, 2008). However, national parks will not truly be “national” until the Central Government fully embraces them. While the Ministry of Environmental Protection and the State Forestry Administration have approved the parks in Heilongjiang and Yunnan, the Central Government as a whole must create guidance and a management structure to support the creation of parks across the country.

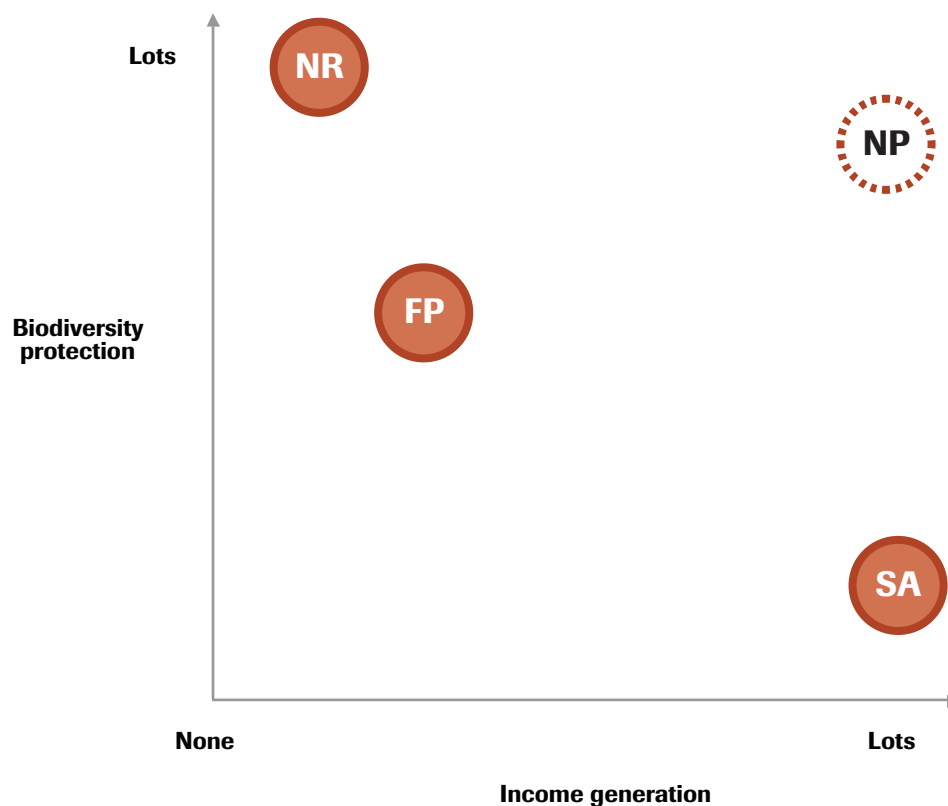
**Figure 3–9. Pudacuo National Park aims to protect resources while generating revenue through tourism. Photo by Zhu Li**



<sup>137</sup> In 2008, the Ministry of Environmental Protection and the National Tourism Administration announced the creation of Heilongjiang Tangwanghe National Park as China's first (People's Daily Online, 2008). However, in terms of timing, Pudacuo would be the first national park since it was created in 2006.



**Figure 3–10. How local governments and conservation practitioners likely view the values of an average Nature Reserve (NR), Forest Park (FP), Scenic Area (SA), and National Park (NP) in terms of biodiversity protection and income generation**



## C. Support New Private Tools Outside of Protected Areas

To date, land protection efforts in China have almost exclusively been led and managed by the government. However, the increasing transfer of use rights from the government and collective land managers to individuals presents new opportunities for conservation by private parties such as NGOs and developers, who can acquire use rights for extended periods of time in order to protect natural values. Models for such efforts include private reserves, conservation developments and certification projects. All of these tools may involve the acquisition of use rights through conservation leases or easements.

There is immense opportunity for increased use of these tools in China. Environmental NGOs were new to the country less than 20 years ago, with the establishment of Friends of Nature in 1994. Today, more than 3,500 environmental NGOs tackle issues from pollution control to environmental education to public involvement (People’s Daily Online, 2008) (Wu, 2002), but few have direct involvement in land protection. Some of the larger organizations such as The Nature Conservancy, World Wildlife Fund, and Shan Shui Conservation Center have the greatest involvement, but due to limited budgets and staff, as well as political constraints, they

are mainly conducting small-scale demonstration projects in cooperation with local or central government. Only if tools or models consistently generate positive results, will it be possible to secure stronger and more widespread government support for land protection efforts and policy changes that may be applied at larger scales and have greater conservation impacts. Thus, although the use of private tools, where applied, has been promising in conserving biodiversity, such efforts are still relatively few and far between as this section illustrates.

There are some key similarities and differences between the tools described herein. Private reserves and conservation developments are similar in that they include a small amount of development while protecting the majority of a parcel for its conservation values. The main difference between them is the source of income: Private reserves rely primarily on private financing and donations, while conservation developments include a significant commercial revenue generation component. Certification projects, by contrast, typically secure income from the sustainable management and harvest of natural resources, such as forests, over most or all of a parcel, under recognized standards such as those from the Forest Stewardship Council. For any of these tools, private acquisition of use rights could take one of two forms – long-term conservation leases or conservation easements, though only the former has been applied in China at present.

It should be noted that there are risks to the use of any private conservation tool in China. Politically, the tools may be perceived as a way to help rich people to grab lands in the name of conservation. Technically, there is no good legal or policy basis for regulating and monitoring the impact of private development activities, so conservation achievement all depends on the goodwill of the developers and conservation organizations (Niu, 2011).

## i. Private Reserves

For the purpose of this book, we define private reserves loosely as areas that non-governmental entities establish to protect ecological values, and that rely largely on private—not governmental—financing and donations. The governmental may or may not recognize these areas formally as protected areas. Unlike some other countries around the world, such as many Latin American countries, China does not have a private reserve law (Environmental Law Institute, 2003). Nonetheless, while private reserves are believed to be few and far between in China, there are examples of established and newly forming projects.

As one example, an individual by the name of Huang Nubo has acquired the use rights to millions of hectares surrounding a mountain called **Mustagh Ata** (meaning “father of all icepeaks”) in the Xinjiang Autonomous Region in rural northwestern China. Huang, a philanthropist and an impassioned mountaineer, was concerned about the vast amounts of litter he observed on Mustagh Ata, which is the second highest of the mountains that form the northern edge of the Tibetan Plateau. Huang saw an opportunity to clean up the mountain while aiding the local nomads and farmers, who were competing with each other for the scarce resources of the arid environment. He worked with the local people to establish a tourist guide service that prohibited vehicles in the area, required that tourists use camels and be guided by the local people, and stipulated that all human waste be packed off of the mountain. By charging a rate of 100 RMB per camel trip, a guide working for three months can feed his or her family

for the year. And by tying the locals' incomes to the tourist attraction, the locals have had an interest in cleaning up and maintaining Mustagh Ata. Huang profits little, if any, from this venture—his conservation vision and passion fueled the project (Huang, 2011).

A very different scenario prompted the creation of the **Yu Jia Shan Nature Reserve** by Liu Yong. Unlike the Mustagh Ata project, which has no protected area status, Yu Jia Shan is now an official protected area recognized by the Chinese government. Yu Jia Shan covers 1,000 hectares in the heart of panda country in Pingwu County, Sichuan Province, near the world-famous Wanglong and Wolong Nature Reserves. Yu Jia Shan's claim to fame is that it is China's first, and perhaps only, private nature reserve in the country (see Chapter III, Case Studies). Creation of a nature reserve was not, in fact, the original intent of Liu, the Nature Reserve Manager. Liu originally purchased the use rights of the area for timber harvest in 1997, and in 1998 the Central Government issued the timber ban. Unable to generate meaningful income on the site through natural resource extraction Liu created a nature reserve, with local government approval, essentially as a last resort. The reserve is "private" in that it receives no regular funding from the government. Liu is operating and financing the reserve himself, and all staff are hired and funded by him—none are government employees (Liu, 2010).

**Figure 3–11. Site of the Motianling Land Trust Reserve project. Photo by Steve Blake**



Also located in Pingwu County, a third example of a private reserve is the **Motianling Land Trust Reserve Project**, led by TNC (Figures 3–11 and 3–12). This project is under development and will combine private management and government supervision. The Conservancy will acquire 50-year forest use rights to approximately 20,000 hectares of forests from the Gaocun collective, the Laohegou State-owned forest farm, and separate state-owned forest land. These entities are willing to sell the use rights to TNC because the area is subject to China’s timber ban, so it is not generating much, if any, income at present. Once TNC holds the use rights, it will establish a private reserve and build the infrastructure necessary to support a limited number of visitors every year. To fund the project, TNC is pooling donations from private philanthropists and entrepreneurs to create a foundation funding source for long term leasing, forest restoration, and maintenance. The goal is to provide enough financial benefits to the local people that they will support the project’s continuation beyond the initial contract term (Zhao, 2010).

**Figure 3–11. Community meeting to discuss the Motianling Land Trust Reserve project.**  
Photo by Zhao Peng



## ii. Conservation Developments

Also known as limited development projects, conservation developments may be defined as “projects that combine land development, land conservation, and revenue generation while providing functional protection for conservation resources” (Milder, 2007). Such projects typically develop the lower-value areas of a project site in order to finance the protection and ensure the long term viability of the most ecologically vibrant areas of a site.

The main advantage of conservation developments over private reserves is that they have greater potential to be financially self-sustaining. Of the tools available to create a robust system of land protection in China, conservation development stands out in its ability to simultaneously generate revenue and to protect sensitive ecosystems. Well-suited for areas that would otherwise be beyond the financial reach of land trusts or conservation groups, conservation developments combine land protection, limited development, and revenue generation to form a comprehensive strategy to protect valuable natural land resources. In China, this combination is particularly attractive in light of growing and rampant speculation, acquisition, and development of pristine and ecologically sensitive landscapes. By allowing conservationists to compete financially with traditional, profit-driven developers for the control of land use rights while abiding by key conservation principles, conservation developments represent a powerful land protection tool for China. In the U.S., this tool has proven essential in undeveloped scenic regions with relative proximity to urban centers, where escalating land values attract well-financed real estate developers. (Milder 2007).

Conservation developments are thought to be relatively few and far between in China. One example of a project in-the-works is the **Great Wall Resort** (see Chapter III, Case Studies). On a parcel northwest of Beijing, partners Zhao Shan and Robert Devine intend to construct a luxury spa and eco-resort on less than 10% of their property while conserving the remainder for nature (Devine, 2010).

Another conservation development, already operational, is **Monkey Island** (see Chapter III, Case Studies). Through this project, developer Dai Guofu leased use rights and created a monkey park on 5.6 hectares of the Nanwan Monkey Island complex. It is the only tropical-type nature reserve for macaque monkeys in the world and covers 1,000 hectares in Hainan Province. Prior to Dai's involvement in 1995, the monkey population had dwindled to 100 monkeys and tourist visits to 30,000 per year. The fate of the monkeys—a state protected species—did not look promising and local residents were struggling to make ends meet. But thanks to the construction of the monkey park (and the sacrifices of some show monkeys), the monkey population has soared to 1,000, and the income of the local people has also been on the rise. The tourism attraction has been in operation for over a decade now, and is generating ever-increasing revenues—25 million RMB in 2009 alone. This highly profitable project provides an excellent example of how development on a small tract of land can fuel conservation over a much larger area, given the right market conditions and natural values.

### iii. Certification Projects

Whereas private reserves and conservation developments protect the majority of a given project site for conservation purposes, certification projects focus instead on sustainable resource management across an entire project area, and may include “micro-sites” of protection. Co-benefits such as biodiversity enhancement or protection (or protection of carbon, soil, water or cultural resources) are rarely the primary focus of these efforts (Von der Heyde, 2011). Nonetheless, certification projects for timber harvest or other types of resource management present an opportunity for private involvement in biodiversity protection—even if that is not the primary intent – depending on the standards applied. Standards can protect land and water

by providing safeguards for sensitive natural values. For example, the Forest Stewardship Council requires the maintenance of “high conservation value forests,” whereas China applies the concept of classified forest management, which is the spatial separation of production areas from protection/conservation areas (Forest Stewardship Council, 2002) (Mann, 2011).

Forest certification for timber harvest began in China in the early 2000s. The first forest management certificate was granted by SmartWood, a certification body accredited by the Forest Stewardship Council, to the **Changhua Forest Farm** in Zhejiang Province (Hinrichs, 2009). Today, there are upwards of 58 forest certification projects (Forest Stewardship Council, 2011). Establishing certified forests has been “relatively slow and difficult” in China, in part due to weak domestic demand for certified forest products<sup>138</sup> and unfavorable cost-benefit ratios (Yuan & Eastin, 2007) (Li, 2008). Currently three certification standards are utilized in China: Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC) and the China Forest Certification Council (CFCC). The first two are NGOs while the CFCC is a national organization. CFCC is the officially endorsed national standard, while other standards face legal barriers (Mann, 2011). Regardless, 18 forest management units were operating under CFCC principles as of 2008 (Yu, 2008), and 40 management units covering 2.6 million hectares were FSC-certified as of 2011 (Forest Stewardship Council, 2011). Of note, non-compliance with standards is punished in China. For example, in 2009, FSC suspended the label of a large State Forest Enterprise in Jilin and considers doing so for a large private forest estate in Fujian (Yang Lin, near Yong’an) (Von der Heyde, 2011).

Certified forest carbon offset projects are also relatively recent additions to China’s conservation toolkit. In 2004, China initiated forest carbon sequestration pilot projects in 6 provinces. One of these pilots—in Guangxi—became the world’s first forestry carbon sequestration project (Gao).<sup>139</sup> Also in 2004, TNC and Conservation International initiated a forest carbon offset project in Yunnan, called the **Tengchong County Carbon Offsets Project** (see Chapter III, Case Studies). Unlike most (or potentially all other) certification projects in China to date, this project includes biodiversity enhancement and conservation as primary objective. The Tengchong County project is certified as the world’s first “gold-level” project of the Climate, Community, and Biodiversity Alliance. Among other provisions, the gold level requires a “net positive impacts on biodiversity” as well as livelihood (Climate, Community, & Biodiversity Alliance, 2008).

#### iv. Conservation Leases and Easements

Any private parties involved with the projects described above have used leases to acquire use rights for specified periods of time. For the purpose of this book, the term “conservation lease” refers to the transfer of use rights from one party to another for a specified period of time, through contracts or use rights certificates, for conservation purposes (see Part 2, Land Tenure). The lease model is very well-suited to the current land tenure system in China, since leases can be written to coincide with the terms of 30-70+ year use rights contracts. Conservation

---

<sup>138</sup> International markets are much more likely than domestic (i.e., Chinese) markets to pay premiums for certified timber.

<sup>139</sup> Another source suggests that forest carbon projects in California may be older (Von der Heyde, 2011).

easements are similar to leases, except they are permanent and irrevocable (Figure 3–13). Thus leases provide more flexibility, while easements provide a greater guarantee of land protection over the long run. Leases are already being utilized in China, and easements may be ripe for application in the future.

Both leases and easements protect particular characteristics of a parcel of land, be they scenic, biological, historical, recreational, or some combination thereof. If property rights are conceived of as a “bundle of sticks,” leases and easements would remove some of the sticks from the bundle of rights held by a landowner or holder of use rights, and would transfer them to a lessee or easement holder. For example, on a property containing both forests and grasslands, a lease or easement could cover the rights to use the forest but not the grassland, and could prohibit commercial development anywhere on the property while still allowing livestock grazing. In essence, long-term leases and conservation easements constitute a “non-use” right, as opposed to a use right such as the right to harvest timber or engage in energy development.

There are strengths and limitations to each tool. A strength of both is their flexibility in allowing conservationists to respond to the needs of individual landowners (or holders of use rights), and conservation opportunities on a case-by-case basis. Leases have the advantage (and, some may say, disadvantage) of providing greater flexibility for management once the lease expires, if not before. To secure permanent protection, however, leases must include provisions that allow for perpetual renewals. Ideally, the lease will include incentives for the grantor to renew, as well as protections for the grantee. Easements have the advantage (and, some may say, disadvantage) of providing permanent protection for biodiversity values. Some critics are concerned with the repercussions of permanently “locking-in” current conservation ideals and needs through a legal instrument that could be very costly to amend (Bray, 2010). For instance, conservation easements could limit the ability to use a parcel for conservation purposes such as carbon sequestration through afforestation, if not addressed in the easement.

**Figure 3–13. Definition of a conservation easement according to the Uniform Conservation Easement Act of the U.S. (Uniform Conservation Easement Act §1, 12 U.L.A. p. 174, 2008).**

...a nonpossessory interest of a holder in real property imposing limitations of affirmative obligations the purposes of which include retaining or protecting natural, scenic, or open-space values of real property, assuring its availability for agricultural, forest, recreation, or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural, archaeological, or cultural aspects of real property.

Easements would be a useful tool in China should the government ever adopt a true private property regime in which the land itself—not only the use rights—could be bought and sold. In that case, conservation easements would be a cost-effective alternative to the purchase of important conservation lands. In the meantime, it is still feasible that an easement could be created through some combination of incentivizes and penalties to which all key stakeholders

agree, and which future stakeholders would support from generation to generation. The easement grantors would almost certainly require some kind of significant monetary benefit in order to honor the terms of the easement. Ultimately, before easements can be an effective land protection tool in China, the government would need to enact policies and regulations to enable their application. Factors needed for the success of conservation easements include: a legal foundation, method of valuation, incentive system, clear tenure, clear conservation goals, and monitoring and enforcement (Bray, 2010) (Airey, 2010).

**Figure 3–14. China’s extensive network of nature reserves includes the Changbaishan Nature Reserve in Jilin Province. Photo by Shen Xiaohui**



## D. Ensure Project Success

There are a myriad of factors that will contribute to the success or failure of any given land protection project designed to conserve nature. Entities such as the IUCN/World Commission on Protected Areas (WPCA), the World Bank, and World Wildlife Fund (WWF) have identified such factors in their methodologies for assessing management effectiveness of protected areas and forests (Hockings et al., 2006) (World Wildlife Fund, 2007). The obvious need for more funding aside, there two key additional considerations that warrant explanation in the Chinese context—the importance of providing lasting benefits to all key stakeholders, and of creating opportunities for public-private partnerships.



## i. Provide Lasting Benefits to Stakeholders

As discussed earlier, the greatest challenge to land protection in China is the variability of tenure security and enforcement. To be successful, any potential land protection project must proactively create its own tenure stability. One way to do so is to generate local support and buy-in by providing lasting and meaningful benefits to project stakeholders, particularly local governments and community members. If stakeholders have something to gain from a project—typically financial resources—they will ensure its longevity. The benefits must be greater than those offered by alternative uses of the land, and significant enough to transcend changes in elected officials, particularly local government and village leaders. Failure to meet stakeholder requirements leaves land protection projects vulnerable to failure. For example, just one individual in a position of power could decide that a project site would be better utilized for commercial activity, and the project could literally be run over by development.

The concept of incentivizing stakeholders to support conservation action is not new to China. Perhaps the most widespread use of this approach is the government's effort to restore and protect forests. As Part 1, Lay of the Land, and Part 2, Land Tenure, describe, the Natural Forest Protection Program (NFPP) seeks to protect and enlarge China's forests through logging bans and financial compensation for forest management and reforestation; similarly, Grain for Green provides grain and financial subsidies for reforesting meadows, steep slopes, and barren lands.

This approach is also commonly used at local scales for individual projects, by NGOs or other parties. One of the case studies in particular, Monkey Island Conservation Development, exemplifies how stakeholder buy-in is enabling the persistence of the project. The project is generating revenue through ecotourism; providing employment and financial benefits to local government, local communities, and the adjacent nature reserve; and as a result, it is effectively protecting a thousand rare Hainan rhesus monkeys and their habitat. Similarly, the Tengchong County Carbon Offsets Project is compensating local villagers for the use of their lands for carbon sequestration purposes, thereby enabling successful reforestation and land protection. The sale of carbon offsets is helping to finance the project (see Chapter III, Case Studies).

## ii. Create Public-Private Partnerships

The Monkey Island and Tengchong County case studies also illustrate the benefits of public-private partnerships, another important element of project success. In China, as in many countries, projects involving joint partnerships may have greater likelihood of success than projects involving solely government entities or solely private parties. Government protection efforts in China, such as protected areas, have been hampered because they have not always fully accounted for stakeholder needs. For example, the government has not always respected customary uses such as fishing when creating protected areas (Herrold-Menzies, 2010), and compensation schemes for forest protection are often too low to deter timber harvest (Sheng, 2010). Government-only efforts are also highly vulnerable to changes in political or economic priorities. Finally, incentives in the Chinese government system are such that money allocated to protected areas or other conservation projects are likely to be diverted to other non-conservation uses.

At the same time, projects involving only private parties, such as NGOs or private developers, are not likely to succeed in China. “Purely” private protection efforts are unrealistic; it is difficult, if not impossible, to establish projects in China without the support and involvement of government. The government is involved in all aspects of land tenure in China, and it would be practically impossible to conduct a land protection project without the involvement of the county, at a minimum. Furthermore, government buy-in is a must because of the relatively large amount of land required for most land protection projects.

Given these considerations, projects involving partnerships between the government and private entities may have more success protecting biodiversity values than projects run by one of those entities alone. Partnership projects can leverage the legal support and land management expertise of the government, while capitalizing on the resources, flexibility, and commitment of private parties. Together, these elements are likely to result in creative land protection solutions that address stakeholder needs. For this reason, all of the case studies in this book provide examples of public-private partnerships (see Chapter III, Case Studies).

## II. PROTECTED AREA REFERENCE GUIDE

This chapter expands on Chapter I, Tools and Strategies, to provide more details about protected areas for terrestrial ecological resources, including nature reserves, forest parks, scenic areas, and international designations. Of the many types of protected areas in China, these types are most relevant to land-based biodiversity conservation. This chapter can serve as a reference guide for those interested in learning about these specific types of protected areas, and may inform decisions about which type of new protected areas to create, and where. The chapter does not address national parks, which are discussed in Chapter I, and have not yet been adopted by the Central Government. Nor does it address areas that can effectively protect biodiversity but are not commonly recognized as protected areas, such as public benefit forests and Ecological Function Conservation Areas (Part 2, Land Tenure). Such areas are the product of nation-wide planning and zoning efforts and may be more subject to wide-scale change than the protected areas covered in this chapter.

### A. Commonalities Across Nature Reserves, Forest Parks, and Scenic Areas

#### i. Process for Establishment

Nature reserves, forest parks, and scenic areas can be created and managed by any level of the government—state, provincial, prefectural, or county. In general, the higher the level of government management, the more important are the resources within the protected area. For example, the Wolong National Nature Reserve was established as a county-level reserve in 1963 and was promoted to national-level in 1975 because it protected panda habitat. The guidance for each type of protected area specifies the requirements for national- versus local-level designation.

To establish a protected area (nature reserves, forest parks, and scenic areas), a sponsoring government agency must submit an application to its corresponding level of government. For example, county government approves proposed county-level protected areas; provincial government approves proposed provincial protected areas; and the State Council approves proposed national-level protected areas.

After a protected area is established, the managing agency will appoint a protected area manager, who then hires staff. Technically, one of the manager's first duties is to develop a master plan, since all protected areas are required to develop their own master plans to establish zoning (e.g., core, buffer, and experimental zones for nature reserves), plan infrastructure construction, and determine staffing (Guangzhi, 2010). However, in practice, plans are not always prepared due to funding shortages, staffing limitations, and other challenges. In recent decades, under the support of international organizations and bi- or multi-lateral governmental cooperative projects,

some protected areas and especially nature reserves have developed management plans, such as Baima Snow Mountain Nature Reserve. However, those management plans are generally “dust collectors” and are not being implemented due to resource constraints (Guangzhi, 2010).

## ii. Withdrawal and Downgrading

Withdrawal or downgrading of protected area status can and does occur under existing guidance.<sup>140</sup> As an example of a withdrawal, the Longtan County-level Nature Reserve in Guangdong Province was eliminated because it lay within the boundary of a newly established city-level nature reserve, and the duplicate protected area status was not necessary. Local government may also withdraw a protected area’s status if it wants to develop the area beyond what is allowable by law. In terms of downgrading, if a higher level protected area is not managed well, it may be downgraded to a lower level, e.g., from national scenic area to provincial. Under guidance, national-level nature reserves should be ranked as excellent, good, fair and poor, and those with poor ratings may be downgraded.<sup>141</sup>

The government may use the threat of downgrading to motivate local improvements in management. For example, in December 2007, MOHURD announced a list of scenic areas required to improve their management within specific timelines or face downgrading. Ten national scenic areas were on the list, such as Mengdong River in Hunan, Jinshitan in Liaoning, and Taoyuandong-Linyinshilin in Fujian.

## iii. Triggers for Higher-level Government Involvement

Many changes to protected areas trigger review by higher levels of government above the managing level (e.g., the involvement of a province in a prefecture-level nature reserve). Examples include:

- Changing the level of a protected area—for example, moving “up” from county to provincial or moving “down” from national to provincial
- Changing the size of a protected area as a whole—for example, expanding a nature reserve
- Shrinking the size of a nature reserve’s core zone and/or changing the uses within it—for example, building a road or a railroad

Such reviews have become the “norm” for protected area management. In fact, very few protected area changes would not involve higher-level government review; one example would be establishing a small-sized research building for better protected areas management (Guangzhi, 2010).

---

<sup>140</sup> Nature Reserve Regulations Article 15, Forest Park Management Regulations Article 9

<sup>141</sup> Supervision and Inspection of National Nature Reserves (1996)

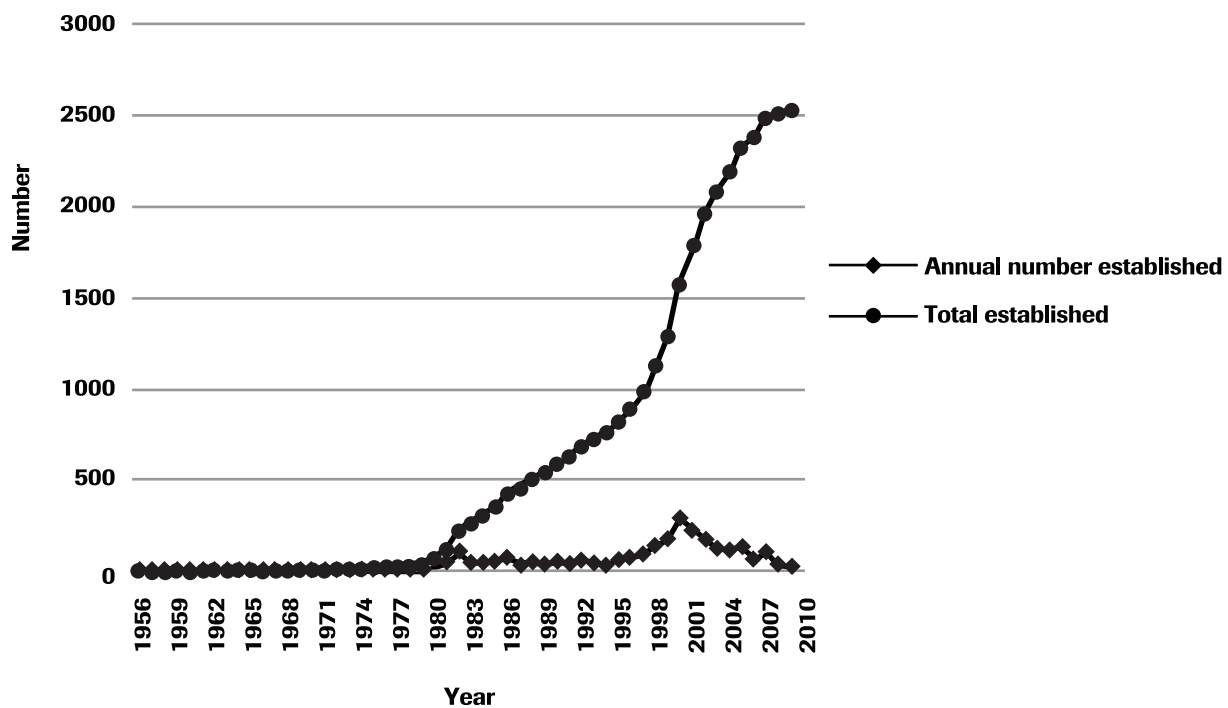
## B. Nature Reserves

### i. Purpose, Number, Extent

Nature reserves are the most common types of protected area and provide the most stringent protection to the values for which they were established, at least according to law. Unlike other types of protected areas, nature reserves include “core zones” where human entry is prohibited except for scientific purpose. In general, they are also less focused on tourism than are some of the other types of protected areas, particularly scenic areas (Figure 3–14).

At the recommendation of the Chinese Academy of Sciences, China established its first nature reserve in 1956 in Dinghushan, Guangdong Province, in order to protect the old-growth forest and associated wildlife for scientific research. Since that time, the number of nature reserves has increased exponentially (Figure 3–15). As of 2009, China had established 2,541 nature reserves across 148 million hectares or approximately 15.4% of the country.

Figure 3–15. Establishment of nature reserves at all levels, 1956–2009



## ii. Guidance

- Regulations of the People’s Republic of China on Nature Reserves (1994)
- Appraisal Standards for National Nature Reserves
- Local rules—some local governments create their own rules for nature reserves. Examples include Yunnan Provincial Nature Reserve Management Regulation (1997), Fujian Provincial forest Wildlife Reserve Management Ordinance (1995), and policies for individual nature reserves.

## iii. Establishment

Nature reserves protect important ecological values and geologic features. Areas eligible for establishment as nature reserves must possess one or more of the following criteria:<sup>142</sup>

- Representative natural ecosystems—“Typical physiographic areas with representative natural ecosystems, and those similar areas where the natural ecosystems have been damaged to some extent, but can be restored through proper protection”
- Important areas for rare plants and animals—“Areas with a natural concentrated distribution of rare and endangered wild animal or plant species”
- Special protection values—“Those areas which are of special protection value, such as marine and coastal areas, islands, wetland, internal water bodies, forests, grassland, and deserts”
- Important landforms or geologic features—“Natural remains which are of scientific or cultural value, such as geological structures, famous karst caves, fossil distribution areas, glaciers, volcanoes, and hot springs”
- Other—“Other natural regions requiring special protection by the approval of the State Council or the people’s governments of the provinces, autonomous regions, or municipalities directly under the central government”

The establishing agency classifies each nature reserve as one of nine specific types (Table 3–4). The types do not affect use restrictions or management. They could, however, influence funding if the government decides to give priority to one type over another, such as forestry ecosystem types over desert ecosystem types (Guangzhi, 2010).

---

<sup>142</sup> Regulations on Nature Reserves Article 10

**Table 3–4. Types of nature reserves. Modified from Zheng and Zhu, 2004)**

General type	Specific type	Example
<b>Natural ecosystems</b>	Forestry ecosystem	Songshan Nature Reserve, Beijing Municipality
	Grassland and meadow ecosystem	Yunwu Shan Nature Reserve, Ningxia Autonomous Region
	Desert ecosystem	Kekexili Nature Reserve, Qinghai Province
	Inland wetland and waters ecosystem	East Dongting Lake Nature Reserve, Hubei Province
	Marine and coastal ecosystem	Wangning Marine Ecosystem Nature Reserve, Hainan Province
<b>Species</b>	Wild animals	Alligator Nature Reserve, Anhui Province
	Wild plants	Chishui Nature Reserve, Guizhou Province
<b>Natural relics</b>	Geological remains	Yitong Volcano Cluster Nature Reserve, Jilin Province
	Paleontological remains	Dinosaur Egg Fossil Nature Reserve, Henan Province

**Table 3–5. Management of all nature reserves by Chinese government agencies (Ministry of Environmental Protection, 2009)**

Agency	Number	Percent of total number
<b>State Forestry Administration</b>	1,879	73.9%
<b>Ministry of Environmental Protection</b>	253	10.0%
<b>Ministry of Oceans</b>	102	4.0%
<b>Ministry of Agriculture</b>	85	3.3%
<b>Ministry of Land &amp; Resources</b>	69	2.7%
<b>Ministry of Water Resources</b>	44	1.7%
<b>Ministry of Urban Construction</b>	11	0.4%
<b>Other</b>	98	3.9%
<b>Total</b>	<b>2,541</b>	<b>100.0%</b>

Nature reserves can be established and managed by any variety of agencies, at any level of government. They may also be managed jointly by different agencies to address managing different habitats within the reserve. For example, Qinghai Lake National Nature Reserve contains an inland lake, grasslands, and desert resources and thus requires support from the fishery bureau as well as the animal husbandry department, which is responsible for grassland management. The State Forestry Administration manages more than two-thirds of all nature reserves in terms of both number and area, followed by the Ministry of Environmental Protection (Table 3–5). If a proposed nature reserve boundary crosses multiple administrative jurisdictions (e.g., counties), all affected governments must reach an agreement.

**Figure 3–16. TNC scientists monitor alpine ecosystems in Baima Snow Mountain Nature Reserve, Yunnan. Photo by Fang Zhendong**



Although SFA manages the most nature reserves, the Ministry of Environmental Protection (MEP) holds the overarching responsibility for nature reserves across the country. Sample duties include formulating laws, regulations, and policies; identifying standards for nature reserve construction and management; and organizing expert review meetings to evaluate national nature reserve establishment. MEP also maintains a publicly available database of nature reserves.

To be considered for *national* nature reserve status, an area must have “typical significance in or out of the country, and have major international influence in science or are of special value for scientific research.”<sup>143</sup> Only reserves that have been provincial-level for at least two years may be elevated to national status.<sup>144</sup> Designation of a national reserve requires that provincial-level government first file an application with the National Nature Reserves Appraisal Committee of the State Council. The Committee will conduct field visits and will assess the reserve against the Appraisal Standards for National Nature Reserves. Approval of the proposal by the Committee requires two-thirds affirmative votes by its members. Upon approval by the Committee, the Ministry of Environmental Protection gathers comments from other relevant agencies and submits them to the State Council. The State Council ultimately approves or rejects the application.<sup>145</sup>

Local nature reserves may contain less-significant resources from a national or international perspective. Typically, final approval rests with the level of government that is the same as the proposed level of the nature reserve (e.g., county-level or prefecture-level). Usually, the higher the level of the nature reserve, the more funding that is available, and national-level reserves are eligible for funding from the Central Government.

<sup>143</sup> Regulations on Nature Reserves Article 11

<sup>144</sup> Appraisal Standards for National Nature Reserves

<sup>145</sup> Regulations on Nature Reserves Article 12



#### iv. Allowable and prohibited uses

According to regulation, nature reserves may be divided into core, buffer, experimental, and outer protection zones.<sup>146</sup> Allowable and prohibited uses are based on these zones (Figure 3–16, Table 3–6). In general, the core area is by far the most protected and prohibits human entry for any purpose except scientific research. The buffer is somewhat less restrictive than the core, and the experimental zone is even less restrictive.

**Table 3–6. Allowable and prohibited activities in nature reserves**

This table identifies the activities expressly allowed (“Yes”) or forbidden (“No”) in each of the core, buffer, and experimental zones, according to the Regulations on Nature Reserves (1994). The only mention of activities allowed/forbidden in the outer protection area states, “The projects constructed in the outer protection zone of nature reserves must not affect the environmental quality inside the nature reserves. If the damage has been done, the relevant units shall be ordered to eliminate and control the pollution within a prescribed period of time.” The activities delineated below apply to all levels of nature reserves—national and local.

Activity	Core	Buffer	Experimental
<b>Entry by humans</b>	Yes, but for research only	Yes*	Yes
<b>Scientific research</b>	Yes, but “generally prohibited”	Yes	Yes
<b>Educational activities</b>	No	Yes	Yes
<b>Specimen collection</b>	No	Yes	Yes, for approved scientific research*
<b>Tourism/visiting/sightseeing</b>	No	No	Yes <sup>147</sup>
<b>Facilities installations</b>	No	No	Yes <sup>148</sup>
<b>Domestication and breeding of rare and endangered wild animal or plant species</b>	No	No*	Yes
<b>Commercial activities<sup>149</sup></b>	No	No	No*
<b>Felling, grazing, hunting, fishing, gathering medicinal herbs, reclaiming, burning, mining, stone quarrying, sand dredging, other resource extraction</b>	No	No*	No*

\*These activities were not specifically mentioned in the regulations, but a protected areas expert identified them as allowable (“Yes”) or not (“No”) (Guangzhi, 2010).

<sup>146</sup> Regulations on Nature Reserves Article 18

<sup>147</sup> Regulations on Nature Reserves, Article 29: “The visiting and sightseeing tourist projects that violate the protection guidelines of nature reserves shall be prohibited.”

<sup>148</sup> Regulations on Nature Reserves, Article 32: “In the experimental zone, no production installations that cause environmental pollution or do damage to the natural resources or landscapes shall be built. Other installations to be built in these areas must not exceed the discharges of pollutants prescribed by national or local discharge standards.”

<sup>149</sup> The English translation of the Regulations on Nature Reserves says “trading,” but Guangzhi (2010) felt that a more accurate translation would be “commercial activities.”

**Figure 3–17. Forest Park in Zhangjiajie, Hunan. Photo by Steve Blake**



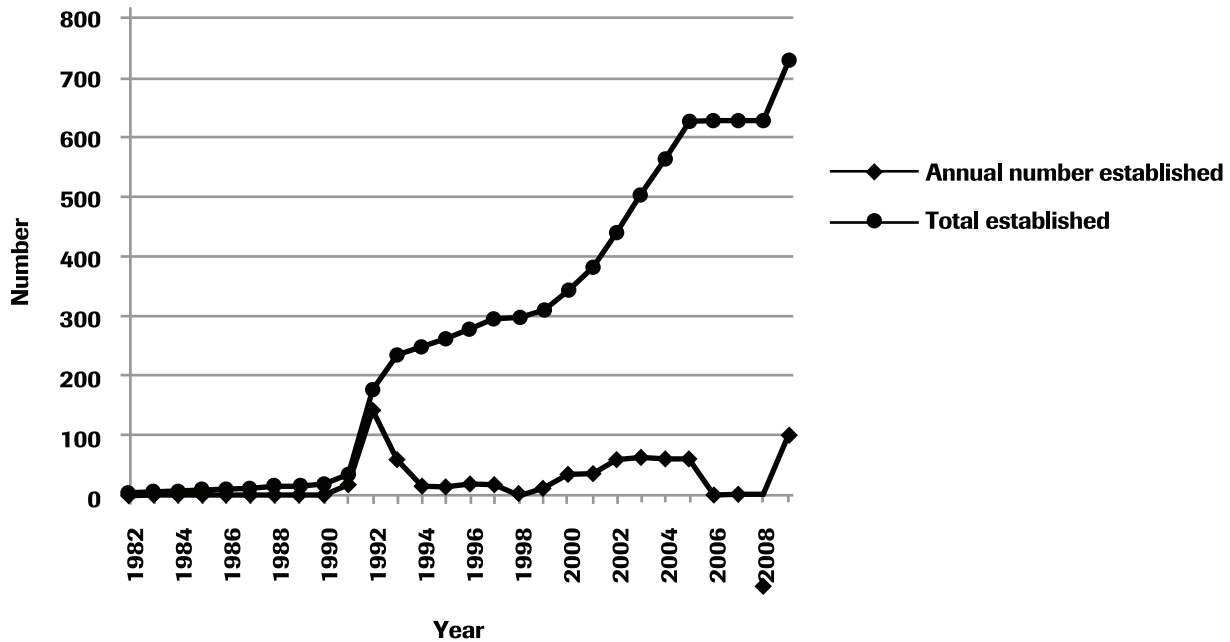
## C. Forest Parks

### i. Purpose, Number, Extent

Forest parks emphasize protection and appropriate development, with public access as a secondary goal. The main biological conservation targets include wild animals and plants with high aesthetic value (Figure 3–17). The Central Government created the forest park system in the early 1980s to fuel local economies through tourism and to protect important forest resources. The State Planning Commission (now the National Development and Reform Commission) established the first national forest park—Zhangjiajie Forest Park in northern Hunan Province—in September 1982. As of 2009, the government tallied 2,458 forest parks covering approximately 16 million hectares (General Office of the National Afforestation Committee, 2010). While the number of forest parks and nature reserves is roughly the same, forest parks cover far less area—1.7% of China versus 15.8%. Nonetheless, forest parks are

important to forest protection, encompassing approximately 8.5% of the forests in China. Of the forest parks,<sup>150</sup> 730 are national forest parks (Figure 3–19) and 1,073 are provincial forest parks; the remainder are county-level. According to a survey of nearly 1,900 forest parks, visitation reached 332 million tourists in 2009 and generated 22.6 billion RMB in revenue that year (State Forestry Administration, 2009).

**Figure 3–18. Establishment of national-level forest parks, 1982–2009, recreated from (Li & Chen, 2007)**



## ii. Guidance

- Regulations on Forest Park Management (1994)
- Standard for Overall Design of Forest Parks (1996)
- China Forest Park Landscape Resources Grade Evaluation (State Standards) (1999)
- Local-level guidance—Provinces such as Hunan, Shaanxi, Guizhou, Shanxi, Heilongjiang, Guangdong and Gansu have developed more specific management rules for forest parks. Some cities and counties have also issued guidance, such as Qingdao City in Shandong Province.

<sup>150</sup> There is also one national forest tourism site which is a type of forest park.

### iii. Establishment

Forest parks may be established in areas with natural forests that are large enough for exploration, entertainment, recreation, and/or the conduct of scientific, cultural, and educational activities. Such areas should be scenic and may contain cultural values. Specifically, forest parks are designed to protect special natural landscapes and maintain historical and cultural relics; and provide opportunities for entertainment and recreation and environmental education.<sup>151</sup> A site that possesses one or more of the qualities below is eligible for designation as a forest park, although these criteria may not always be applied in practice:

- Special forest features; ecological, historical or scientific preservation values; or educational values
- Development values for tourism
- “Large enough” acreage and canopy cover of no less than 60% (except for sites with high development value); in practice, most provinces require at least 70% cover
- Clear forest resources tenure and well-delineated boundaries [between state and collective lands, according to Guangzhi (2010)], including relevant ownership certificates
- No spatial overlap with an officially established nature reserves

As with nature reserves, forest parks can be national- or local-level depending on resource quality and size. To be a national forest park, an area must have “significant landscape, concentrated cultural landscapes and significantly high scenic, scientific and cultural values, specific geographical location, representativeness in region scale, well-equipped tourist facilities and higher popularity.”<sup>152</sup> A county forest park, by contrast, is characterized by scenic, scientific and cultural values of more local importance.

The State Forestry Administration is the only agency that creates and manages national forest parks, but local forestry bureaus have the authority to propose and approve the creation of forest parks at their respective levels. For example, a provincial forestry bureau can designate provincial-level forest parks. The process is as follows: the local forestry bureau prepares an application, then the provincial forestry bureau reviews the application, and finally the State Forestry Administration reviews the application and makes a final decision.

---

<sup>151</sup> Regulations on Forest Park Management Article 2

<sup>152</sup> Regulations on Forest Park Management Article 6

Forest parks are placed in one or more of the categories according to dominant landscape features (Table 3–7). Such designation helps the public understand the main resources of the forest park, but it does not necessarily affect allowed or prohibited activities (Guangzhi, 2010).

**Table 3–7. Types of forest parks and examples (National Forest Parks of China)**

Type of Forest Park	Example
Mountain	Taibaishan Forest Park, Shaanxi Province
Lake	Qiandaohu Forest Park, Zhejiang Province
Volcanic	Huoshankou Forest Park, Helongjiang Province
Glacial	Hailuoguo Forest Park, Sichuan Province
Grassland	Huangganliang Forest Park, Inner Mongolia Autonomous Region
Desert	Yanguan Desert Forest Park, Gansu Province
Hot spring	Longsheng Hot Spring Forest Park, Guangxi Autonomous Region
Coastal	Qinghuandao Coastal Forest Park, Hebei Province
Sea island	Pingtanhaidao Forest Fujian Province
Cascade	Qishan Forest Park, Fujian Province
Urban	Sheshan Forest Park, Shanghai Municipality

#### iv. Allowable and Prohibited Uses

Regulations address master planning,<sup>153</sup> but unlike the nature reserve system in China, there is no recommendation to establish particular zones in forest parks, such as core, buffer, and experimental zones. Prohibited activities in forest parks include: clearing forest for farmland, quarrying, sand mining, excavating soil, and conducting other deforestation activities. In addition, except as necessary for basic safety, the construction of buildings or engineering facilities in rare, important, and scenic areas is also prohibited.<sup>154</sup> Some provinces create additional rules to govern allowed and prohibited uses of forest parks. For example, Fujian prohibits the following activities in forest parks: clearing forest for farms and mining; graffiti; filling natural water sources arbitrarily; hurting, harming or hunting protected wild animals without permission; collecting endangered and rare wild plants; littering; smoking, building fires, and lighting candles or fireworks.<sup>155</sup>

<sup>153</sup> Regulations on Forest Park Management Article 7

<sup>154</sup> Regulations on Forest Park Management Articles 11 and 12

<sup>155</sup> Fujian Province Forest Park Management Rules

## D. Scenic Areas

### i. Purpose, Number, Extent

Along with protection of beautiful places and ecological values, scenic areas typically emphasize tourism much more than nature reserves and forest parks (Figures 3-19 and 3-20). China has 906 scenic areas, including 208 national-level and 698 provincial-level scenic areas,<sup>156</sup> which cover approximately 1.9% of the terrestrial land area of China (Ministry of Housing and Urban Development, 2009). Twenty-two national scenic areas are also designated World Heritage sites. In the past, some scenic areas were allowed to partially or totally overlap with nature reserves. However, the Regulations on Scenic Areas no longer allow such overlap.

**Figure 3–19. Gongga Mountain Scenic Area offers a cable car ride to Hailuoguo Glacier. Photo by Megan Kram**



---

<sup>156</sup> In China, the direct translation of “scenic areas” in Mandarin is “national parks.”

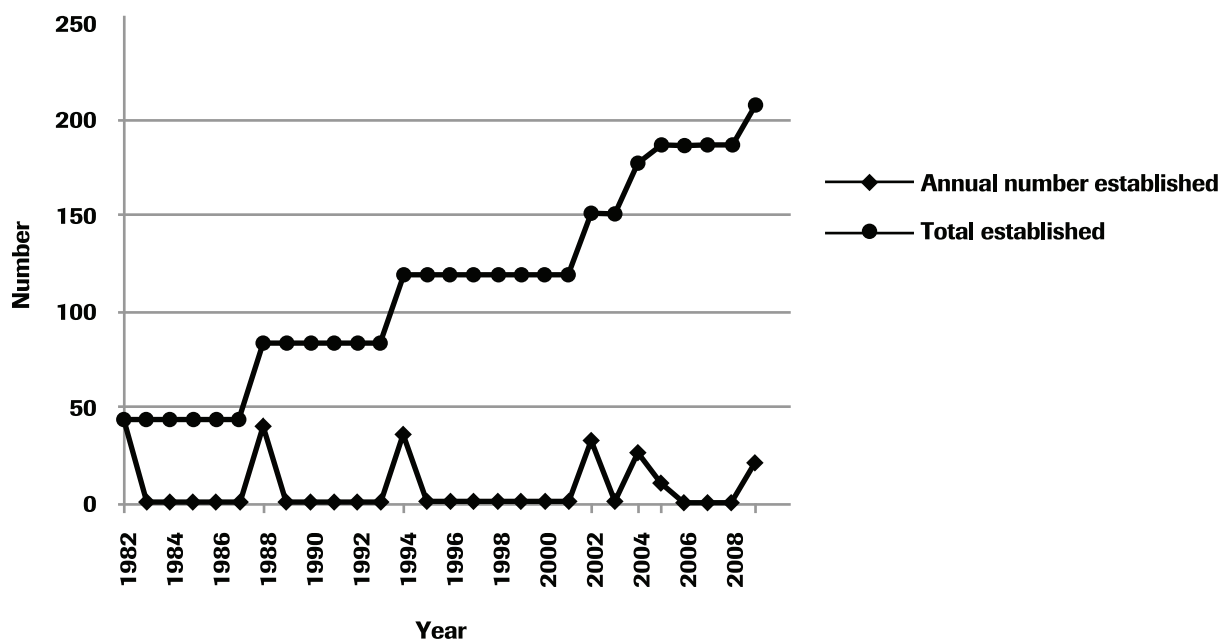
The origins of scenic areas can be traced to the 1920s. At that time, the government set aside famous scenic sites, such as Lu Mountain in Jiangxi Province and Huang Mountain in Anhui Province, as important summer resort and sightseeing districts. Those scenic sites were administrated by local government agencies. Then in the 1970s, in response to heightened economic development and pressure on natural resources, the State Construction Commission (now the Ministry of Housing and Urban-Rural Development, MOHURD) placed greater emphasis on strengthening protection of natural and cultural landscapes and natural ecosystems. The Commission led country-wide scenic sites assessment and advised relevant provincial governments to select a series of scenic sites for promotion as national scenic areas.

**Figure 3–20. Scenic areas typically contain more tourism infrastructure than nature reserves and forest parks. Below are facilities at Gongga Mountain Scenic Area, Sichuan. Photo by Megan Kram**



In November, 1982, the State Council announced the first 44 scenic areas with national significance. Since then, the government established another six groups of scenic areas (Figure 3–21).

Figure 3–21. Establishment of national-level scenic areas, 1982–2009 (Xinhua News Agency, 2009)



## ii. Guidance

- Construction Management Regulations of Scenic Areas (1993)
- Regulations on Scenic Areas (2006)
- Local regulations

## iii. Establishment

Scenic areas have been designated in some of the most picturesque places in China, for sightseeing, scientific research, or cultural activities. The government designates scenic areas for a variety of reasons, such as to protect ecology, biological diversity and environment; develop tourism; conduct scientific research and educational programs; and provide ecological and social benefits through compatible development activities. Scenic areas must possess one or more of the following traits:

- Natural or nearly natural status
- Reflect the evolution process of significant natural and historical events
- Representativeness and significance
- A minimum size of approximately 50 square kilometers (for a national-level scenic area)



National-level scenic areas possess both significant natural and cultural values and, like nature reserves and forest parks, are identified by type (Table 3–8).

**Table 3–8. Types of scenic areas and examples**

Type of Scenic Area	Example
Mountain	Tai Mountain Scenic Area, Shandong Province
Lake	Tai Lake Scenic Area, Jiangsu Province
River	Li River Scenic Area, Guangxi Autonomous Region
Cascade/waterfall	Huangguoshu Waterfalls Scenic Area, Guizhou Province
Coastal or island	Qingdao Coastal-Lao Mountain Scenic Area, Shandong Province
Cultural	Badaling Great Wall Scenic Area, Beijing Municipality

MOHURD manages all scenic areas, but a variety of agencies can propose their establishment. To establish a national scenic area, the government follows these steps: First, the people’s government of a province, prefecture or municipal must submit a proposal to MOHURD; then MOHURD consults with the Ministry of Environment Protection, SFA, the State Administration of Cultural Heritage (SACH), and other relevant agencies for review and comments; and, ultimately, the State Council decides whether to approve the scenic area.

#### iv. Allowable and Prohibited Uses

Each scenic area is required to develop a master plan and detailed plan within two years of its establishment.<sup>157</sup> Usually, a master plan covers the intended use and development for 20 years and includes: a biological inventory, conservation strategies for protecting ecological resources, the location of major construction projects, zoning and major functions, areas where development is prohibited or restricted, and environmental capacity for tourism.<sup>158</sup>

The plans should emphasize principles of sustainable development, and should “strictly protect” significant landscapes and natural resources and not arbitrarily destroy or change them.<sup>159</sup> Prohibited activities include: Any activity that would destroy the landscape, vegetation, or landforms, including, but not limited to: blasting mountains and quarrying; clearing forest for farmland; constructing facilities to store explosives, flammable, radioactive, poisonous, and corrosive items; creating graffiti; and littering. Other commercial activities are allowable, with the permission of “relevant management authorities,” including: Installation or posting of commercial advertisement; large-scale entertainment activities; modifying the course of streams and rivers; and other activities that impact the ecology and landscape.<sup>160</sup>

<sup>157</sup> Regulations on Scenic Areas Article 14

<sup>158</sup> Regulations on Scenic Areas Article 13

<sup>159</sup> Regulations on Scenic Areas Article 24

<sup>160</sup> Regulations on Scenic Areas Articles 26-29

## E. International Designations

At least three types of international protected area designations have been established in China—Biosphere reserves, World Heritage Sites, and RAMSAR sites. This section addresses only the terrestrial types—biosphere reserves and World Heritage sites; RAMSAR sites are designated for wetlands. These designations typically overlap existing protected area designations, and can overlap with each other. Technically, they offer an additional layer of protection, though in practice they do little to discourage development.

There are 28 **Biosphere Reserves** in China. Biosphere Reserves are recognized under the Man and Biosphere Reserve Programme of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) (UNESCO, 2011). They are intended to serve as learning and demonstration sites for meshing conservation and sustainable development. All biosphere reserves in China currently overlap with existing nature reserves; for example, Wolong Biosphere Reserve overlaps Wolong National Nature Reserve. Typically, biosphere reserves in China have no special management requirements beyond those of nature reserves, since the nature reserve zoning requirements mirror those of biosphere reserves (core, buffer, and flexible transition area).

If a nature reserve desires Biosphere Reserve status, first the management bureau must seek approval from higher level administrative management sectors. Then, the Chinese National Commission of Man and the Biosphere Program (the Commission) decides whether the reserve is qualified to be a biosphere reserve; if so, the Commission will submit application to UNESCO for final review. The State Council created the Commission in 1978 as part of the Chinese Academy of Sciences (Chinese National Committee for Man and the Biosphere).

UNESCO also designates **World Heritage Sites** for natural and/or cultural locales that have “outstanding universal value” for at least one of ten criteria. There are 41 World Heritage Sites in China, 12 of which are designated partially or entirely for natural values, such as the Sichuan Giant Panda Sanctuaries and the Jiuzhaigou Valley Scenic and Historic Interest Area (UNESCO, 2011). Any one protected area (e.g., nature reserve) or multiple consolidated protected areas can be designated as a World Heritage Site. Qualified sites are nominated by MOHURD and/or the Ministry of Culture, which submit an application to IUCN and/or the International Council of Monuments and Sites. Once the application is approved, the local government establishes relevant management organization(s) responsible for management.

# III. CASE STUDIES

This chapter provides six case studies of the land protection tools and strategies described in Chapter I. The case studies illustrate the practical application of each tool within the current land tenure regime, with the hope of sparking more such efforts (Table 3–9, Figure 3–22). While all of the case studies correspond to specific land protection opportunities, most also apply more than one land protection tool. For example, Yu Jia Shan illustrates the application of the private reserve and conservation lease tools. Each case study also provides examples of public-private partnerships and providing benefits to stakeholders, which are both factors in ensuring project success.

**Table 3–9. Case studies and associated land protection tools—bold “Xs” indicate the primary tool, non-bold “Xs” indicate other tools used and described.**

Case Study Sites	Improve the management of existing protected areas	Create new protected areas (i.e., National Parks)	Apply private tools: Private reserves	Apply private tools: Conservation developments	Apply private tools: Certification projects	Apply private tools: Conservation leases
<b>Pudacuo:</b> China’s first national park	X	<b>X</b>				
<b>Yu Jia Shan:</b> China’s first private nature reserve			<b>X</b>			X
<b>Songshan:</b> Evolution of a model nature reserve	<b>X</b>					
<b>Monkey Island:</b> Conservation development for primates, people, and profit	X			<b>X</b>		X
<b>Great Wall Resort:</b> The making of a model conservation development				<b>X</b>		X
<b>Tengchong County Forest Carbon Offsets:</b> Protecting land through a gold-level certification project					<b>X</b>	X

Table 3–22. Case studies sites

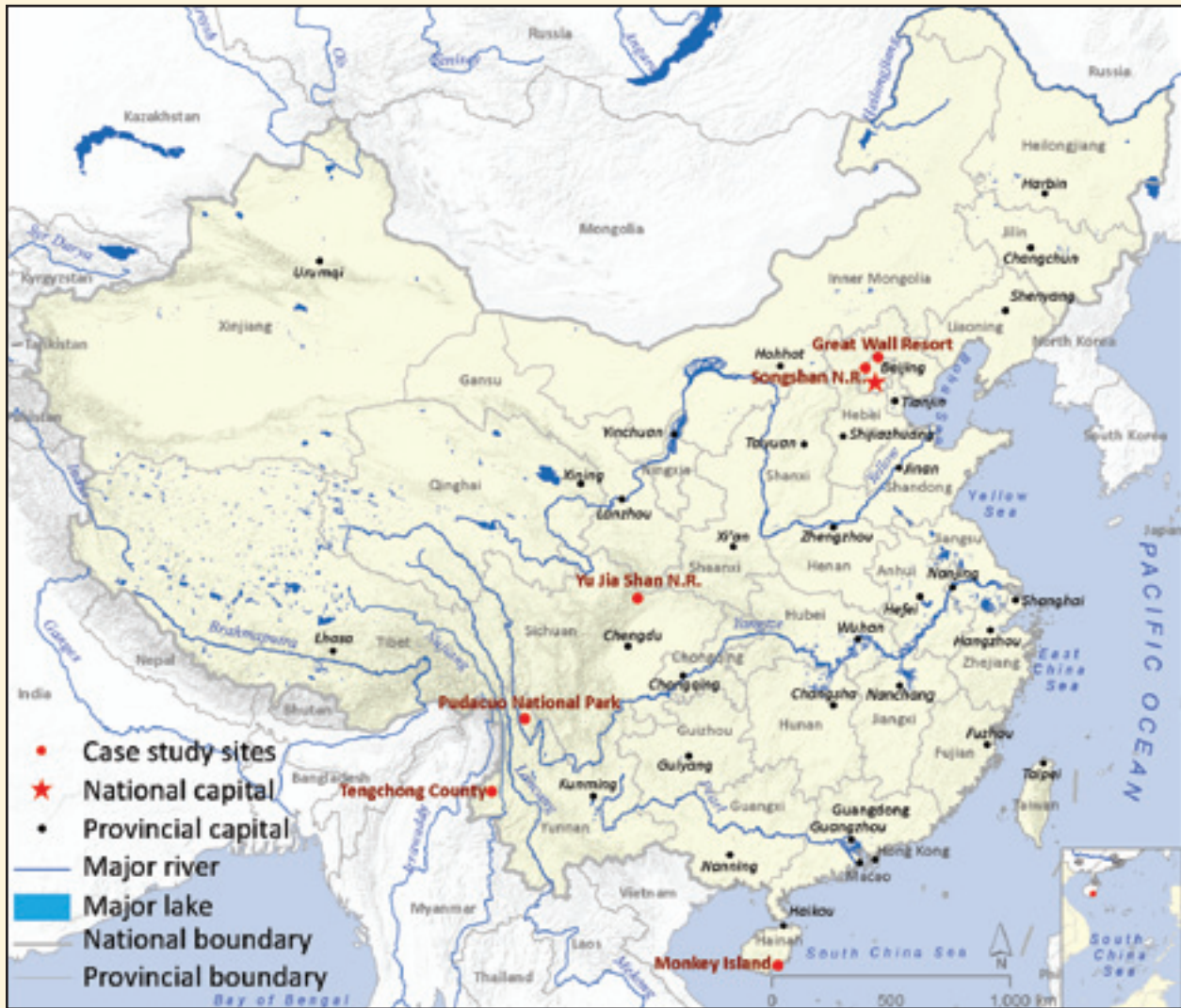


Photo by The Nature Conservancy



# PUDACUO: China's First National Park

## Interviewees

- Dr. Yang Yuming, Vice President, Southwest Forestry University and former initiator of national parks in Yunnan Province when he served as the Director of The Nature Conservancy's Yunnan Program
- Dr. Ye Wen, Dean, Ecotourism Faculty of Southwest Forestry University and creator of the Master Plan for Pudacuo National Park
- Wang Yue, Acting Director of the Yunnan Program, The Nature Conservancy

## Introduction

As Chapter I, Tools and Strategies describes, China boasts more than 5,000 nature reserves, forest parks, and scenic areas, as well as many of other types of protected areas. Although all of China's existing protected area models have their strengths, none have proven particularly effective in simultaneously achieving goals of biodiversity protection and revenue generation. Thus, the Yunnan Provincial government, with encouragement from The Nature Conservancy, decided to test the national park model, in the hopes of increasing conservation while generating more income. The concept is working. Pudacuo National Park, China's first,<sup>161</sup> has expanded protection to an area four times the size of the original protected areas that it surrounded (Bita Lake Nature Reserve and Shuduhu Lake Scenic Area), and generated 117 million RMB in 2009 alone (up from 6 million RMB in 2005, a 20-fold increase). This case study tells the story of the park's creation.

## Vision

- To pilot a new national park model in China as a way to meet dual goals of biodiversity conservation and income generation
- To create a site to protect the conservation values surrounding the existing Bita Lake Nature Reserve and Shuduhu Scenic Area

## Project Area

Pudacuo National Park lies within one of the most biodiversity-rich regions of China, if not the world. The area lies within "one of the world's least-disturbed temperate ecological areas, an epicentre of Chinese endemic species and a natural gene pool of great richness" and is believed to support over 25% of the world's animal species (UNESCO). For this reason, it is part of the Three

---

<sup>161</sup> In 2008, the Ministry of Environmental Protection and the National Tourism Administration announced the creation of Heilongjiang Tangwanghe National Park as China's first (People's Daily Online, 2008). However, in terms of timing, Pudacuo is the first national park because it was created in 2006.

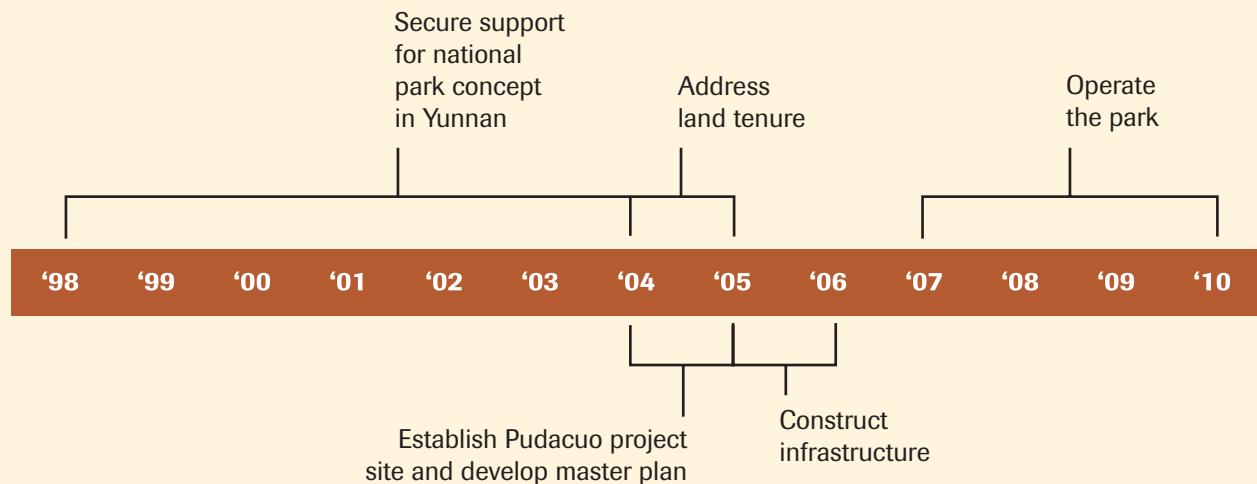
Parallel Rivers of Yunnan Protected Areas World Heritage Site. Pudacuo is home to species such as the black night crane and an endangered endemic fish, *Ptychobarbus chungtienensis chungtienensis*. The site is situated in the core zone of the Hengduan Mountains Biogeographical Region.

A 50-minute drive from the town of Shangri-La, the park covers approximately 60,000 hectares in Shangri-La County, Deqing Tibetan Autonomous Prefecture, Yunnan Province. The park encompasses and extends beyond two existing protected areas—the Bita Lake Nature Reserve (14,000 hectares) and Shuduhu Lake Scenic Area (1,500 hectares). The remaining area covers a mix of collective- and state-owned land, nearly all of which is public benefit forest and prohibits timber harvest (see Part 1, Lay of the Land). Nearly 2,000 hectares of the nature reserve are covered by the Bitahai Wetland RAMSAR site (Wetlands International, 2004). There is one village within the park, close to the gate, with approximately 200 individuals living in a relatively concentrated area.

## Project Creation

Much of the work to establish Pudacuo involved garnering support for the national park concept as a whole. After 6 years of discussions between TNC and the Chinese government from local to national levels, there was enough support for the project to establish the project site, create a master plan, and start addressing land tenure issues (Figure 3–23). The park became operational in 2007, 9 years after discussions started.

**Figure 3–23. Steps and timeline for the creation and management of Pudacuo National Park**



**1. Secure support for National Park concept**—In 1998, TNC first proposed the idea of a Chinese national park system to the local governments associated with the Three Parallel Rivers World Heritage Site. Originally TNC aimed to create a “Great River National Park” for the entire site. However, the idea did not gain traction because the government did not fully understand the purpose and process for establishing national parks. Although the term “national park” was well known in China, there was no common understanding of what they were and how they differed from traditional Chinese protected areas. In fact, the direct translation of the Chinese word for *scenic area* is *national park*; the Ministry of Construction named them as such without fully appreciating the conservation purpose of typical national parks. TNC was promoting a national park model that would both protect biodiversity and generate revenue by developing small portions of park areas for tourism and recreation.

For the next 6 years, TNC communicated with government officials at all levels about national parks, slowing building support for and a common understanding of the concept. TNC organized educational visits to national parks in Australia, Canada, New Zealand, and the U.S. The organization held workshops and trainings for a wide variety of stakeholders. TNC also published two books to promote a common understanding of the concepts, which were actually published after the national park was created: *From theory to practice: Yunnan National Park* (2010) and the *Resource Book of Yunnan National Park Policies and Research* (2009). Official government support for the project started from the bottom-up, expanding from Diqing Prefecture to Yunnan Province to the Central Government. In 2008, the State Forestry Administration approved Yunnan as the pilot province for establishing national parks in China.

With government support at all levels in place, Yunnan decided to cultivate its national park program. In December 2009, the province identified a goal of creating 12 national parks from 2009-2020. The first 5 included Pudacuo, Meili Snow Mountain, Lijiang Laojun Mountain, Xishuangbanna, and Pu'er. Based on the Pudacuo experience, Yunnan developed standards and guidelines to guide the creation of these and other future parks. The guidelines describe requirements for establishment, master planning, surveys, and construction (National Park Management Office of Yunnan Province, 2009). As of this writing, Pudacuo was the only park open to the public, Meili and Lijiang Laojun Mountain were under construction, and Xishuangbanna and Pu'er were not yet under development.

**2. Establish park boundary and develop a master plan**—The local government selected the park boundary based on existing roads, natural mountain ranges, rivers, and the administrative boundary of the county. Diqing Prefecture hired Professor Ye from the Southwest Forestry University to develop the master plan and TNC provided technical support. The plan included an “introductory core area” which is analogous to the experimental zone of nature reserves. This zone allowed some construction in the traditional Tibetan style. The plan also allowed the local villagers to continue their farming and grazing activities in identified areas, and provided for recreation infrastructure such as wooden trails, limited paved roads, and bathroom facilities.



There were two major sources of debate during the planning process: whether to construct dams and whether to build Tibetan structures in the core area of the Bita Lake Nature Reserve. Professor Ye, an advocate for maintaining a natural landscape, persuaded the Director of Diqing Prefecture against some of the dam construction based on its potential political risk (e.g., anticipated protests by NGOs) and limited attractiveness for tourists. Ultimately, the Director canceled the plans to create a large dam and lake, and reduced the number of waterfall-creating dams to two. He did maintain plans to reroute the river to “improve views,” where construction activities had already significantly impacted the riparian system.

Pre-existing human activities in the protective core area of the Bita Lake Nature Reserve—an island in the middle of the lake—presented another challenge. Prior to the designation of the nature reserve, Tibetans had constructed a temple for religious use. Government officials wanted to build additional Tibetan structures on the island, to attract tourists—despite the fact that the Nature Reserve Regulations (1994) prohibit human activity in core zones.<sup>162</sup> In the end, the government built the additional facilities.

**3. Address land tenure**—The local government addressed two tenure issues in the process of creating Pudacuo: the allowed uses by the local people and the management of the land surrounding Bita Lake Nature Reserve.

The local people were using the land in Pudacuo primarily for widespread livestock grazing, limited farming, and tourism development around Bita Lake. The tourism infrastructure consisted mainly of shops, restaurants, and horseback riding and boating businesses. Timber harvesting was not an issue; although some of the park is forested, the government had already designated the land as public benefit forest (as opposed to commercial forest. See Part 1, Lay of the Land).

Upon the establishment of the park, the government allowed all local uses to continue except the horseback riding and boating operations. These were eroding soils and impacting the water quality of Bita Lake. Furthermore, the government saw an opportunity to implement a more profitable and coordinated tourism strategy by employing a tourism company. A state-owned tourism investment company formed an agreement with the village committee that specified allowed uses and a compensation plan. The company compensated the local people for their businesses and agreed to pay each household a total of 5,000 RMB per year.

In addition to working out the agreement with the villagers, the local government completed an intra-governmental shift of the management of the area around Bita Lake. Prior to the park’s designation, the area around Bita Lake was a scenic area managed by the prefecture construction bureau. The construction bureau applied a “hands-off” approach to management. To streamline and improve operations, the prefecture government transferred the management from the construction bureau to the national park (see below).

---

<sup>162</sup> Nature Reserve Regulations Article 18

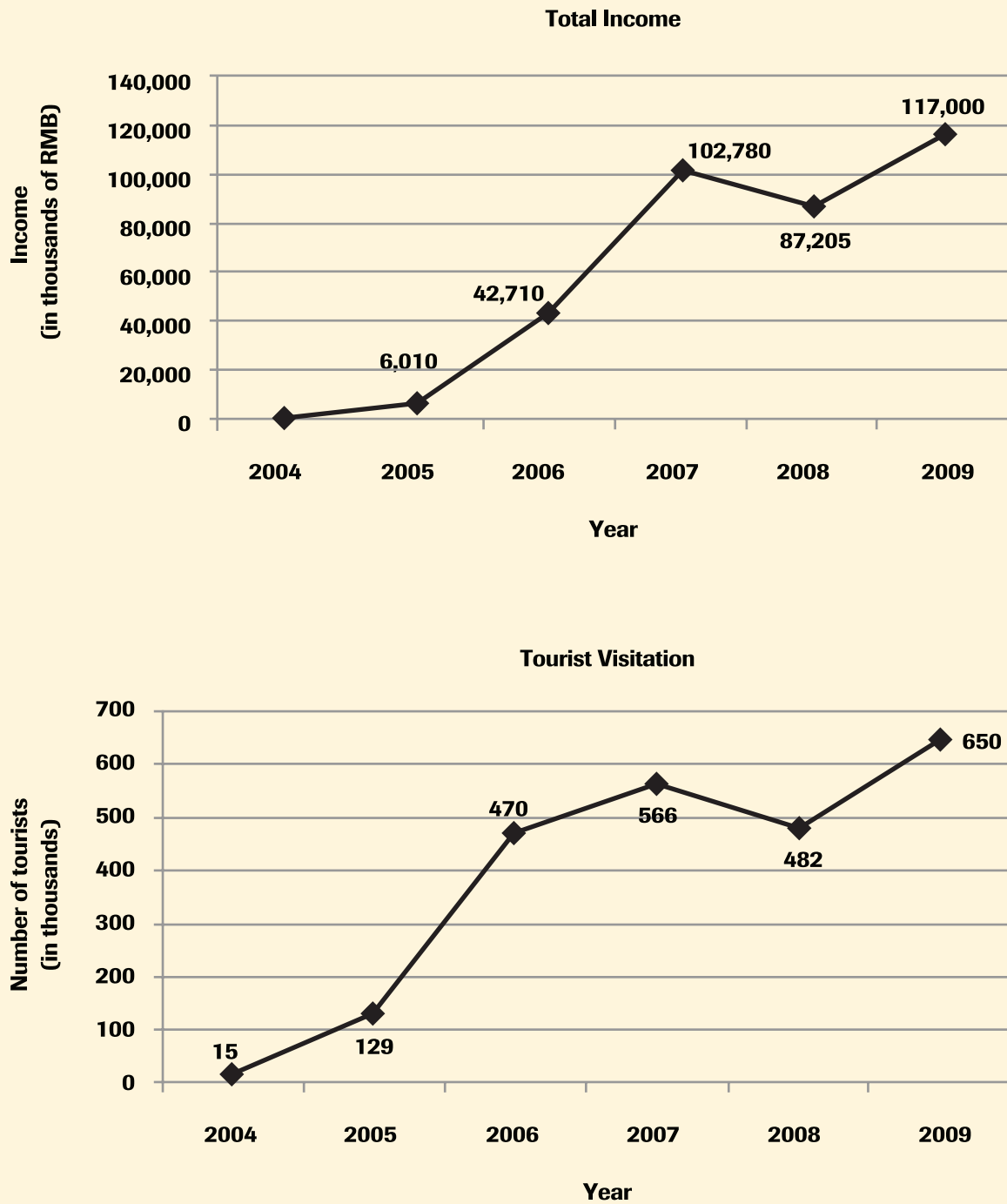
**4. Construct park facilities**—The state-owned tourism investment company secured the bank loans for the construction of tourism facilities. The construction cost approximately 400-500 million RMB, and included roads, walking trails, visitor centers, toilets, lookouts, signage, and other infrastructure. The park was closed to visitors for portions of 2005 and 2006 for construction.

**5. Operate the park**—Once the park opened its doors to the public in 2006, visitation and revenues skyrocketed (Figures 3–24). From 2005 (prior to park designation) to 2009, Pudcauo enjoyed a 20-fold increase in income and a 5-fold increase in tourists. Altogether, from 2006-2009, the park generated 350 million RMB of income and hosted more than 2 million visitors. At present, the entrance fee is 180 RMB per person and the park is open 10 hours per day. As of 2009, the park employed 230 people, including 180 permanent employees and 50 temporary workers.

Tourists can enjoy walking along the wooden trails in different areas of the park and boating in the lakes. One visitor to the park described the experience as follows (www.seeyunnan.net, 2007):

*“The park has a visitor center, two lakes, a number of interesting minority villages, lush forests and pasture views. At the visitor center you take a park bus to the first stop 8 miles away from where you can walk for a mile to several miles on a raised wooden walkway, pass by Shudu Lake 300 acres in size and then catch the bus again to your next destination . . . Bitu Hai Lake is 11,482 feet above sea level and is usually the next lake you will encounter. It is surrounded by dense forests that are spectacular to see in their late October autumn colors. The bus lets you off a few feet from the wharf where you can catch a boat ride around the lake and the island in the center. Price for the boat ride is 30 Yuan. It is just over a mile from where the boat lets you off to the bus pick up point. Alternatively, some travelers walk down the 1.2-mile path from the south entrance and hike to and exit the park from the west entrance. Getting to the west entrance requires both a boat and ferry ride, depending on your stamina the entire hike can take 4-6 hours.”*

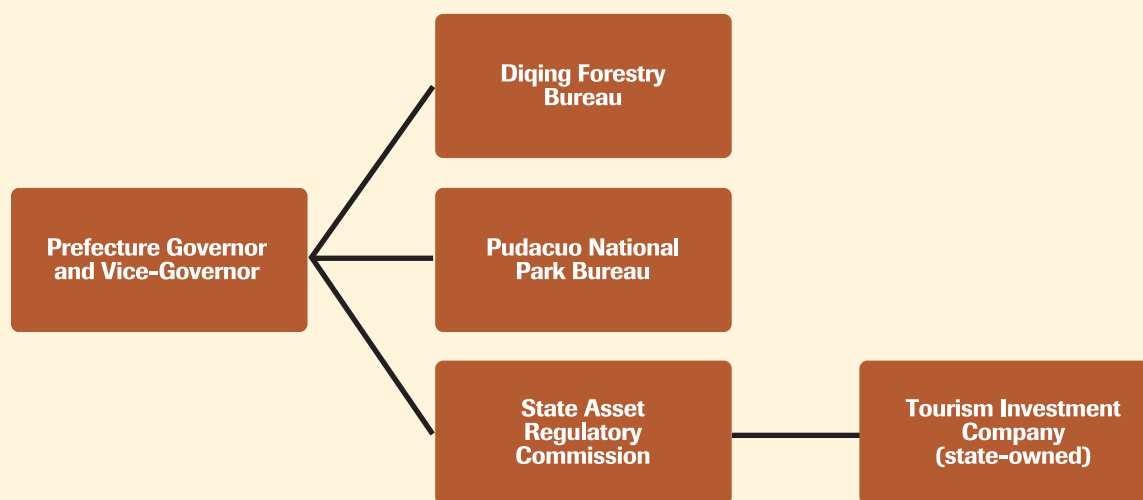
Figure 3–24. Income and visitation in Pudacuo National Park, 2004–2009



All levels of government including prefectural, provincial, and central have a role in the creation and/or management of Pudacuo National Park (Figure 3–25). Key roles and responsibilities include the following:

- **Central Government:** The State Forestry Administration is supervising the establishment of Pudacuo and other parks in Yunnan through the Yunnan Forestry Bureau.
- **Yunnan provincial government:** The provincial government makes policies and regulates park establishment across the province. Within the provincial government, the Yunnan Forestry Bureau created and supervises the Yunnan Provincial National Park Management Office (YPNPMO). The YPNPMO coordinates agencies, experts, and institutions to develop relevant guidelines and standards and implement the park application and approval process.
- **Diqing prefecture government:** Diqing oversees the on-the-ground management of the park and coordinates with local-level agencies. The prefecture selected and now oversees the three park offices responsible for the day-to-day operations including:
  - » **Bita Lake Nature Reserve Station (within the Forestry Bureau)**—This “conservation station” was in operation prior to the establishment of the national park. It still manages the Bita Lake portion of Pudacuo on behalf of the Forestry Bureau. The station receives and allocates funding from the provincial government for research and monitoring, and from the prefectural government for staffing.
  - » **State-owned tourism investment company (within the State Asset Regulatory Commission)**—With guidance from the prefecture, this company develops all aspects of tourism such as ticketing and collection of entrance fees, facility maintenance, and interpretation. The director of the Bita Lake Nature Reserve Station is the deputy officer of the tourism company, which employs 230 people in Pudacuo.
  - » **Pudacuo National Park Bureau**—This bureau provides administrative management for the entire park. It employs only a few staff.

**Figure 3–25 Offices of the Diqing prefecture government associated with Pudacuo National Park**



## NGO Role

TNC acted as a catalyst to generate support for the national park concept and the creation of Pudacuo as the first national park. The organization has served as a technical advisor for park design and management, bringing to bear its knowledge of international park management practices. The Yunnan program of TNC also engaged Dr. Yang in the development of the standards and guidelines for national parks across China. TNC has not yet fulfilled its goal to improve the interpretation system in Pudacuo so that visitors can gain a better understanding of the park's values.

## Successes

**National park model is up and running**—It took six years of concerted effort on the part of TNC to garner support for the national park idea. Ultimately, the organization succeeded and Yunnan took a “leap of faith” to create Pudacuo National Park. Today, the park is serving as a model for how to balance conservation with limited development while generating significant income.

**Skyrocketing visitation and revenues**—From 2005 (prior to park designation) to 2009, Pudcauo enjoyed a 20-fold increase in income and a 5-fold increase in tourists. The park generated 117 million RMB of revenue and attracted 650,000 visitors in 2009 alone.

**Improved protection for biodiversity**—The creation of Pudacuo expanded size of the protected area by four times and eliminated some activities that were negatively impacting biodiversity, such as horseback riding around Bitá Lake.

## Challenges

**Use of revenues**—The Park is generating significant revenues but little is returning to conservation. Originally, the project aimed to dedicate 10-15% of its income for monitoring and other conservation activities. Drs. Yang and Ye recommend using the revenue to monitor the impacts of tourism on biodiversity, tourist behavior compared to that in other types of protected areas, and changes in the local community in terms of income, lifestyle, and attitudes toward the park.

**Implementing a new model**—Implementing any big new idea can be a daunting task. It took many years to secure enough support for the national park to convince the government to implement it. There were no rules and regulations to guide the effort, and the government questioned the utility of creating a new model when nature reserves, scenic areas, and other types of protected areas already existed. Now the Central Government must decide whether and how to support the creation of national parks in other parts of the country. Until then, it is unlikely that other provinces will do so.

**Ensuring sustainable management**—At present, there is no regulation of grazing in the park boundaries. There is no consensus about whether the amount of grazing currently in the park is sustainable.

## Replicability

Based on Pudacuo's impressive visitation and revenues, it is clear that national parks can effectively generate fresh interest and income for protected areas while maintaining or expanding biodiversity protection. However, it may be challenging to create national parks in provinces other than Yunnan due to the lack of policy guidance at the State level. Yunnan is the only province with national park guidance, and, despite the "national park" title, no central-level guidance exists for these parks.

The timeline for Central Government action is uncertain. Ultimately the State Council will need to make a decision on whether and how to support the creation of national parks in China, and who will be the managing agency. The State Forestry Administration has led the Yunnan effort, but other agencies such as the Ministry of Environmental Protection and the Ministry of Construction have expressed the strong desire to lead the national effort. Creation of a new agency is highly unlikely and "would take 100 years," according to one of the interviewees. At the same time, this lack of Central Government policy also presents an opportunity for local governments to create national parks as they see fit.

**Below: Yu Jia Shan is the first and only private nature reserve with panda habitat.  
Photo by Megan Kram**



## YU JIA SHAN: China's First Private Nature Reserve

## Interviewees

- Liu Yong, businessman and manager of the Yu Jia Shan Nature Reserve
- Chen Youping, Vice-Minister, Pingwu County Forestry Bureau
- He Xin, Project Manager, Shan Shui

## Introduction

“I am an unlucky man,” proclaimed Liu Yong only half-jokingly, “a very unlucky man.” In 1997, Liu purchased the logging rights to 1,000 hectares of forested panda habitat just outside of Jinfeng Village in Sichuan Province. Just one year later in 1998, the government issued a logging ban in the area, in response to the Yangtze River flooding. Unable to harvest the timber or earn significant income from the land via other means, Liu worked with the Pingwu County Forestry Bureau to establish Yu Jia Shan as China’s first private nature reserve in 2006. Liu is now the proud manager of the nature reserve and enjoys sharing the forest, water, and wildlife with others.

Yu Jia Shan is unique as China’s first and only private nature reserve with panda habitat. While it is an official protected area as authorized and created by the county government, Yu Jia Shan is considered “private” for several reasons:

- It is comprised entirely of collective lands—not state-owned lands as is the case with other nature reserves;
- It receives no regular funding from the government; and
- None of the nature reserve staff are government employees. Liu is self-employed and has hired three staff himself.

The circumstances of Yu Jia Shan’s creation led to this unique arrangement. However, the private protected area model—as well as the PES and conservation agreement efforts—could certainly be replicated in other places with different circumstances. In addition, this project provides an important example of a “conservation use right” in the form of the non-use (for the most part) of the timber.

This case study describes the unique aspects of this private nature reserve and the process by which it was established. It also describes the cooperative agreements that NGO Shan Shui (formerly Conservation International, CI) has helped broker between the Yu Jia Shan and the Forestry Bureau, and between Yu Jia Shan and the local community. Finally, it explains how a ground-breaking, collaboratively-managed, and county-wide funding source—the Pingwu Biodiversity and Water Fund—is financing Yu Jia Shan and other conservation priorities, in part through Payments for Ecosystem Services (PES).



## Vision

- To demonstrate a new model for protected areas in China—private nature reserves
- To establish private nature reserves' potential for ecological sustainability through agreements with the local community
- To prove private reserves' potential for fiscal stability through Payments for Ecosystem Services and other funding sources

## Project Area

Located five kilometers outside the Pingwu Township, the Yu Jia Shan County Nature Reserve encompasses 1,000 hectares in Pingwu County. Yu Jia Shan is a small but important component of a network of nature reserves that protect panda habitat in the Mingshan Mountains. The Mingshan Mountain region in Sichuan and Gansu Provinces is the most important of four key areas for pandas.<sup>163</sup> Of the total global population of 1,500 pandas, 650 (more than 40%) live in the Mingshan Mountains, within which Pingwu County is the global stronghold. More than 40% of Pingwu County is panda habitat, and the county is home to approximately 200 pandas, the largest number of pandas of any county in China or the world.

Yu Jia Shan is the smallest of four nature reserves in Pingwu County, the others being Wanglang National Nature Reserve, Xubaoding National Nature Reserve, and Xiaohegou Provincial Nature Reserve. Together, these nature reserves capture 20% of the area of the County and more than 50% of the County's panda habitat. Yu Jia Shan abuts one other protected area—Tangjiahe National Nature Reserve in the adjacent Qingchuan County.

In addition to protecting panda habitat, Yu Jia Shan is the source of Pingwu Township's drinking water. Two streams wind their way through the nature reserve and a water treatment plant lies just downstream of it. Some agricultural plots lie just upstream of the nature reserve and the heavy use of pesticides and fertilizer is affecting water quality, as are goat droppings.

Unlike most if not all other nature reserves in China, Yu Jia Shan is comprised entirely of collective lands. The managing village is a small hamlet just outside of the reserve boundary and includes 17 households and approximately 50 residents. The average household income is 3,300 RMB per hectare per year from sources such as the Grain for Green Program and the Natural Forest Protection Program, beekeeping, and construction labor. Poaching of pandas, musk deer, takin, and other bushmeat is negatively impacting the nature reserve.

---

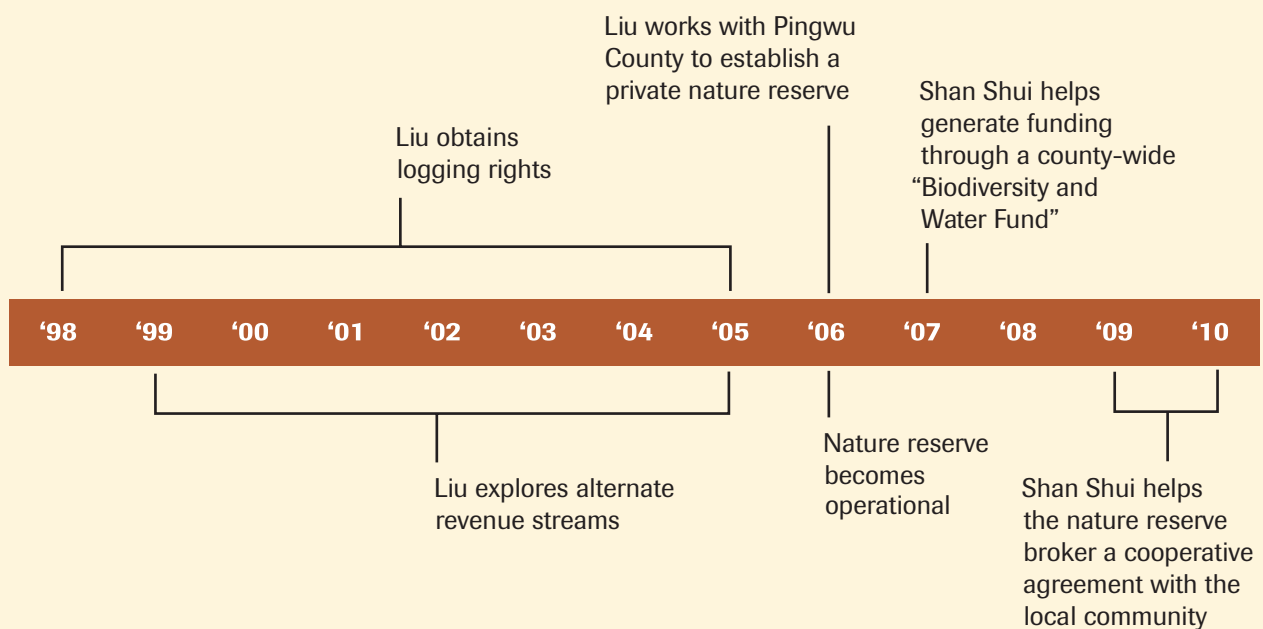
<sup>163</sup> The others include the Qingling Mountains in Shaanxi Province, the Qionglai Mountains and Daxiaoxiangling Mountains in Sichuan Province.

Prior to its designation as a nature reserve, the area was part of a forest farm and was logged until the timber ban in 1998. To implement the timber ban, the county government zoned a series of “public benefit” or “ecological” forests (see Part 1, Lay of the Land) which included the Yu Jia Shan area. Today, the mountainsides are recovering well and are forested with young trees.

## Project Creation

This case study describes the history of the project since 1997 when Liu obtained the logging rights. The real conservation action started in 2006, with the creation of the Yu Jia Shan nature reserve (Figure 3–26).

**Figure 3–26. Steps and timeline for the creation and management of Yu Jia Shan Nature Reserve**



**1. Liu obtains logging rights**—Liu originally purchased 50-year logging rights for 320,000 RMB to harvest timber, not to establish a nature reserve. He bought them from a Chengdu businessman in 1997, who had purchased the use rights from the collective land managers in 1996. They were displeased with the original lessee and was eager to find a new lessee, especially a Pingwu County local like Liu. In purchasing the use rights, Liu assumed approximately 1 million RMB of owed benefits to the community including electricity, road construction and maintenance, satellite for television, and annual payments of 500 RMB per year for 40 years (after the first 10 years of the lease). Liu received two contracts for the use rights—one from the Chengdu businessman, and one from the village and the county.

**2. Liu explores alternate revenue streams**—After the Central Government banned logging in 1998, Liu considered different ways to recuperate his costs. He pursued income from the Natural Forest Protection Program (which he still receives). However, additional income sources were needed. Liu considered all of the following possibilities, none of which were viable options:

stone mining, which county regulations prohibited close to streams; ecotourism, which was financially prohibitive; harvesting frogs for medicinal purposes, but the frogs were nearly impossible to catch; and herb growing, which required 7 growing seasons prior to harvest.

Thus, stuck with logging rights that he couldn't use and resources that he couldn't access or harvest, at least not in the near term, Liu was faced with a choice: sell the logging rights at a loss, or keep the logging rights and increase the potential for revenue by turning the land into a nature reserve. He appreciated the natural beauty of the area and chose the latter scenario.

**3. Liu works with Pingwu County to establish a private nature reserve**—Liu approached the Pingwu County Forestry Bureau with his plan. It was an easy sell due to his relationships, the importance of the site for panda habitat, and because the land was the headwaters of the local drinking water supply. Liu knew the head of the Forestry Bureau in 2006 well because he had also, coincidentally, been the leader of the village in 1998 when Liu secured the forest use rights. (Today, that same individual is one of the vice-ministers of the county government as a whole.) Liu also consulted the village about his vision, which was eager to embrace a new revenue source because they were hurting financially from the timber ban. Prior to the ban, 70% of the county's income was from logging.

In accordance with the Regulations on Nature Reserves (1994), Liu submitted an application to the County Forestry Bureau to establish a county-level nature reserve. The Forestry Bureau reviewed the application and submitted it to the county, who then approved it. The entire process, from application to approval, took approximately six months. The approval went quickly because it was free to the county, which did not have funds to contribute. The county was already financing the three much larger reserves in the county. (The county has, however, provided funding for the private reserve on two occasions thus far).

**4. Nature reserve becomes operational**—As part of becoming operational, Shan Shui helped Yu Jia Shan develop a master plan and obtain funding for staff and other costs. Like the master plans for other nature reserves, Yu Jia Shan's plan identifies three zones of use—a core area (no humans allowed), an experimental zone, and a buffer zone. Yu Jia Shan's plan for the experimental zone allows herb plating and harvest, logging of cultivated trees (if and when the timber ban is lifted), and the construction of a conservation station to house local staff.

Shan Shui also helped broker a deal between Yu Jian Shan and the County Forestry Bureau for the period of 2006-2008, whereby the Forestry Bureau would pay 100,000 RMB to the nature reserve for patrolling and monitoring costs. This was the first of two "Conservation Steward Agreements" (CSAs) signed between these parties. CI and Shan Shui facilitate the creation of CSAs worldwide to establish mutual understanding between the holders of use rights and other stakeholders.

Liu pays and manages a staff of three for monitoring, patrolling, and community relations. He also hires extra help during the winter, when poaching is most common. One full-time patrol officer is especially well-qualified: he was a poacher himself. Each staff member earns approximately 1,000

RMB per month, or 50 RMB per day. That amount is half of a “good salary” in Pingwu County of 100 RMB per day, and less than the average salary of 60-80 RMB/day. Even paying lower wages, Liu found that the costs of managing the reserve were beyond his ability to finance alone.

### **5. Shan Shui helps generate funding through a county-wide Biodiversity and Water Fund**

—Shan Shui realized that the County’s (then) one-time contribution to Yu Jia Shan, while extremely valuable, could not be depended upon in future years. Furthermore, it believed that the nature reserve could not be expected to generate significant income in the foreseeable future due to limitations on timber harvesting, ecotourism, and mining. To keep the nature reserve afloat and also fund other conservation priorities in Pingwu County, Shan Shui proposed the creation of a Biodiversity and Water Fund (Water Fund), to be funded in part through Payments for Ecosystem Services.

He Xin from Shan Shui (then CI) first introduced the Water Fund to the Vice-Governor of Pingwu County in 2007. Since then it has “taken on a life of its own.” The idea appealed to all the stakeholders. Most importantly, it appealed to Pingwu County because it would allow the local government to collect revenue that would actually remain in the county. Often, fees collected by the county do not remain there. For example, the counties in Sichuan Province collect water use fees, but must turn them over to Provincial government for redistribution.

In 2009, Shan Shui seeded the fund with 350,000 RMB. The County and Shan Shui distributed the initial pot to the reserve (55%), to projects in the form of grants (40%), and to operations (5%). Yu Jia Shan received 50,000 RMB for monitoring and patrolling (45,000 RMB) and to incentivize the community to decrease its impacts on the nature reserve (5,000 RMB).

As of mid-2010, the fund had received more than 1.1 million RMB, of which Yu Jian Shan received another 50,000 RMB for the purpose of monitoring, patrolling, and water conservation. Sources of the Water Fund included:

- Payments for Ecosystem Services: 500,000 RMB from a large state-owned hydropower company in Pingwu County
- Donations from corporations: Funding from Dreamworks, the producers of Kung Fu Panda; 400,000 RMB from Marriott Hotels; and 200,000 RMB from Pingwu County

The County keeps the money in a separate account at the local bank. The Fund is managed by a team of nine members from Shan Shui/CI and county government. In the future, membership may be expanded to include members of the local communities. The Vice-Governor of Pingwu County has primary responsibility for securing funding and is the overall manager of the fund. According to He Xin, ideally the fund would have dedicated fundraisers.

**6. Shan Shui helps the nature reserve broker a cooperative agreement with the local community**—As previously mentioned, the villagers use the lands inside the nature reserve as (illegal) hunting grounds. Also, their activities upstream of the nature reserve negatively impact the streams within it, primarily through heavy pesticide and fertilizer use and contamination from goat droppings. To address these issues, Shan Shui is facilitating an agreement between the nature reserve and the villagers to establish a mutual understanding of allowed and prohibited activities and to incentivize the village to abide by the agreement.

This agreement is still in negotiations as of this writing. However, the parties have agreed that 12,000 RMB is necessary to secure the community's cooperation. The 2010 Water Fund contribution to the nature reserve allocated just 5,000 RMB for distribution to the community, while Shan Shui donated an additional 7,000 RMB. In future years, Shan Shui anticipates that the Water Fund will fully fund the effort (instead of Shan Shui needing to contribute).

Shan Shui and the nature reserve will organize a “village conference,” to be attended by all the villagers, to decide how best to use and manage the money. The funding could, for example, fund the creation of alternative sources of income to the villagers such as beekeeping. It may also be used to pay villagers to not engage in certain activities such as grazing goats near streams. The distribution of the funds will probably include a combination of direct payments to households and a lump sum payment to the village. As He Xin said, “It is good for the households to actually feel the money.”

In the event of a lump-sum payment to the village, Shan Shui has full confidence in the village leaders' ability to manage the money. In 2007, Shan Shui introduced World Wildlife Fund (WWF) to the Yu Jia Shan project. WWF gave a small grant of 9,000 RMB to the Yu Jia Shan community for the purpose of microcredit loans. The community has managed the grant very well, creating a community fund and lending out money to individuals based on village approval. The fund collects interest and has grown to 11,000 RMB.

## Successes

**Creation of a private nature reserve**—The timing was right to establish a nature reserve and all the stakeholders were supportive of doing so.

**Stakeholder benefits**—Pingwu County and Pingwu Township are enjoying a greater degree of water protection at limited additional cost. The village is benefiting financially. Finally, the nature reserve designation has enabled Liu to generate some revenue when he otherwise could not.

**Biodiversity outcomes**—The biodiversity outcomes have also been positive. Based on monitoring by the nature reserve staff, more wildlife such as golden monkeys and pandas have been utilizing the area. This is due to increased forest cover, better fire prevention, and more effective control of poaching.

**Creation of the Biodiversity and Water Fund**—The project partners have successfully established this county-wide fund based on donations and, to a lesser degree, Payments for Ecosystem Services. Donations to the fund are increasing over time. The partners have created regulations and assembled an effective team to guide its management.

## Challenges

**Funding for the nature reserve**—Financial support has been the biggest challenge for the reserve. The government was fully supportive of creating a nature reserve, but had no consistent stream of revenue to offer. As a result, the nature reserve is almost entirely funded by private contributions, both directly (e.g., from Liu and Shan Shui) and indirectly (from corporate donors through the Water Fund). Finding a continual, renewable source of revenue is critical to continued protection of the area.

**Funding for the Biodiversity and Water Fund**—Since its creation in 2007, the fund has received support primarily from Shan Shui, various corporate donors, and one hydropower company. This is a supportive but random array of contributors, who, for the most part, are making one-time donations. Ideally the fund would be supported more by companies having direct impacts on the ecosystem and would be allocated to more closely offset actual impacts by the donors.

**Heavy reliance on NGO support**—The project is heavily dependent on Shan Shui. Given the endless conservation opportunities in China, it can be challenging for NGOs to determine how much time to dedicate to any one effort—and when to exit.

## Replicability

There are two aspects of this project that are particularly replicable: the private nature reserve and the Biodiversity and Water Fund.

**Private nature reserve**—The circumstances that led to the creation of the Yu Jia Shan private nature reserve were very unique and are not likely to be duplicated. That being said, it would still be possible to create a private reserve in a different locale, as TNC is attempting with its Motianling Land Trust Reserve project (see Chapter I, Tools and Strategies). First and foremost, there is nothing in Chinese law that prohibits the acquisition of forest or other use rights (aside from agriculture) for “non-use” purposes. Beyond that, success requires the support of the local government and a dependable funding stream. It is possible that local government would support the creation of a private reserve, so long as the benefits outweigh the costs. In the case of Yu Jia Shan, the county government was thrilled to have Liu protect an important source of drinking water at little additional cost to the county, and the other resources were virtually inaccessible anyway.

**Biodiversity and Water Fund**—As previously mentioned, Pingwu supported the Water Fund because it could keep any funding it secured rather than sending it “up the government chain” as is the case with most fees that counties collect. For this reason, other counties may be equally as enthused about establishing such a fund. Securing the funding would be the primary challenge, followed by fund management. Pingwu County is in an usually easy position to raise private funds because of its panda habitat. Other counties may have more difficulty securing funds from private sources. Payments for ecosystem services are ideal for generating funding, but it is challenging to negotiate PES with companies who have no legal requirements to buy services and do so only to show goodwill. Counties that create legal requirements or incentives for companies to offset activities with PES would be much more effective in generating funds.





**Below: View of the Yanshan Mountains from a lookout tower at Songshan Nature Reserve. As part of the model reserve effort, Songshan aimed to attract more tourists through well-maintained infrastructure and world-class interpretation. Photo by Megan Kram**



## SONGSHAN: Evolution of a Model Nature Reserve

## Interviewees

- Wu Jigui, Director of Natural Resource Management, Beijing Songshan National Nature Reserve
- Guangzhi (Lucy) Yu, The Nature Conservancy

## Introduction

Rising dramatically from the vast, flat expanse where the Hebei grasslands meet the northern hills of Beijing, the Yanshan Mountain Range is an area rich in natural beauty and historical significance. The Songshan Nature Reserve lies within these storied mountains. Here, the Great Wall of China follows a lumpy ridgeline until it meets the East China Sea, ending its 5,000 mile traverse across China. The pine forests of the Yanshan Range have long been an important economic, environmental, and cultural resource for the people of northern China. During the Qing Dynasty, the Emperor Kangxi was so enchanted by the rugged, picturesque mountains that he ordered a lavish royal complex—the “Escape the Heat Palace”—to be built in the forested foothills of Yanshan.

Today, the forests are flourishing, and Songshan has become 1 of 51 model nature reserves in the country. This case study examines the establishment and evolution of Songshan Nature Reserve, with special attention paid to the implications of designation, policy, and management that arise from its unique location close to China’s capital city. Songshan is a typical example of a nature reserve in China, and thus provides a lens for examining the shortcomings, successes, and lessons learned from this particular—and common—protected area approach.

## Vision

- To protect one of the best examples of temperate forest ecosystems in the greater Beijing municipality as 1 of 51 model nature reserves in China
- To serve as a “conservation window” to other nature reserves in the country

## Project Area

Beijing Songshan National Nature Reserve lies in the heart of the Yanshan Range, a 90-minute drive northwest of downtown Beijing on the border of Hebei Province. It is one the closest nature reserves in China to the seat of national government. Songshan is surrounded by nature reserves on two of its three sides, while the third side is bordered by community forest lands. Songshan’s boundary is occasionally marked by signposts, and generally follows natural geographical features such as ridges and rivers.

In a small valley within Songshan's borders lies a small village called Dazhuangke. Today, approximately 70 people live in the area. While the rest of the reserve is state-owned, the village is in collective ownership, with the villagers responsible for land use decisions as prescribed by their rights in the collective ownership framework.

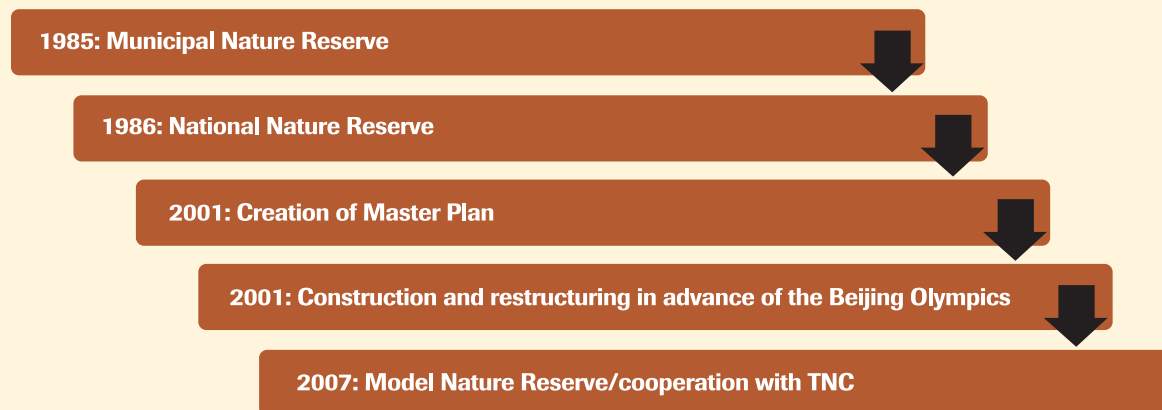
Songshan was established to protect existing regional forest ecosystems and is home to not only warm temperate deciduous broad-leaved forests, but also Chinese pine and Mongolian oak forests. With 88% forest cover, its 4,660 hectares provide refuge for a variety of native animal and plant species that are threatened by increasing development in the region.

Songshan's pine resources are a particularly important conservation target. In fact, in Chinese, Songshan means "Pine Mountains," a name that reflects the historical prevalence and social importance of the region's natural pine stands. The stands of Chinese pine at Songshan are the only natural stands in the Huabei (north-central China plain) region and are, thus, areas of both ecological and educational importance. Due to the use of the Chinese pine in everything from furniture to pharmaceuticals, centuries of logging and deforestation have left few remaining stands of old-growth Chinese pines in the country. Thus, by protecting 100 hectares of one of the few old growth forests of Chinese pine in Beijing Province, Songshan further cements its significance as a conservation project.

## Project Creation

Songshan's status as a protected area has evolved over the years, from its beginnings as a municipal-level nature reserve to its promotion to a national-level nature reserve. Songshan's transition from a lower level reserve to a national reserve represents a relatively common trajectory for nature reserves in China (Figure 3–27).

**Figure 3–27. Steps and timeline toward the creation of Songshan as a model nature reserve**



**1. Creation of a municipal nature reserve (1985)**—Before its designation as a municipal nature reserve in 1985, the Songshan area was a forest farm (林场) and was subject to commercial timber production and harvesting in select zones. The region first received protected status in 1985 when the Beijing Garden and Forestry Bureau (BGFB) established it as a Beijing Municipal Nature Reserve. The reserve was notable for its rich natural resources, limited degradation, relatively sparse resident population, and its proximity to Beijing, the political heart of the nation. Local residents traditionally used the forested hills of Songshan as a source of fuelwood and other commercial or personal commodities, such as wild mushrooms. Upon transition from forest farm to nature reserve, there were few changes to the use of the collective lands within Songshan’s boundaries.

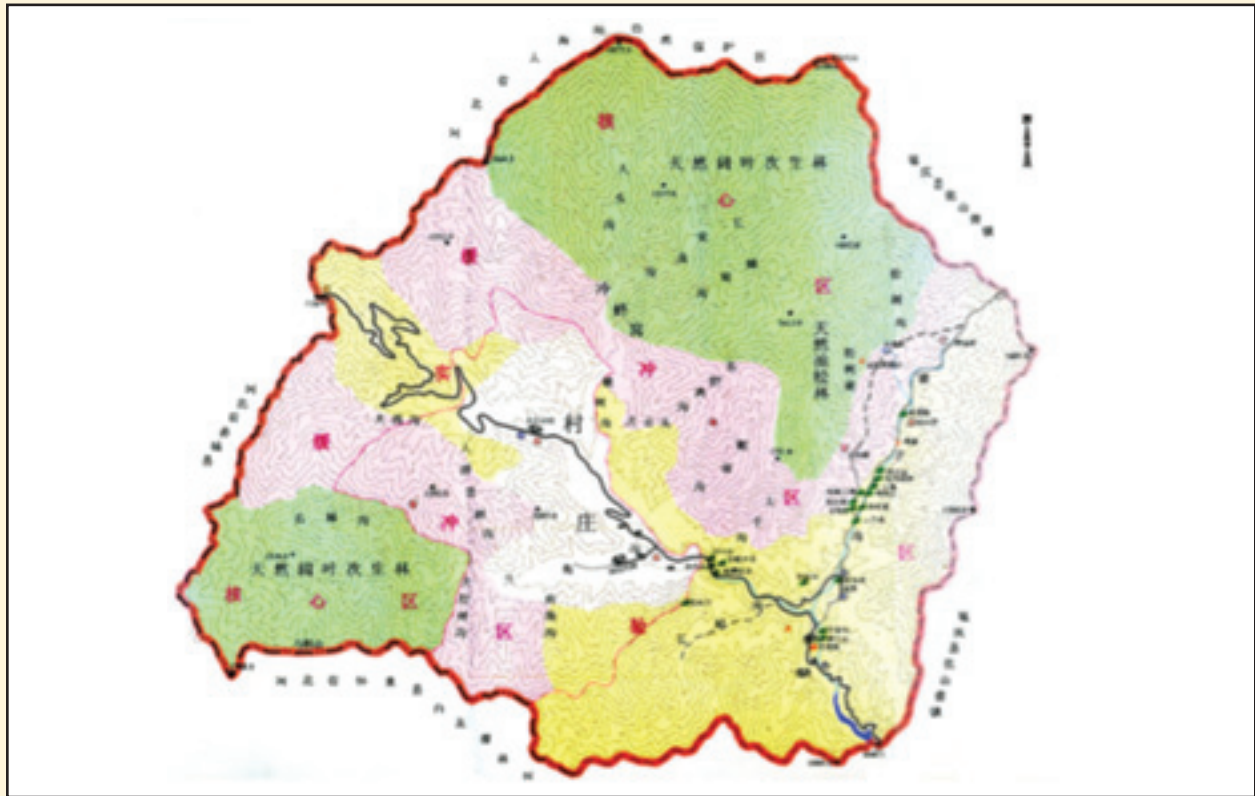
**2. Promotion to a national nature reserve (1986)**—Under the legal framework guiding the establishment of national-level nature reserves, only a nature reserve with municipal or provincial status can achieve national status. Because Beijing is not governed as a province, but as a special type of municipality, Songshan became a national-level protected area.

**3. Creation of Master Plan (2001)**—From its establishment in 1985 as a municipal nature reserve until a large influx of funding in 2005 prior to the Beijing Olympics, the majority of Songshan’s forest area was closed and not subject to active forest management policies. Over this period, there were few changes to the management structure and there was no active conservation strategy or activity. Smaller steps to reform the management of the park occurred in 2001 with the development of the first official Master Plan under guidance of the SFA and the BGFB.

The *Songshan National Nature Reserve Master Plan* serves as the foundation for the development and management of the nature reserve. The plan specifies both short and long-term development goals for reserve partition, wildlife conservation, capacity building, infrastructure development, community involvement, public education, and ecotourism. As specified in the Master Plan, the first stage (2001-2006) saw the completion of the specimen exhibition hall, education building, and fire control tower as well as the renovation of restaurants, shops, and roads. A second Master Plan is currently under review, and will be implemented in 2011.

The Master Plan divides Songshan into three zones—the core protection zone which accounts for 39% of the reserve, the buffer zone covering 27% of the reserve, and the experimental zone covering 34% of the reserve (Figure 3–28). All of the reserve’s infrastructure and visitor facilities are contained within the experimental zone, such as the visitor’s center, lodging, and hiking trails. The objective of zoning at Songshan, as with other nature reserves, is to allocate appropriate activities to areas with respect to conservation objectives. This allows a high level of protection in one part of the protected area and controlled levels of minimal impact use in other parts.

**Figure 3–28. Songshan's zoning divisions: green = core zones, pink = buffer zones, yellow = experimental zones, and white = village**



To encourage conformance with the master plan, the villagers are offered compensation to discourage the illegal harvesting of timber. They are permitted to collect fuelwood, but they also are charged with the process of self-monitoring and enforcement. The Beijing municipal government provides the funding for the compensation. The agreement is broken into two parts: Villagers receive 23 RMB for every mu they control within the protected area; in addition, villagers receive the national compensation rate under the Natural Forest Protection Program. The Songshan management office employs villagers throughout the year, giving them additional income opportunities.

#### **4. Construction and operations in anticipation of the Beijing Olympics (2001)—**

Construction of reserve facilities began in earnest after the creation of the first Master Plan, and in anticipation of the Olympics, and also upon creation of a second master plan in 2005. There is now a visitor center, restaurants, a walking path, a hotel, and several stations on the trail including bird watching platform, a fire outlook pagoda, and trash cans shaped like tree stumps. The entrance fee is 50 RMB. Annual visitation is averaging 70,000 per year, which is down from more than 100,000 per year in the early 1990s when the government placed an emphasis on tourism. This reduction in tourism was one of the drivers for the creation of Songshan as a model nature reserve (see next section).

The visitor center and the four-kilometer pathway are two of the park's greatest assets and tourist attractions. The center is a lovely two-room building, complete with brilliant photographs of Songshan and many of the other model nature reserves in China. The pathway, which meanders up a gentle slope and ends at the boundary of the core zone, provides a pleasant experience (even though the vegetation on either side of it was being drenched with pesticides as the authors hiked), surrounded by examples of Chinese pine and other plant and animal species. The path is laid in stone for the entire four kilometers, and features interpretation signs, benches, side trails to overlooks, and bridges across a small stream.

There is a side “tourist attraction,” an illegal development, about 1.5 kilometers from the visitor center along the nature trail. It consists of rickety rope bridges that were built and run by an individual in the mid-2000s. The operator would live for six months out of the year in the experimental zone, and charged 10 RMB per person to walk across the “Indiana Jones”-style bridges. The operator also constructed a small dam to create a mini reservoir that contributed to the aesthetic of the attraction. The individual has since left and the platforms, bridges, and dams are scheduled to be torn down, presumably at the expense of Songshan.

Today, Songshan is jointly managed by the State Forestry Administration (SFA) and the Beijing Garden & Forestry Bureau (BGFB). SFA is involved in national-level administration and provides review and approval for master plans. The BGFB directly manages the structure and policies surrounding the management of Songshan. Besides providing SFA with occasional reporting and other information, the BGFB is the *de facto* government body in charge of Songshan and budget approval. Songshan itself is responsible for the day-to-day administration of the park. There are 36 employees, plus 10 or so people who are hired from village on occasion for fire prevention and monitoring.

**5. Model nature reserve and TNC involvement**—In 2007, the BGFB and SFA commissioned TNC to collaborate with Songshan to discuss installation of global-standard interpretation in Chinese nature reserves. As an outgrowth of this effort, SFA and TNC agreed to establish 51 model nature reserves across the country. TNC and Songshan worked together to complete the following efforts; similar efforts are being completed in other model reserves:

- Created a “Conservation Action Plan (CAP),” a TNC planning document that assesses the status of biodiversity values, prioritizes threats to these values, and identifies management strategies to abate the threats. Nature reserve staff, experts, and local community members participated in the process.
- Built the capacity of nature reserve staff for planning, GIS and nature reserve management.
- Supported Songshan’s tourism planning efforts to disperse and minimize negative impacts from visitors.

- Invited fire experts to identify the role of fire in the protection and restoration of Chinese pine in the nature reserves.
- Partnered with General Motors (China) to construct a visitor center.
- Completed education and outreach activities including a handbook about Songshan’s plants and birds, a short video to promote the reserve, and a summer volunteer interpreter program.
- Helped build Songshan’s website in order to attract tourists and generate more revenue.

## NGO Role

Currently there are no partnerships with NGOs other than TNC, described in detail above. However, Songshan seeks a bigger NGO presence following its positive experience with TNC. It desires to work further with NGOs to help establish better forest management programs and to establish connections with foreign entities.

## Successes

**Public-private partnership and model nature reserve**—The creation of Songshan as a model nature reserve helped increase the reserve’s planning, capacity, education, and outreach. According to Wu Jigui, visitors to the park increased dramatically after the initial creation of the model nature reserve; however the numbers leveled and eventually fell after a few years due to minimal funding to promote the park to tour groups and travel agencies.

**Resource protection**—A well-trained staff at Songshan has enacted a series of mechanisms important to the long-term protection of the reserve. According to official reports, there has been no fire, illegal logging, or poaching in the reserve for 21 years. Songshan relies on a forest patrol system and patrol team to strengthen the conservation and management of ecological resources. In 2005, a team for fire suppression was established.

## Challenges

**Funding**—Like most nature reserves, Songshan has far less funding than it would like. The most pressing needs for additional funding are facility operation and maintenance, marketing, removal of the illegal dam and rope bridge, and, according to one park scientist, additional monitoring.

**Ecosystem management**— Arguably, the reserve places too much emphasis on fire suppression, with the fire suppression team, a consistently-staffed fire observation tower, and “no smoking” signs everywhere. The use of “bug zappers” and pesticides on either side of the nature trail is ecologically questionable in a nature reserve, particularly since the trail runs along a creek

**Enforcement**—While Songshan has been successful in preventing illegal logging and poaching, monitoring and enforcement remains a challenge. There has been an increase in locally-led tourism which is problematic because tourists are accessing, with the aid of local villagers, the core zones of the reserve by a trail leading from the village to the summit of Haitou Mountain—the highest peak in Songshan. This access is having a serious negative impact on the ecosystem along the trail. Due to the unplanned tourism, several new trails have appeared in several valleys in the reserve, and the vegetation along these trails is also damaged to some extent.

## Replicability

It is expected that SFA will evaluate the success of the model nature reserves after more time has passed, and will decide at that time whether to replicate the program.



**Below: Dai Guofu stands in front of a statue that reads “Darwin” at the Nanwan Monkey Islet Eco-tourist Attraction. Photo by Megan Kram**



## MONKEY ISLAND: Conservation Development for Primates, People, and Profit

## Interviewees

- Mr. Dai Guofu (above), Developer and Chair of the Hainan Nanwan Monkey Islet Eco-tourist Attraction
- Dr. Long Yongcheng, Chief Scientist, TNC's China Program

## Introduction

In the middle of the Monkey Island development and surrounded by lush vegetation, a bronze statue of a monkey gazes thoughtfully at the human skull in the palm of its hand. “Darwin,” the inscription reads.<sup>164</sup> The statue embodies businessman Dai Guofu’s philosophy of development and conservation: Projects must respect nature or humans will cause their own demise.

Upon visiting Nanwan Monkey Island in the mid-1990s, cable car entrepreneur Dai saw the opportunity to profitably apply this philosophy while resolving many of the island’s issues. The island, established as a nature reserve in the 1970s, was suffering from decaying tourism infrastructure and unsustainable fuelwood harvest on the part of local villagers. Annual visitation had dropped from 200,000 in 1990 to 30,000 in 1995, which reduced income for the nature reserve and the local people. Related, the local people were hunting the resident Hainan rhesus monkeys, a state protected species, for bushmeat, medicinal purposes, and even out of self-defense—the monkeys had a habit of harvesting farmers’ young sweet potatoes. With just 100 monkeys remaining, the future of the primates and their habitat did not look promising.

Fortunately for the monkey population, Dai had a vision of a conservation development and the resources and savvy to execute it. Today, Monkey Island is a major tourist destination that is protecting the forest and wild monkeys, enhancing villagers’ livelihoods, and generating ever-increasing profits. And, of course, the development includes a cable car—China’s longest overseas cable car, in fact. This case study shows how conservation development projects can be sustainable and benefit all stakeholders involved, arguably with the exception of 100 show monkeys.

## Vision

- To generate a profit by developing a tiny portion of Monkey Island for tourism and conserving the remainder of the island for the Hainan rhesus monkey
- To conserve biodiversity while benefiting local people

---

<sup>164</sup> The sculpture is modeled after Hugo Rheinhold’s “Monkey with Skull.”

## Project Area

Nanwan Monkey Island is actually comprised of two peninsulas and a small island. Together, these landforms constitute 1,000 hectares (nearly 2,500 acres) on the south coast of Linshui County in Hainan Province. They are an hour's drive east of the town of Sanya, which boasts China's most popular beaches and an airport. The peninsulas are surrounded on three sides by the South China Sea and serve as the only tropical-type nature reserve for macaque monkeys in the world. Today, 24 tribes of approximately 1,000 monkeys inhabit the area. Four of these tribes serve as the "show monkeys" for Dai's development on one of the peninsulas, while the remaining 20 tribes roam freely outside the development area. As recently as the 1960s, the local people used significant portions of the land for agriculture. Now, however, most of Monkey Island is covered with forest and fruit trees such as lychee, coconut, and jackfruit.

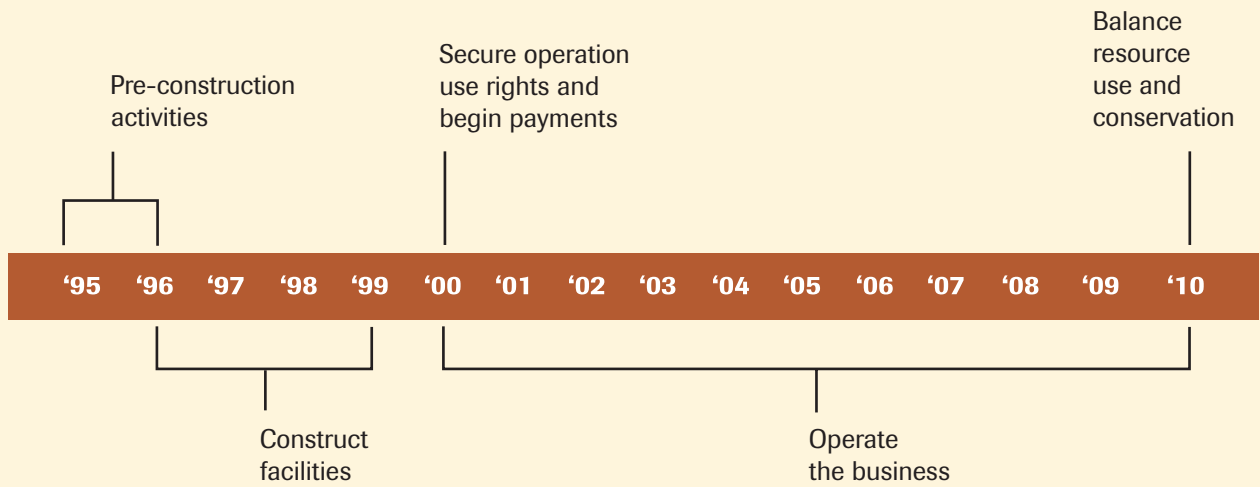
The nature reserve is a provincial-level protected area that the Hainan Provincial Forest Bureau operates through a conservation station. The nature reserve covers 90% of the peninsulas and consists of the traditional core, buffer, and experimental zones. The 10% of the island outside of the nature reserve primarily lies along the outskirts of the peninsulas, along the sea. The conservation development project covers less than 1% (80 *mu* or 5.6 hectares) of the peninsulas near its outskirts and straddles the boundary of the nature reserve. Ten *mu* of the development lie in the experimental zone of the nature reserve. The remaining 70 *mu* lie in what was previously collective unused land (wasteland) that the local government requisitioned for the project.

There is one village associated with the island consisting of approximately 400 households and 1,200-1,500 people. Most of the villagers reside in shacks that float in the channel between Monkey Island and the mainland. The villagers earn their incomes through employment with the conservation development, fishing, sales of food and gifts, and other tourism-related activities. The world's fastest cable cars fly over the village, shuttling tourists between the development project and the mainland. At 2,138 meters, the cable lines comprise the longest overseas cable car in China.

## Project Creation

Establishing the project was relatively straightforward, largely due to the clear and significant benefits that the conservation development would provide to the stakeholders. Operation began in 2000, just five years after Dai first visited the site for the first time (Figure 3–29).

**Figure 3–29. Steps and timeline in the creation of Monkey Island Conservation Development**



**1. Pre-construction activities**—To prepare for the construction of the cable car and on-site tourist facilities, Dai conducted a socioeconomic survey, garnered government approval for a general strategic plan, and obtained separate approval for construction. The survey captured data such as population, age, and income of local villagers in order to learn about the potential employment base. Based on the survey, Dai created a general strategic plan to describe the project including anticipated improvements to local livelihoods, proposed locations of cable car and tourism infrastructure, profit-sharing agreements, environmental impacts, and other aspects of reserve management. Because the project would affect a provincial-level nature reserve, Dai needed approvals from provincial and county governments and their respective departments. For example, the land and resources bureaus at both levels approved the concept of issuing development use rights, the ocean bureaus approved the seashore-related construction plans, and the environmental protection bureaus verified the adequacy of the environmental impact assessment.

Once the provincial and county governments approved the strategic plan, the county granted Dai the approval to construct the cable car and tourism facilities starting in 1996, with the understanding that operational (i.e., development) use rights would commence in 2000. According to Dai, once a strategic plan is approved it is relatively simple to obtain construction approvals and operational use rights.

As part of the construction approval process, the county secured access for Dai to the 70 mu outside of the nature reserve. The county purchased the land from the village using money from Dai, converted the land from collective to state ownership in accordance with the law,<sup>165</sup> and sold Dai the use rights. The transaction was relatively simple because the land was classified as “wasteland” and was not being used for agricultural or other purposes. It enabled the villagers to earn money on land that was not generating any income.

<sup>165</sup> Land Administration Law Article 43

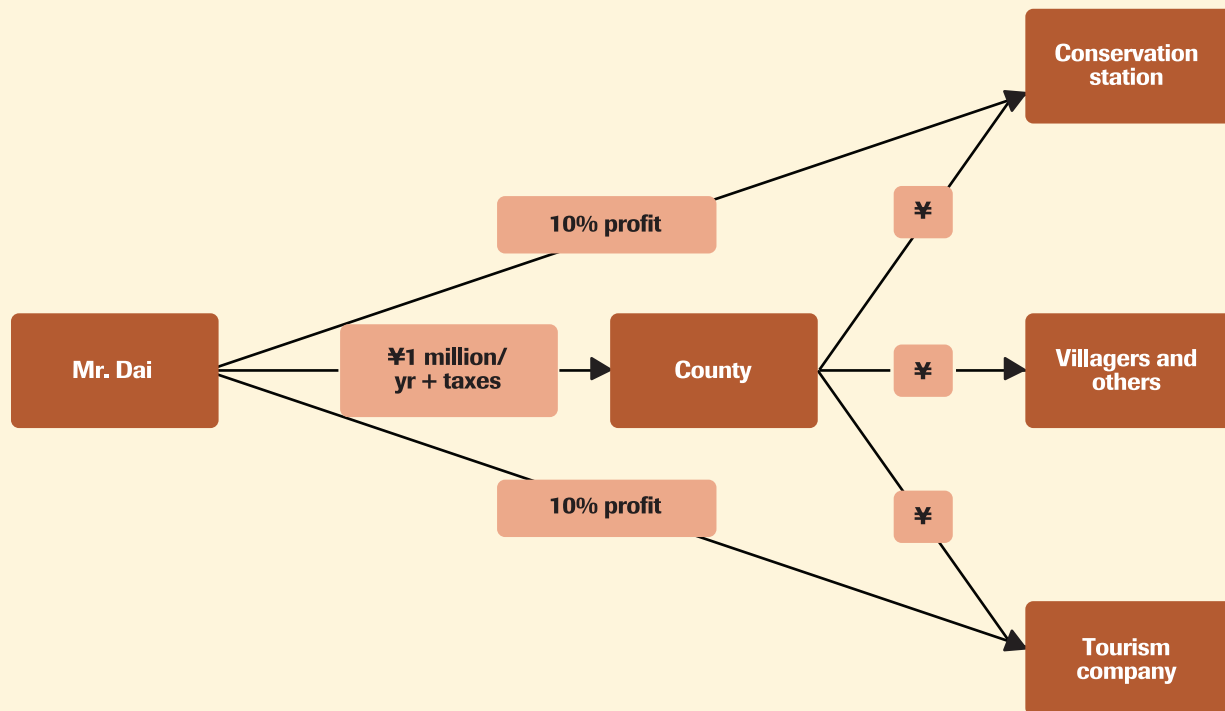
**2. Construct facilities**—From 1996-1999, Dai constructed the cable car and tourism infrastructure, aiming to build a “harmonized environment for the coexistence of humans and wildlife.” The buildings incorporate natural materials such as coconut shells for roofs and small-diameter coconut logs for building structures, signposts, and benches.

The development project includes two large “bedrooms” and a number of smaller “guest rooms” for the monkeys. The bedrooms are the forested mountainsides that lie adjacent to the development. As Dai explains, “The monkey is the master” of the bedrooms and enjoys full respite from tourists. The “guest rooms” consist of outdoor theaters for monkey performances, a monkey swimming pool, and other facilities where tourists (the guests) can view them. Fruit trees mitigate the summer heat for both monkeys and humans. Lush native plantings both prevent the establishment of invasive species and provide a beautiful environment for guests.

**3. Secure operation use rights and begin payments**—In 2000, Dai signed a contract with Linshui County for 50-year operational use (i.e., development use) rights to the 80 *mu* project site. The contract specifies that Dai will pay the county 1 million RMB per year for the life of the project, regardless of profit and in addition to taxes. Dai took great care to ensure that the terms of the contract would appeal to subsequent employees and politicians so that they would not be likely to rescind or change the contract. Upon expiration of the use rights, the county will have the option of taking them back or negotiating a new contract. Dai expects the latter, since the project is benefiting all the key stakeholders.

Through a separate but related agreement, Dai formed a joint venture with the conservation station that operates the nature reserve and the county tourism company. The terms of the venture specify that Dai will pay each party 10% of net profit on an annual basis. This arrangement facilitated securing the use rights from the county. These entities also receive some portion of the 1 million RMB from the county finance department, based on an internal county allocation process. Dai retains all remaining profits and is responsible for all capital and operational expenses (Figure 3–30). Thus far, the model is working well and all parties are adhering to the terms of the contract.

**Figure 3–30. Monkey Island development funding path**



**4. Operate the business**—Since the conservation development became operational, visitation has increased 20-fold, from 50,000 in 2000 to 1 million in 2009. In 2009, international visitation totaled 150,000 people from Japan, Russia, and other countries. Profits have been skyrocketing as well. The first year of operation was the only year that ran a deficit, and Dai contributed 100,000 RMB of his own money to pay the county the 1 million RMB as promised. Just nine years later Dai earned 18 million RMB in net profit after paying the government nearly 7 million RMB in taxes. The entrance fee, including the cable car ride, currently costs 140 RMB per day.

While the cable car ride is exhilarating, the 100 show monkeys are of course the main attraction. Dai applies an operational methodology in which the monkeys are the “hosts,” the tourists are the “guests,” and the workers are the “servants.” Dai makes a genuine and concerted effort to ensure the health and well-being of the hosts—as much as is possible given their roles as entertainers. Visitors are not allowed to touch the monkeys and are closely monitored by the many workers. At night, the monkeys retreat to the solace of the forested mountainsides.

The interactions with the monkeys can produce a wide range of emotions, from thrilled awe as monkeys greedily grab peanuts from your hand, to wonder as you see them splash and frolic in the swimming pool, to bittersweet appreciation as you see realize the unwitting sacrifice that these creatures have made to enable their wild brethren to persist. As Bedford (2009) writes, “The various stations you walk through...[bring] to mind a cross between an organ-grinder and an old time carnival—but 1 million people a year are able to have an up-close experience with a remarkable little creature.”

Thanks to the working monkeys, local livelihoods are improving and the wild monkey populations are recovering. The development directly employs 200 people, 90% of whom are local, and pays them at market rates. In addition, tourists support other businesses apart from the conservation development such as restaurants, food stands, hotels, and gift shops. Because the local people have more income, hunting and fuelwood gathering within the nature reserve have decreased. Over the last 15 years, the monkey population has multiplied ten-fold.

**5. Identify strategies to balance resource use with resource conservation**—The development’s facilities are at capacity to support its current 1 million annual visitors, and visitation is still growing. Dai estimates that another half-million visitors would require more infrastructure and six more tribes of monkey performers, which he considers “no longer conservation-friendly.” As a result, Dai is considering alternative options that would keep profits growing without placing significant additional pressure on the monkeys.

One option would be to cap visitation and increase ticket prices. However, the more likely scenario in the near future is that Dai will expand tourism options to include the local village and its “seashore-style culture.” He has received authorization to manage the coral reefs around Monkey Island, and aims to capitalize on the island’s natural and unique values such as its beaches, seafood, and floating houses. Whether the new activities will shift attention from the monkeys is to be determined, but unlikely. In any case Dai fully recognizes the need to carefully plan for and mitigate risks to the primates, the freshwater aquifers, and the seafood populations that could result from additional development.

## NGO Role

Dr. Long, one of the interviewees and a TNC employee, is the leading scientist for China’s primatological community. As such, he has had an informal role in providing technical advice for the management of the monkeys in the island. Dai has also asked TNC to assist in the coral reef management.

## Successes

**Improved conservation of the nature reserve and wild monkeys**—Fuelwood harvest and monkey hunting were the primary pressures on the nature reserve prior to Dai’s involvement. Because the development project has greatly increased local peoples’ employment and incomes, their dependence on the nature reserve’s resources is substantially reduced. The villagers are self-policing of the nature reserve and the monkeys. As Dr. Long quips, “No one wants to cut their money tree. You kill one monkey and the other families will kill you.”

**Ever-growing profits and improved local livelihoods**—All stakeholders are profiting financially from the development: the local people, the local government, and Dai. The villagers enjoy a much more sustainable existence than they once did due to employment by the development and other tourism-related income streams.

**Government support at all levels**—The government continues to support the development because it is earning millions of RMB in tax revenues every year. In addition, the project has received recognition from the Communist Party. In February 2011, a member of the CPC Central Standing Committee visited the Monkey Island and recognized its role in both promoting local economic development and being a model of best practices for wildlife and natural resource management.

## Challenges

**Development**—Creating a conservation development “is like sailing a small ship through a sea of potential lagoons,” observes Dai. There are many potential pitfalls, and strategy and foresight are required to sidestep them with grace and maintain credibility. Dai explained the challenges of running a business in a nature reserve and with local people: Operational models may be constrained by no development restrictions in buffer and core zones. Hiring local employees is critical to ensuring the support of local people and the government, but significant staff training may be required to achieve a high quality of service. Furthermore, local and external partners may have differing ideas of designs that will attract tourists, such as “fancy materials” versus natural products.

**Philosophical debate**—Is the sacrifice of a few worth the benefits to the many? A visit to Monkey Island inevitably begs this question. As Bedford (2009) writes, “Now, there is a strong population, good habitat protection, and a local community that relies on the health of the monkeys to survive—even though we were all embarrassed for the monkey’s loss of dignity at being on stage in a ‘Monkey Comedy Theatre.’” In any case, it is clear that Dai genuinely wants the monkeys to be healthy and happy. “Upon my retirement,” he reflects, “all that I want is for the monkeys to say, ‘This guy treated us great.’”

**Balancing conservation and development**—Visitation is increasing with no end in sight, especially if Dai proceeds with the seashore culture tourism expansion plans. As numbers increase, pressures on the monkeys, fisheries, and freshwater supplies will mount. Having too many visitors is perhaps an enviable problem, but one that requires careful planning and attention, as Dai fully realizes. As development progresses, time will tell the extent to which the monkey statue’s message of sustainable development will persist as the Island’s guiding principle.

## Replicability

Few nature reserves offer the draws of Monkey Island such as its charismatic primates, beaches, and close proximity to an airport. However, Dai firmly believes that it is possible to create conservation developments in other parts of the country that are economically, socially, and environmentally sustainable, if certain criteria are met. First and foremost, he urges developers to pursue sustainability over a very long term, at least several generations. This may mean sacrificing some short-term profit for long term natural resource conservation. For developments in nature reserves, he strongly recommends keeping them within the experimental



zone and out of core and buffer areas, in order to sustain conservation values. He recommends showcasing the values for which the nature reserve exists—wildlife or other—and respecting these values as the “hosts.” “Any development must respect and appreciate the local host,” he emphasizes. He strongly cautions that developing in nature reserves with endangered species such as pandas may only add to their demise and again—that long term costs and benefits to species and profits must be considered, as they are inextricably linked.



**Site of the future Great Wall Resort. The developer will concentrate buildings and sustainable agriculture in the valley, while protecting surrounding hillsides as a model nature reserve.  
Photo by Great Wall Resort Ltd.**



# GREAT WALL RESORT: The Making of a Model Conservation Development

## Interviewees

- Robert Devine and Zhao Shan, business partners, Great Wall Resort

## Introduction

“I missed the nature in the U.S.,” explained Zhao Shan, one of the three partners of the Great Wall Resort project, regarding his motivation for creating the Great Wall Resort. To clear his head from studying economics in the U.S., he hiked in National Parks such as Yellowstone and the Grand Tetons. And when he returned to China in 1994, he sought out new trekking destinations—including the future site of the Great Wall Resort (GWR). Then lying 2.5 hours north of Beijing and bordered by a rare stretch of un-restored Great Wall, the pastoral site was an easy, peaceful getaway for this native Beijinger.

Now 15 years later, Zhao Shan and his partners are creating a nature preserve and luxury resort on this special land. They are lucky—a conservation development was not always the plan for the GWR site. In the 1990s, the State Council granted development permissions to the Beijing Cultural Relics Bureau and the local government to create a “Badaling”-type destination at what is now the GWR site. Badaling is the Disneyland of the Great Wall; an awe-inspiring but overwhelmingly developed site complete with a cable car, expansive visitor facilities, and a highway to transport millions of tourists per year.

Horrified by this notion, Zhao Shan and his partners jumped on an unexpected opportunity to create a vastly different vision of a development that would provide an authentic visitor experience while protecting natural values. In 2000, a hiker fell off the Wall at the GWR site and broke her arm. The incident received press coverage because a foreign ambassador happened to be among the group. Concerned about potential liability, the government halted its mass development plans and began to consider Zhao Shan’s idea.

This case study explains how the GWR partners—with their passion for conservation, business savvy, and dogged persistence—are bringing their vision to life. The tale sheds light on how to navigate the development process through a dizzying array of government agencies and villagers, and provides insights about how it may be possible to establish permanent protection for nature outside of an existing protected area in China.

## Vision

- To build an environmentally sustainable resort that will showcase model conservation development practices such as green building principles and sustainable farming
- To restore and protect the natural environment and preserve a section of the Great Wall

- To provide a comprehensive framework of livelihood improvement for the local community including housing, services, job opportunities, retirement and medical security, plus an option for significant cash payouts to finance urban relocation for those who choose that path
- To implement an economic model that is robust enough to support the above priorities

## Project Area

The GWR site lies 65 kilometers north of Beijing's Central Business District, within Yanxi Township, in the Huairou District of Beijing Municipality. It is two kilometers west of the Mutianyu Great Wall, on the north side of the Wall. This section was built around the year 1600 during the Ming Dynasty and is famous among local hikers for its beauty.

Bordered on two-thirds of its perimeter by 20 kilometers of original Great Wall, the site is roughly triangle-shaped and covers 15 square kilometers (1,500 hectares). Still in pre-development, it is primarily covered by 1,400 hectares of shrubland and forested hillsides rising up to the Wall (thanks to the reforestation efforts of the GWR partners), with some village lands and agricultural plots in the valley below. The site is under collective ownership, and is managed by one administrative village comprised of seven natural villages. The villages are scattered throughout the valley and include approximately 180 households and 400 villagers. The villagers reside on 21 hectares of rural residential lands and farm 65 hectares of agricultural lands (1% and 4% of the land area, respectively). Different use rights pertain to each of the three types of land: hillside, agricultural, and rural residential.

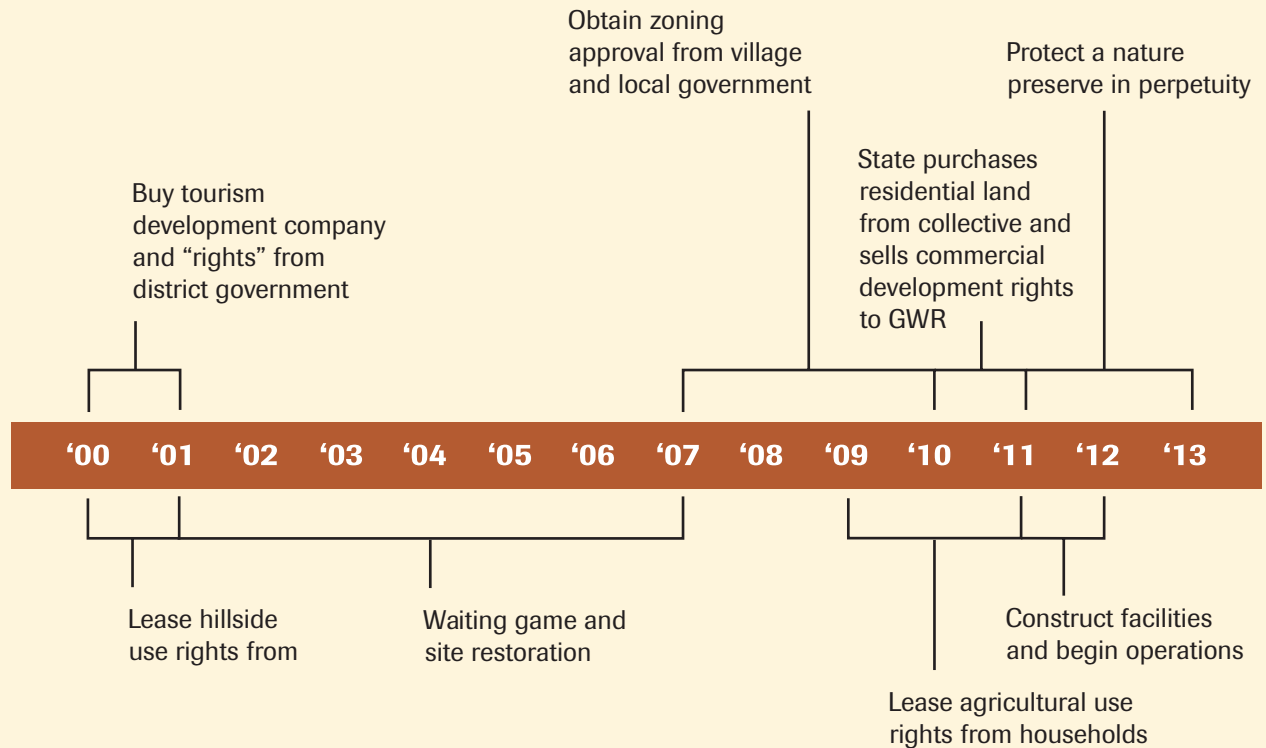
The site, though scenic, was in dire straits environmentally when Zhao Shan and partners first became involved. The land had been nearly completely deforested and wildlife was practically nonexistent. The local agriculture practices were unsustainable and depleting the soil. Farmers used significant amounts of pesticides and herbicides on the farmland (as is common throughout China) and poisoned pheasants and other birds so they would not eat the corn. "We never even saw a bird for the first few years," explained one of the partners.

Villagers earn approximately US\$700-800 per year from agriculture and tourism. Net per capita agriculture income, primarily from corn, is approximately US\$300 per year. Net per capita tourism income is US\$400-500 per year and is generated primarily from Beijingers coming to climb the wall (although technically the Wall is closed to the public), paying for (unsanctioned) tickets, buying food and drink, and perhaps staying overnight. There are two problems with the tourism. First, damage to the Wall from unregulated access is becoming increasingly apparent. Second, income is distributed unequally—two private restaurants account for nearly half the income. Without the GWR project, the government would have either had to restrict access (unlikely because it would crush the villager's tourism income), or completely rebuild the Wall along the Badaling/Disney model, paid for by developing the valley for mass tourism.

## Project Creation

The project started in 2000 and should be operational by 2013, with the infusion of approximately US\$200 million (Figure 3–31). Once fully developed, the project will consist of an eco-luxury spa, resort, a new village, and other resort-related buildings on 1% of the site; agricultural plots in the valley on 5% of the site; and the remainder of the valley and surrounding hillsides protected as a nature preserve.

**Figure 3-31. Steps toward the creation of the Great Wall Resort**



### 1. Buy tourism development company and associated “rights” from the district

**government**—The State owns the Great Wall. Prior to the involvement of the GWR partners, the State Council had granted permission to the Beijing Cultural Relics Bureau for tourism development of the Wall bordering the GWR site. The district government had set up a “Development Center”—a quasi-private company—responsible for acquiring the collective lands, relocating its residents, and planning and constructing the mass development.

GWR spoke with government officials at all levels, from the village to Central Government bureaucracies like the State Administration of Cultural Heritage, to garner support for its vision and acquire control of the project. GWR negotiated the purchase of the development center

from the district government for a couple million RMB and, in doing so, acquired the “tourism rights” for an indefinite period of time. In 2001, the transaction was completed and the Development Center was transformed into a private company owned by GWR.

**2. Lease hillside use rights from collective land managers**—With the private corporation in place, GWR negotiated a 70-year lease for 1,400 hectares of collectively-owned hillside land (Figure 3–32). The negotiations were relatively easy, because the land was economically productive for the peasants only insofar as it provided fuelwood, wild crops such as mushrooms, and limited wild game. The company received all use rights and lease payments were contingent upon controls on continued deforestation. The collective leadership, prior to signing, sought and obtained approval from the township and district governments.

**3. Waiting game & site restoration**—In 2001, China was focused on rapid development and there was little recognition of, or market demand for, conservation projects. Additionally, with travel time from central Beijing to the GWR site then nearly three hours by car, the project could not economically support a conservation model. So, with the hillside lease and development rights in place, GWR proceeded to wait for infrastructure and the market to catch up to the project concept, while immediately commencing restoration activities. For the next six years, GWR paid lease fees to the collective, implemented a reforestation program, and prepared the ground for development by engaging with all levels of government on education and outreach. The hillsides are now covered by young forests of species such as wild apricots, pines, mountain poplars, and cherry.

**4. Obtain zoning approvals from the village and the local government**—In 2006, the waiting game ended as the government constructed the JingCheng Expressway, cutting transport time from central Beijing to 1.5 hours. (Additional roads and tunnels have also been planned, which will further reduce travel time to one hour by 2012.) Interest in “green” experiences had also become more widely spread in China. In response, GWR began working within the District Government’s regional planning process to start a “master” zoning designation for the tourism development land within the valley of the site. Although the government had already approved tourism development for the Wall, GWR still needed approval for the “detailed” zoning for locations for buildings, densities and heights, and road and infrastructure layouts.

**Figure 3–32. Sample provisions of the hillside lease between GWR and the collective**

- States goals of protecting the Great Wall and other cultural and natural resources in the valley, restoring the forest, developing tourism infrastructure including site and economic planning, and improving villagers' livelihoods
- Defines "hillside" as mountains, forests, scrubland, riverside (i.e., riparian areas)
- Transfers the use of the hillside resources including trees and other natural resources to the company for 70 years
- Explains that is the "mutual responsibility" of GWR and the collective to undertake the "aggressive protection" of cultural and natural resources, including stabilization of the wall
- Prohibits GWR or anyone else from felling trees or otherwise harming existing forests, trees, and fruit trees without proper approvals (e.g., from the State Forestry Administration)
- Prohibits the conversion of scrubland into development or agricultural land, and any projects that will cause soil erosion
- Obligates GWR to increase forest cover by 75% over the life of the lease, protect water resources, protect public water irrigation infrastructure, and prevent soil erosion
- Allows the withdrawal of land from the contract if the government changes the zoning and/or intends to acquire the land
- Gives GWR exclusive rights to the use of the assets, investment return, and cooperation with third parties
- Gives GWR the right to determine the extent and nature of tourism development, including the structure such as direct investment, cooperative investment, and selling or leasing the project

Ordinarily, planning and zoning is internal government work. For the GWR project, however, the partners undertook zoning on behalf of the government, committing to both funding the planning work and working the bureaucracy to obtain approvals. This unusual arrangement cost GWR 2.5 years and more than US\$1 million, but allowed them to create a plan aligned with their vision. GWR retained two U.S.-based firms—Hart Howerton as the Master Planner and Sherwood Design Engineers as the civil and environmental engineers—to formulate the plan and then began the long and arduous task obtaining government approvals from the village, township, district, public (through a 30-day public comment period), and municipal government. Village approval was based largely on the compensation plan (Figure 3–33).



**Figure 3–33. Compensation package that GWR is providing the villagers in exchange for their use rights and opportunity to develop the GWR site**

#### **For villagers choosing to remain on-site**

- Ongoing income from hillside and agricultural leases.
- One-time cash payment for agricultural land averaging approximately US\$25,000–30,000 per household and based on the total number of mu acquired (one mu is equal to 1/6th of an acre).
- Compensation for housing and other above-ground structures averaging approximately US\$80,000 per household and consisting of either new housing with utilities such as running water, gas for cooking and heating, and telecommunications. The houses will be owned by the recipients and they will not pay any rent.
- Indefinite employment for whoever desires it, including entrée into a social security system (retirement, pension, etc).
- Potential income for the rental of any “extra” residential units in the new village that are not inhabited by the villagers. GWR will manage the new village jointly with the collective and since the new village will accommodate up to 200 households (more than the number of villagers who are expected to want to stay on-site) the additional space will be rented to the resort for back-of-house and staff dormitories, or for local retail operations and the like.

#### **For villagers choosing to move away**

- One-time cash payment of approximately US\$80,000–100,000 for the agricultural land, housing, and other above-ground structures. This compensation is higher than for those choosing to stay, because they are foregoing all the other benefits such as new housing and employment. As part of its calculation, GWR estimated that unskilled labor moving to Beijing will earn at least 60 RMB per day or approximately 20,000 RMB per year.

**5. Lease agricultural use rights from households**—In 2009, GWR initiated the painstaking process of leasing agricultural land from the villagers, household by household. The partners worked out an agreement with the land managers whereby GWR could acquire the use rights for all of the agricultural plots within three years if at least 75% of the households agreed to the transfer—an all-or-nothing arrangement. Unlike the hillside land, which was under the direct control of the collective land managers, they had contracted out the agricultural land to individual households in a “crazy patchwork.” The result was 700 different leaseholds across the valley, each of which is being negotiated and then transferred to GWR. It is like putting together a jigsaw puzzle and has already involved stacks of leases “a meter high.”

As of 2010, GWR had acquired more than half of the agricultural use rights, each for the remainder of the household's contract (average of 25 years), and GWR had planned to lease more land at the end of the growing season. For the most part, the households have been amenable to leasing their use rights because of the compensation. The biggest challenges have been the households who were using the land for illegal but lucrative non-agricultural purposes, such as parking lots at which they charged entry fees to hikers, and speculators from outside who leased some of the land and attempted to flip the leases to GWR at inflated prices. With much of the agricultural land under control, GWR has started reducing the sites' toxicity by prohibiting the use of chemicals and poisons. As a result, wildlife such as pheasants and wild pigs are returning.

**6. State purchases the rural residential land from the collective and sells development right to GWR**—GWR must also obtain the rights to construct the commercial infrastructure on the rural residential land. This area will include all the rural residential land except that which the new village will occupy, which will remain in collective ownership. The state will sell the development rights to GWR via tender, which will require GWR to create an Environmental Impact Statement. Once the transaction is complete, GWR will own the land use rights to the state-owned portion of the valley (15 hectares) of rural residential land for a period of 40 years. The use rights are renewable upon expiration. How this renewal will work is to be determined—perhaps through another payment.

**7. Construct facilities and begin operations**—The resort facilities will include a central spa and hotel, a club house, hotel reception and facilities, an integrated organic farm, organic cuisine restaurants, small-scale meeting and banquet facilities, and other outbuildings. The new construction will reuse as many materials as possible from the existing buildings. It is not desirable to simply renovate the existing buildings because of they are highly energy inefficient and have limited historical value.

The site will be a model of sustainability, and will include an interpretive learning center to describe each of the sustainability elements below:

- **Environmental sustainability**—GWR is restoring the local biodiversity on most of the site and nearly the entire site will be protected as a nature preserve. GWR is partnering with TNC on these efforts.
- **Resource sustainability**—GWR will design the resort to LEED standards and is aiming for net zero impacts on energy, carbon, and water. All the energy will be renewables (geothermal, biomass, and solar) so the resort will be “off-grid.” New buildings will be constructed with local materials using green building design, the biomass will be harvested locally, rainwater will be harvested, and maximum onsite recycling and treatment will be used.

- **Agricultural sustainability**—GWR will aim for 90% food self-sufficiency for grains, meats, produce, and herbs for its restaurant on-site. It will export any extra local fruits, nuts, and mushrooms to nearby Beijing. The farm will be organic and chemical-free.
- **Cultural sustainability**—The site will be a model of non-profit, limited tourism that strives for in-place preservation (i.e., no reconstruction of the Wall). The Wall will be open to the public and not just limited to hotel guests, but GWR will cap the number of visitors.**8. Protect the hillsides as a nature preserve in perpetuity**—Although GWR will hold all the use rights to the site, there is no guarantee of long-term protection for the future nature preserve which will cover the vast majority of the hillside/forest area (Figure \_\_\_). This uncertainty is due to China’s patterns of tenure insecurity and limited enforcement. GWR and TNC considered having the government establish a protected area, but are leaning instead toward private protection and management, with government support. The solution must address issues such as future ownership of use rights by a party other than GWR who may not want to retain the nature preserve; activities that would harm biodiversity values, such as incompatible timber harvest; rezoning and legal development; and illegal development. Along with the Motianling Land Trust Reserve Project (see Chapter I, Tools and Strategies), TNC and GWR hope that this project can help start a 10-20 year conversation with the government about developing a trust and easement regime in China.

## NGO role

The Nature Conservancy (TNC) is helping GWR figure out how to establish permanent protection for the nature preserve area. TNC will also help design and manage the preserve as a model protected area in China and will provide input to the interpretive center. TNC or other entities may be able to offer trainings for park rangers or other types of conservation professionals from the center.

## Successes

**Stakeholder support**—“Nothing has gone terribly wrong,” quips Devine. Sarcasm aside, this highly complex project is on its way to successful completion because the GWR partners have “played their cards” wisely. GWR has saved the site from being “chopped into pieces” and has maintained functional control. The partners developed a feasible business model with the right partners and financing to support the project. And thanks to good timing and strong relationships with the government, they have received approval for “an excellent zoning plan,” for both conservation and development purposes. Slowly but surely, they have had success in obtaining buy-in from the government.

**Figure 3–34. The proposed nature preserve (green/shaded areas) covers the vast majority of the GWR site and includes all of the hillsides**



## Challenges

**Resource requirements**—GWR has learned some important lessons along the way. While GWR believes that getting into the zoning was really the only way to create a truly successful project, it has cost more time, patience, and money than they envisioned. Also, they did not anticipate the challenges in arranging for funding – the business model needs to be very solid very early on in the project in order to obtain the necessary funds. Finally, Devine wishes they had worked more closely and earlier with the government bureaus on the site design and zoning, rather than investing significant time and money in a design that the township initially rejected.

## Replicability

Devine shares the following recommendations for others interested in creating conservation developments:

- **Develop a sound business model.** The developer needs to know from the outset that the project is financeable, including the extra costs and foregone revenue from land conservation. GWR carefully developed its model, which was challenging because so little of the land area is being developed (i.e., there is less land on which to generate revenue) and the price of acquiring development rights is very high, particularly in the Beijing area. A golf course, for example, may be an “easier sell” for financing but was not compatible with GWR’s vision.
- **Be prepared to solicit approvals from the full array of village and government stakeholders.** Developers will spend significant time and money in soliciting approvals from villages for use rights, and from the government for zoning approval and development use rights. Although the GWR case was more complicated than the average deal due to the importance of the site, the same or similar process of working through the different bureaus at different levels of government (e.g., township, county, province) would be utilized in other areas of the country. Obtaining buy-in at higher-levels of government (e.g., district vs. township) will ease the approval process. As Devine states, “If the higher-ups believe in a project, the lower ones will at least pretend to.”
- **Get involved in zoning.** Even if conservation development were the government’s focus, its plans would have undoubtedly differed greatly from GWR’s. For example, the government probably would not have hired the same caliber of site planners and would have created a much more simple design, such as a block of land for development in the middle of the valley. Such decisions directly affect the final product, including its conservation and revenue-generation potential.
- **Carefully plan land protection.** There is no “silver bullet” for protection—there are both pros and cons with creating either traditional protected areas or private protected areas. To be effective, any solution must be sanctioned by the government and address key threats such as future ownership by a party with different values, activities that would harm biodiversity values, illegal development, and the potential for rezoning and legal development. The solution must also, naturally, provide ample incentives for local villagers to abide by any use restrictions, ideally by improving their livelihoods.



The project will reforest abandoned agricultural lands. Photo by Steve Blake



# TENCHONG COUNTY FOREST CARBON OFFSETS: Protecting Land with a Gold-level Certification Project

## Interviewee

- Ma Jian, Project Manager, The Nature Conservancy

## Introduction

As Part 1 (Lay of the Land) describes, China's forests have suffered several periods of intense deforestation over the last 50 years. The upside or "silver lining" of this situation is that China is now ideally poised to be an important player in the market for forest carbon offsets. This case study describes one such effort—the Tengchong County Forest Carbon Offset Project, also known as Tengchong County Small-Scale Reforestation for Landscape Restoration. This project is the second forest carbon offset site in China, the first being in Guanxi Province, and will protect part of the buffer of the Gaoligongshan Nature Reserve. It is also certified as the world's first Climate, Community and Biodiversity (CCB) "gold-standard" project (explained below). In 2004, TNC and Conservation International (CI) initiated this project in Yunnan Province, plus another, larger project which covers portions of a five-county area in Sichuan Province. TNC is managing the former; CI is managing the latter. At the time of this writing, the Tengchong County project was further along and was thus selected as the case study site.

## Vision

- To reforest and protect a buffer to the Galigongshan Nature Reserve by restoring ecological condition by planting trees and removing invasive species.
- To improve local livelihoods through jobs and compensation for use rights, financed through the sale of carbon credits; and
- To meet two sets of internationally-recognized carbon offset certification standards:
  - » Clean Development Mechanism under the Kyoto Protocol—The project follows the criteria defined by the Clean Development Mechanism (CDM), which is the primary driver of carbon offset projects worldwide.
  - » Climate, Community, and Biodiversity standards (CCB)—The project was certified as the world first CCB "gold-standard" project. A group of international NGOs and research institutions created the CCB standards (2008) as a complement to the CDM. The CCB standards support standardized verification of a project's environmental and social benefits.



## Project Area

The project site covers 467 hectares in Tengchong County, in western Yunnan Province and adjacent to the Gaoligongshan National Nature Reserve. The nature reserve covers more than 400,000 hectares. It is a UNESCO Biosphere Reserve and a biodiversity hotspot, as recognized by Conservation International, World Wildlife Fund, and TNC. The mountainous terrain of the region hosts a wealth of vegetation types such as savanna, coniferous forest (*Pinus yunnanensis*), monsoon evergreen broad-leaf forest, and cold temperate bamboo forest.

The project site lies along approximately 20% of the southwestern border of the nature reserve. Most of the land lies along two major tributaries of the Irrawaddy and the Salween Rivers. The site is comprised of 13 non-contiguous patches that range in size from 6 hectares to 86.2 hectares, and average 36 hectares. Twenty percent of the project's lands are adjacent to the nature reserve; the other 80% lie within 30 kilometers of the nature reserve. The site spans portions of three different townships including Qushi, Jietou, and Houqiao.

The land tenure of the site is complex. Approximately 25% of the site is a state-owned forest farm and the remaining 75% is collective- or household-owned. The collective/household lands are managed by 5 administrative villages, which in turn manage 18 natural villages (i.e., collectives). Of the collective/household lands, the collectives hold 280 hectares while households "own" the remaining 75 hectares. More than 450 households including nearly 2,300 individuals hold use rights to agricultural and unused lands, which they have since contributed to the carbon project.

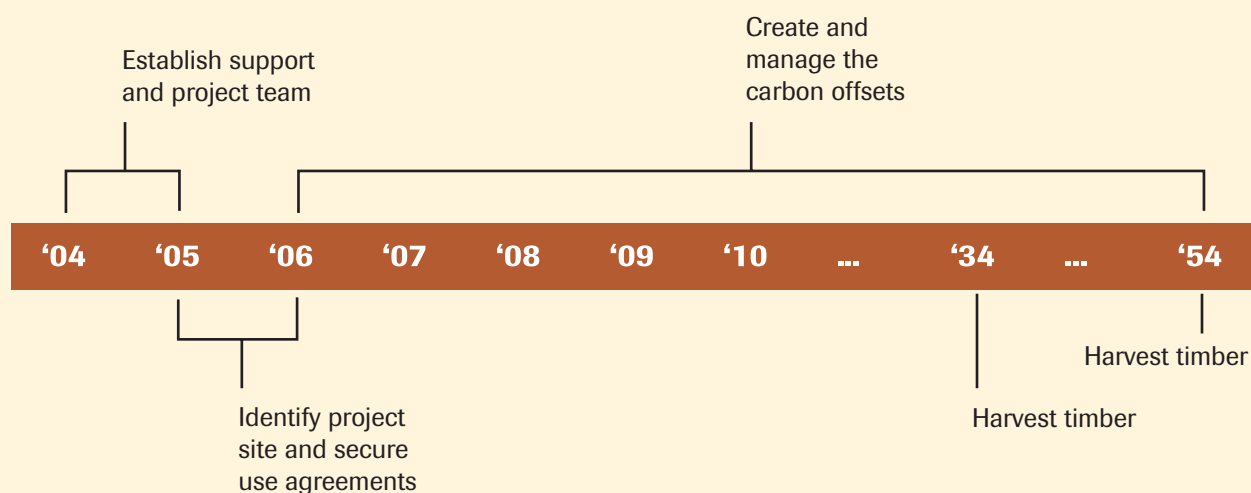
The county has re-zoned the agricultural lands in the project site to commercial and ecological forest. For the most part, the local people supported this alternative land use because the lands were relatively undesirable for agricultural purposes. Eupatorium, an invasive species, flourished in the abandoned lands, and was so dense that regeneration of native species was impossible. The carbon project is providing income for the households that they would not have otherwise earned.

Today, as a result of the carbon project, the invasives have been controlled and all of the lands in the project area have been converted to young forest. The site is covered by native trees such as floss taiwania (*Taiwania flousiana* Gaussen), shiny-bark birch (*Betula luminifera* H. Winkl), Yunnan pine (*Pinus yunnanensis*), and Nepal alder (*Alnus nepalensis*). The shade from the growing trees is preventing the reestablishment of the invasives and native understory is returning.

## Project Creation

It took just a few years to get the project up-and-running. The first timber harvest will occur more than 20 years from now (Figure 3–35).

**Figure 3-35. Steps in creating and managing the Tengchong County Forest Carbon Offsets project**



**1. Establish support and project team**—To build support for the project, TNC and CI conducted workshops for the government at all levels to explain the project and the forest carbon market. The training targeted the State Forest Administration at all levels of the government including national, provincial, county, and township. In 2004, the 3M Foundation granted TNC and CI \$300,000 for the project.

With funding secured, TNC created a project team comprised of TNC, the Tengchong Forestry Bureau, the Sujiang Forestry Farm (a state forest farm managed by the Tengchong Forestry Bureau), the nature reserve, Yunnan Forestry College, the Yunnan Forestry Department, and Yunnan Forestry Inventory and Planning Institute. TNC provides technical support, developed the project’s standard operating procedures associated with the CDM and CCB requirements of the field surveys, and developed the Project Design Document (see below). The state forest farm is designated as the “Local Operating Entity” (LOE) for the project. The LOE manages the on-the-ground implementation of the project such as acquiring and planting seedlings, patrolling, preventing fire and insects, and preparing the contracts with households. The Tengchong Forestry Bureau monitors the project and ensures quality control for all processes such as field surveys and planting. The nature reserve, with its many years of positive interactions with the local communities, is assisting with project communications.

**2. Identify project site and secure use agreements**—TNC and CI solicited input from the Yunnan Forestry Bureau to select a site. Tengchong County was an excellent candidate given its location in a biodiversity hotspot, its favorable conditions for forest establishment, and its relatively low community income. Furthermore, the project area met the requirement of the Clean Development Mechanism including no forest reforestation since 1989 and no afforestation for least 50 years. Local nature reserve staff mapped the initial project site, which included 900 hectares of deforested land.

The team next secured household participation. They identified the villages and households involved in the initial 900-hectare project area by interviewing local communities. They surveyed the villages to identify collective and household lands. Although the households' use right boundaries were not mapped, the village leaders were able to identify the percentages owned by individual households.

To entice households to participate, a group comprised of TNC, CI, the Yunnan Forestry Bureau, the Tengchong County Forest Bureau, the State-owned forest farm, and local people developed a compensation package (Figure 3–36). This package was based on data collected locally by the Yunnan Forestry College. The mean annual gross per capita income ranged from US\$75 to US\$372. The compensation package was appealing to the participating households because of the low potential crop yield of the site, and the fact that many individuals were not earning any income from the farm plots they had abandoned. Furthermore, compensation of 210 RMB per year totals nearly 15% of average annual household income.

**Figure 3–36. Compensation package associated with the carbon offset project**

- **State-owned forest farm:** 90% of the revenue from the sale of carbon credits, estimated at 40 RMB/mu/year and 100% of the timber revenue on state-owned lands.
- **Households:** would technically still hold their land use rights, but would allow the LOE to implement the forest carbon project in exchange for the following:
  - » 10% of the revenue from the sale of carbon credits on collective lands, estimated at 10 RMB/mu/year. Households will receive this income once every five years.
  - » 100% of the revenue from the sale of the timber on collectively-owned lands, estimated at 6,000 RMB/mu over the first 30-years of the project, or 200 RMB/mu/year. There will be two selective tendings, in year 16 and year 23. In year 30, the harvest will total 40% of the standing volume. Households will receive this income after each tending and the 30-year harvest.

Ultimately, 433 households with land covering 467 hectares (approximately 50% of the original project site) agreed to participate. The LOE prepared the legal agreement and visited each eligible collective land manager and household to solicit the signatures of willing participants. The household negotiations were time-consuming given the large number of households involved. Not surprisingly, households that were not actively cultivating their lands generally contributed their land to the project without hesitation, while those who were actively farming were much more reluctant to do so.

The use agreements effectively transferred the use rights from the households and collective land managers to the forest carbon project. However, unlike typical lease transfers, these agreements do not include annual payments. Instead, payments are deferred until the timber is actually sold in order to allow the project to focus its available cash on the land, and to incentivize the local people to protect the timber resources.

**3. Create and manage the carbon offsets**—The project team developed the forest carbon offsets in accordance with CDM standards. The team created a “Project Design Document” to describe the project, monitoring methodologies, environmental and socioeconomic impacts, and stakeholder comments. The team also completed a baseline survey to calculate the amount of carbon on the site pre-reforestation. TNC and CI, in partnership with the Provincial and County Forestry Bureaus, hired and provided technical training to local villagers to collect the survey data, which TNC then analyzed. Furthermore, in accordance with both CDM requirements and the Chinese government, the project team identified two validation entities—one for third-party independent valuation and one for national agency valuation.

The team also completed activities on the ground to prepare for the sale of carbon credits. Using local labor, tree-planting began and was completed in 2007. The LOE also hired 10 guards, or approximately 1 guard for each 1,000 *mu* (67 hectares), at a cost of 800 RMB per month each. The guards patrol the project site to prevent illegal activities such as timber harvest and livestock grazing. The latter is particularly important in the first several years after initial plantation because the young trees are particularly susceptible to damage. If the guards catch offenders, they can turn them over to Tengchong County for punishment. The county has relatively strong enforcement procedures because most of it is zoned as commercial forest and nearly 10% of the county’s revenues come from forestry.

Presently, CI and TNC are finding buyers for the carbon credits. The project will create 150,000 tons of carbon credits over 30 years. At the time of writing, the project had sold 20,000 credits to one company and one individual, both from voluntary carbon markets in the U.S. There are two types of markets for carbon credits—the Kyoto (CDM) market and non-Kyoto markets including those in the U.S. and Australia. Typical buyers of carbon credits include brokers, investment banks (e.g., World Bank), individual companies, and individual people.

In several decades, the timber will be harvested and the profits shared with the local people in accordance with the compensation package. The timing of the timber harvest depends on the type of forest zone, commercial versus ecological. For example, the Yunnan pine in the commercial forest will be harvested in 30 years from when the project started (in approximately 2034), whereas it will be harvested in 50 years in the ecological forest (in the year 2054). The staggered timing of harvest will help maintain ecological function.

## Successes

**Nature reserve buffer protection**—The project is effectively protecting the nature reserve buffer area by improving its ecological condition and reducing invasive species. Local people are incentivized to ensure the protection of the forest, since they will receive the bulk of their payments after the timber is harvested in 30 years. The project is maximizing benefits to the environment and communities because it is applying the CCB standards.

**Model for afforestation efforts**—Unlike most of the country's afforestation projects, the Tengchong County project is using diverse native species. If carbon value were the sole consideration, the project would have planted faster-growing species. The plantation of diverse species provides a wider array of benefits such as wildlife habitat, biodiversity, and scenic values. To encourage the plantation of diverse species, the carbon market recognizes the high environment value carbon credits in high price.

**Sound business model**—The project team created a workable financing scheme. The team's up-front research on household income enabled them to craft a compensation package that would balance affordability with attractiveness to the community. They also succeeded in effectively acquiring use rights without having to pay the typical annual fees to collectives and households. This arrangement enables the project team to spend more money on the ground on an ongoing basis.

**Local experts**—Finally, the project has created a team of local experts who understand and can implement Clean Development Mechanism projects and CCB standards. They have the ability to replicate this project in other places.

## Challenges

**No guarantee of long-term protection**—Although the project will effectively protect the nature reserve buffer for at least the next 30-50 years, there is no guarantee of long-term protection beyond that timeframe. Any variety of factors could terminate protection such as a reduction or elimination of the market for carbon credits, a change in zoning, or illegal timber harvest.

**Securing local support**—Garnering the support of the local people was one of the most challenging aspects of the project. It was difficult to convey the carbon offset idea to the local people, and to persuade some to contribute their land.

**Selling carbon credits**—Forest carbon represents a very small part of the international carbon market. More common markets include energy (bioenergy, hydropower, windpower, and methane generation through garbage), electricity, and public transportation.

## Replicability

Certified forest carbon offset projects can provide a cost-effective way to protect and restore land. The sale of carbon credits can fund the compensation to local people or other relevant stakeholders so secure their participation. The tool is promising and forest carbon projects should become easier to implement as Chinese government officials become increasingly familiar with the concept and the international forest carbon market gains strength. The project manager believes that once stakeholders are supportive of a project, “a project is not that difficult and local people can replicate this same idea in other places.” Smaller-scale projects that involve fewer players would be easier to implement than those with more complex stakeholder interactions.

Creating a workable financial model is critical to project success. It is possible for projects to be profitable on their own through the sale of the carbon credits and (eventually) timber, but significant up-front capital is needed for initial planting and other start-up costs. Ultimately, for this tool to be successful at scale, the sale of forest carbon credits will need to become easier in the future, as the market grows.