

# Rebranding Terroir: Ethnoecology and Tea Agro-Ecosystem Management in Response to Increased Market Integration in Southern Yunnan, China

Sammi Wae Ki WONG\*

Faculty of Architecture, The University of Hong Kong, Hong Kong 999077, China

\*CORRESPONDING AUTHOR

Address: Knowles Building, The University of Hong Kong, Pokfulam Road, Hong Kong, 999077, China  
Email: wsammi2@connect.hku.hk

## ABSTRACT

Prompted by increased domestic and transnational demand for Pu'er tea, an emergence of agro-ecosystem intensification in Southern Yunnan, China has resulted in various agro-ecosystems including tea forests, mixed crop systems, and monocultural terrace tea gardens, in the tea production system. Plants of *Camellia sinensis assamica* often grow as trees in forests whilst *C. sinensis sinensis* grow as shrubs in terrace tea gardens. Inspired by the wine industry, the concept "Terroir" acts as a framework that analyzes both environmental and human factors yielding varying botanic profiles, and hence quantifies values created by the cultivation process. The approach allows economic opportunities of place-based tea products to be driven by the origin in lieu of extrinsic qualities, which has resulted in to the fabricated reputation of terroir. In response to a common gap in terms of botanical and cultural values between tea cultivation and marketing trends, this article investigates an alternative scenario in which tea production and promotion model could minimize its environmental impacts and utilize its economic weight to advance land conservation efforts specific to cultural complexity at community scales.

## KEYWORDS

Pu'er Tea Cultivation;  
Terroir;  
Ethnoecology;  
Agro-ecosystem Management;  
Ethnography;  
Botanic Quality;  
Product Authenticity

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## HIGHLIGHTS

- Contrasts scale and speed of two cultivation practices—Tea Forest and Tea Garden
- Argues that there is a widening gap of botanical value between tea cultivation and marketing trends
- Envisions community forests that secure villagers' control over the landscape from outsiders
- Proposes economic opportunities driven by terroir from a landscape architectural perspective

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## 1 The Value of Pu'er Tea in China and Transnational Interests

Tea production in Southern Yunnan, China since Tang Dynasty (618–907) has become an asset with international commercial

appeal, playing a critical role in the commodification of a border with neighboring territories via the Ancient Tea-Horse Road<sup>[1]</sup>. In the late 1950s, under a state directive the Chinese government seized an opportunity to boost the local market economy by large-scale replacement of traditional tea forests with monocultural

terrace tea gardens for a more productive economic system<sup>[2]</sup>. In the market of “modern” tea, the notion of value creation started with the process of marketing and developing the brand value of Pu’er tea. However, nowadays the territory of production, Pu’er per se, has mere control over the marketing of the celebrated brand<sup>[3]</sup>, meaning that botanic profiles and qualities have little relevance to the product values in monetary terms. Despite the attempt to create a more inclusive labor force in the tea production line, current division of labor leads to increasing tension among upland residents, local intermediaries and ecdemic tea merchants, given that its initial goal was to help alleviate local poverty<sup>[4]</sup>.

## 2 Branding Terroir

Derived from “terre” or “land” in French, “terroir” is developed as a core concept of place-making during the production and consumption of wine and cheese. The term is useful in understanding the production of high-quality botanicals through an emphasis on the complex interactions of environmental and cultural factors that shape agricultural products, yet seldom applied in the Chinese tea industry. Terroir highlights the crucial role of human-environment interactions in imparting distinct sensory characteristics and health properties to botanicals<sup>[5]</sup>.

In the context of Pu’er tea itself, the quality of botanicals is majorly driven by a number of ecological and management factors, before other value-added stages such as processing and marketing. The former factors, comprising of tea plant species, biotic and abiotic conditions of the two corresponding growing habitats like temperature, moisture, light, and soil quality, characterize value created by plant-environment interactions<sup>[6]</sup>. The latter factors include the quantity and quality of labor (upland tea farmers) in the management of agro-ecosystems, and processing techniques, emphasizing human-environment interactions. A review of impacts of both factors on botanic profiles under the two agro-ecosystems—Tea Forest and Tea Garden—therefore help perceive the role of terroir as a whole in the creation of product value from the perspective of producers.

### 2.1 Mainstream Representation of Terroir

Contrary to tea forests, Pu’er with standardized botanical qualities is produced by intensive cultivation using chemical inputs at modern monocultural terrace tea gardens. In lieu of unique botanical profiles created by different climatic, topographic, and soil conditions<sup>[7]</sup>, the ecological value of terrace tea garden is mainly portrayed by value-added processing and marketing model. Under

the name of Pu’er, origin, authenticity, culture, history, and ecology are branded with key terms “ecological,” “vintage,” and “natural”<sup>[8]</sup>. Pu’er products from monocultural tea gardens are often falsely represented as sourced from “ecological” systems like agroforests. Tea tree leaves are classified as “not meeting the standard” of state-owned tea factories, due to the great variations in shapes and sizes. Similarly, terrace tea leaves are graded on a 1-to-5 scale, with the smallest buds (Grade 1) as the best. In order to boost the number of buds and the harvest, intensive pruning and chemical inputs are commonly practiced. Apart from land purchase, ecdemic tea merchants dominate the local Pu’er market by owning tea companies and the private terraces. As Pu’er products experience increased market integration, entrepreneurs seize the market opportunity with efforts to distinguish their products from others by developing industrial processing methods in response to non-traditional taste attributes<sup>[9]</sup> (Fig. 1).

Indigenous knowledge and tea culture inherited by local residents are not reflected in the market of Pu’er sourced from mechanized terrace cultivation. Meanwhile, tea entrepreneurs use the term “suzhi” (素质) to decorate the “high-class” of their Pu’er brand, at the same time, downgrading and labeling local groups “backward” and “primitive”<sup>[10]</sup>. A sense of conflict arises in relationships with the merchants from outside limited local residents to the position of tea workers, who are paid the least, not to mention the intensive labor required throughout days and years. For example, tea workers are expected to strictly follow the on-site management calendar regardless of local weather and gender distribution of labor force. Working shifts 24 hours a day, tea farmers spend over 8 ~ 10 hours plucking, since 5 a.m. during harvesting seasons<sup>[11]</sup>. After grading, the tea leaves are sold to processing factories accordingly. The labor required throughout the whole process includes 1) tea leaf harvest, with yield at least 900 kg per hectare, between March and May; 2) tea leaf grading and transportation to processing factories between June and October; and 3) pest and fertility control between November and February. It is aimed to maximize land productivity in short term through application of pesticides, fertilizers, and other chemical inputs. The cost is high (2,400 yuan per hectare), not to mention the low resilience to pests, drought and soil erosion, compared to tea forests (Fig. 2).

### 2.2 The Cost of Branding at Terroir

Mainstream representation of the Terroir concept is also reflected in the continuous loss of tea forest to commercial monocultural tea garden, leading to a gradual shift to private

## Constraints of Tea Forest Production and Management

Site: Menghai County, Xishuangbanna Dai Autonomous Prefecture, Yunnan, China

### 1. Slow Process of Forest Succession

#### 1.1 Forest canopy as shading

Canopy layer  
30 ~ 40 m

Midstory layer  
7 ~ 8 m

Short tree layer  
4 ~ 5 m

Herb layer  
0.3 ~ 1 m

#### 1.2 Natural pest regulation

### 2. Limited Site With Suitable Climatic and Geographical Conditions

#### 2.1 Suitable climatic condition

Annual precipitation: 1,300 ~ 1,800 mm  
Temperature range: 18 ~ 25°C

Tea tree:  
*Camellia sinensis assamica*

2.2 Topographic condition  
Altitude range: 1,400 ~ 2,200 m  
Slop:  $\geq 15 \sim 25^\circ$  (moderate)

#### 2.3 Suitable soil condition

Soil texture: loam/organic (well drained)  
Soil pH: 4.5 ~ 5.5

Soil depth:  
0.5 ~ 1 m

Ancient tea tree  
> 100 years old

#### 3.2 Traditional leaf picking

3.3 Rich forest litters

#### 3.1 Traditional weed control

### 3. Significant Inputs From Indigenous Knowledge

resource ownership and Pu'er cultivation practices with negative social and environmental impacts. Attractive economic benefits have influenced land use decision-making in both top-down and bottom-up manners, such as increasing reports of large-scale destruction of tea forests by local villagers. Given political, economic, and social factors in Xishuangbanna Dai Autonomous Prefecture, the conversion of tea forest to commercial monocultural tea garden between 2000 and 2010 has been particularly serious<sup>[11]</sup>. While the state-initiated "transforming ancient tea gardens" campaign has

acted as an attempt to reduce rural poverty<sup>[12]</sup>, the shift of Pu'er cultivation practices results in continuous loss of collectively-owned tea forests to private ownership. Tea forest has been destructed by villagers in various ways, such as poisoning tea trees and removal of tree bark<sup>[13]</sup>. Reported crime is often found at foothills near village areas, where slopes are less steep and more accessible in daily lives. Before the establishment of Biodiversity Corridor by Asian Development Bank in 2016, ecologically important trees, such as 100-year-old ancient tea trees and protected species, are lost



1. The value of Pu'er Tea in China: constraints of tea forest production and management.

extensively<sup>[13]</sup>. Locations and size of deforestation sites are carefully chosen, in order to ensure future tea gardens can be covered by natural forests from a far distance.

Although tea forests remain the majority spatially, impacts of tea forest conversion into terrace tea gardens under private practice are substantial. It is reflected particularly on local livelihoods, such as potential loss of forest ownership and the ability to use and gain economic benefits<sup>[14]</sup>. Competition of land ownership between villagers (bottom-up) and private tea enterprises (top-

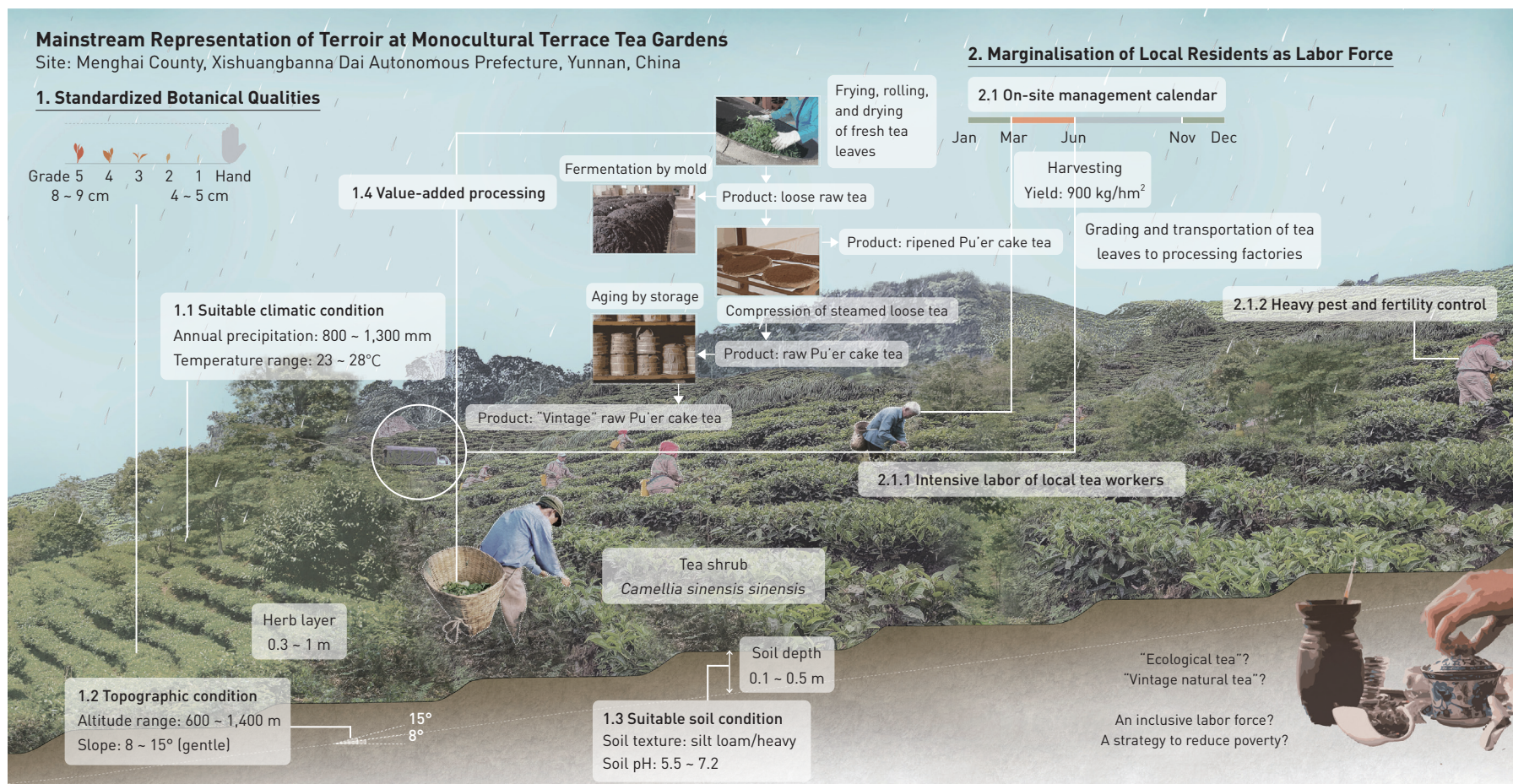
down) is also intense. The once collectively-owned tea forests are purchased and fenced off, creating boundaries of public and private Pu'er cultivation system. In order to maximize productivity of land, gentle slope<sup>[15]</sup> and large surface area of terraces are more suitable for tea shrub (*Camellia sinensis sinensis*) planting<sup>[4]</sup>. The process of landform transformation from natural slopes to terraces (less than one year) is much faster than the tea forest succession (30 to 50 years), due to the gradual formation of the rich plant biodiversity and ecosystem services. Unfortunately, the labor-intensive change is supported by local villagers as construction workers, as the immediate economic benefits to their livelihoods are apparent. Despite its small scale compared with tea forests, terrace tea garden has quickly transformed into a major tool of Pu'er cultivation and production mechanism<sup>[16]</sup>. Due to the contrasting scale and speed of the two cultivation practices, the gap of botanical value between tea cultivation and marketing trends widens exponentially (Fig. 3).

### 3 Rebranding Terroir Through Strategic Conservation-Based Ethnic Ecotourism and Community Forests

Juxtaposed with the mainstream representation of Terroir, this article aims to promote a site-specific framework in which values of Pu'er tea products are quantified according to the ecological values of land and botanical profiles, and cultural factors supported by knowledge from indigenous communities. The position aligns with the core goal of planned biodiversity corridor initiatives under Asian Development Bank in 2016. While the discourse of tea forest conservation and poverty alleviation through a landscape-sensitive ecotourism approach is applicable to many, if not most, regions of Ancient Tea Mountains in Yunnan, two pilot communities at Bulang Ancient Pu'er Tea Mountain are selected as sample sites of this experimental project. The intervention consists of two parts—a conservation-based ethnic ecotourism, followed by a tea forest conservation mitigation plan, in response to the need to establish collaborative forest governance through community forest projects, with efforts by natural scientists to integrate conservation-based decisions into forest tea production and local livelihoods.

#### 3.1 Conservation-Based Ethnic Ecotourism

Ecotourism, first, acts as a driver of tea forest conservation, raising public awareness of tea forest and ethnic culture conservation. The audience includes both local villagers and tourists from outside, who are also potential consumers of Pu'er tea<sup>[17]</sup>. Apart from promoting the consumption of forest tea in



2. Branding Terroir: mainstream representation of terroir at monocultural terrace tea garden.

the Pu'er market, this strategy aims to build up an economic momentum in community forest projects. The mass ecotourism packages aim to maximize revenue return by providing recreational and leisure services in nature. The model of conservation-based ethnic ecotourism intends to increase tourists in Bulang Tea Forest region and Pu'er tea products' potential consumers, who gain a more realistic understanding of the end products purchased.

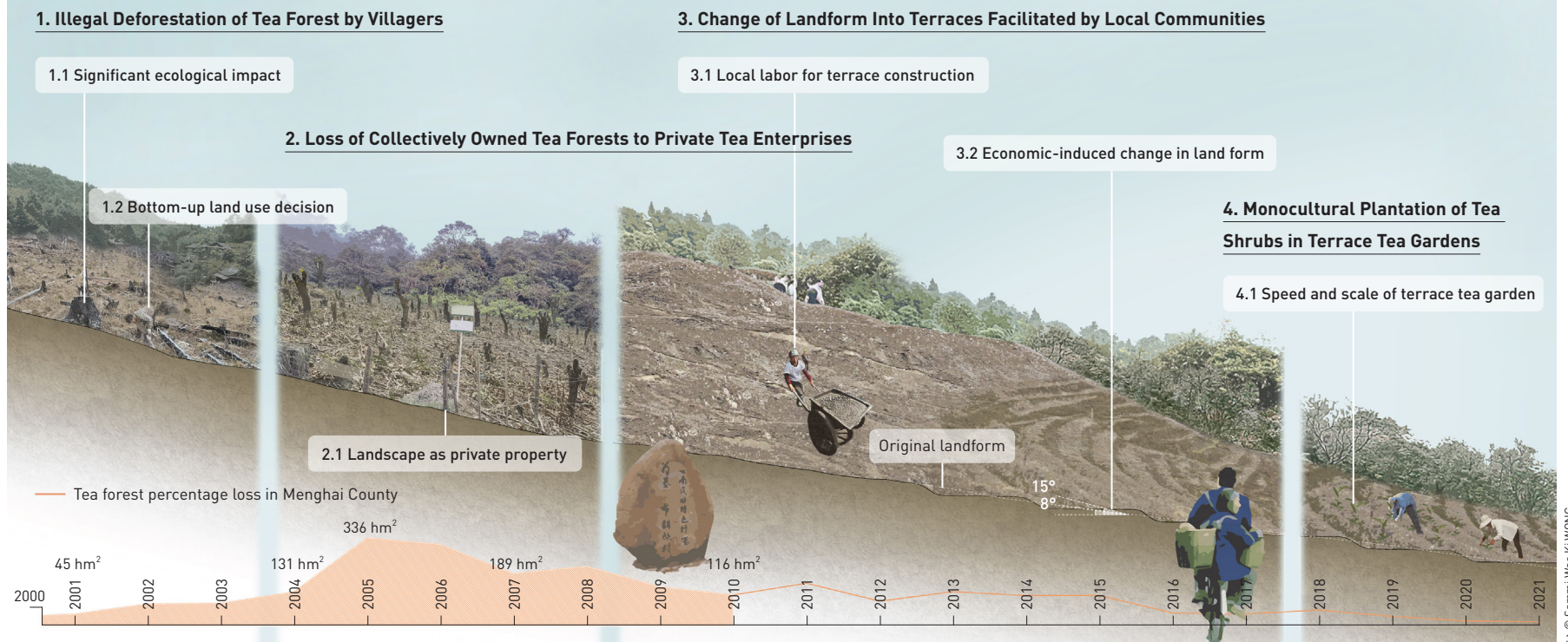
The framework highlights benefit-sharing, in form of employment, education, and community empowerment for local residents involved in Pu'er tea cultivation. In addition to basic service fee charged by local travel agents, bonuses for environmental and cultural heritage conservation are divided into three classes: Class I (highest price), Class II, and Class III (lowest price). Within a 2-day to 5-day tour, Class I bonuses will be granted when eco-tour routes of conservation are planned. Tourists joining this type of eco-tour are exposed to a diverse range of tea forest values apart from Pu'er cultivation, offering insights into

the significance of tea forest conservation and an authentic ethnic cultural experience. Eco-tour routes with both tea forest and tea garden related itinerary will be granted a Class II bonus. It aims to reveal the ecological reality of mainstream Pu'er products and environmental consequences of terrace cultivation, recognizing advantages of tea forests over monocultural tea garden. Eco-tours with more than three seasonal activities are regarded as Class II as well, since they help empower local livelihoods and respect indigenous knowledge. Class III bonuses can be claimed by private tourism agencies if one to three seasonal activities are included.

In order to maximize impacts of eco-tourism on conservation, proposed strategy is to directly link the number and type of traditional Pu'er cultivation/cultural practices with profits received by beneficiaries involved (i.e. businessmen/owners of travel agents, tourism-related organizations, and investors). By direct payments through site-specific contract, villagers, particularly upland residents, are encouraged to continue and promote their long-

## Land Use Conflict and Livelihoods System

Site: Menghai County, Xishuangbanna Dai Autonomous Prefecture, Yunnan, China



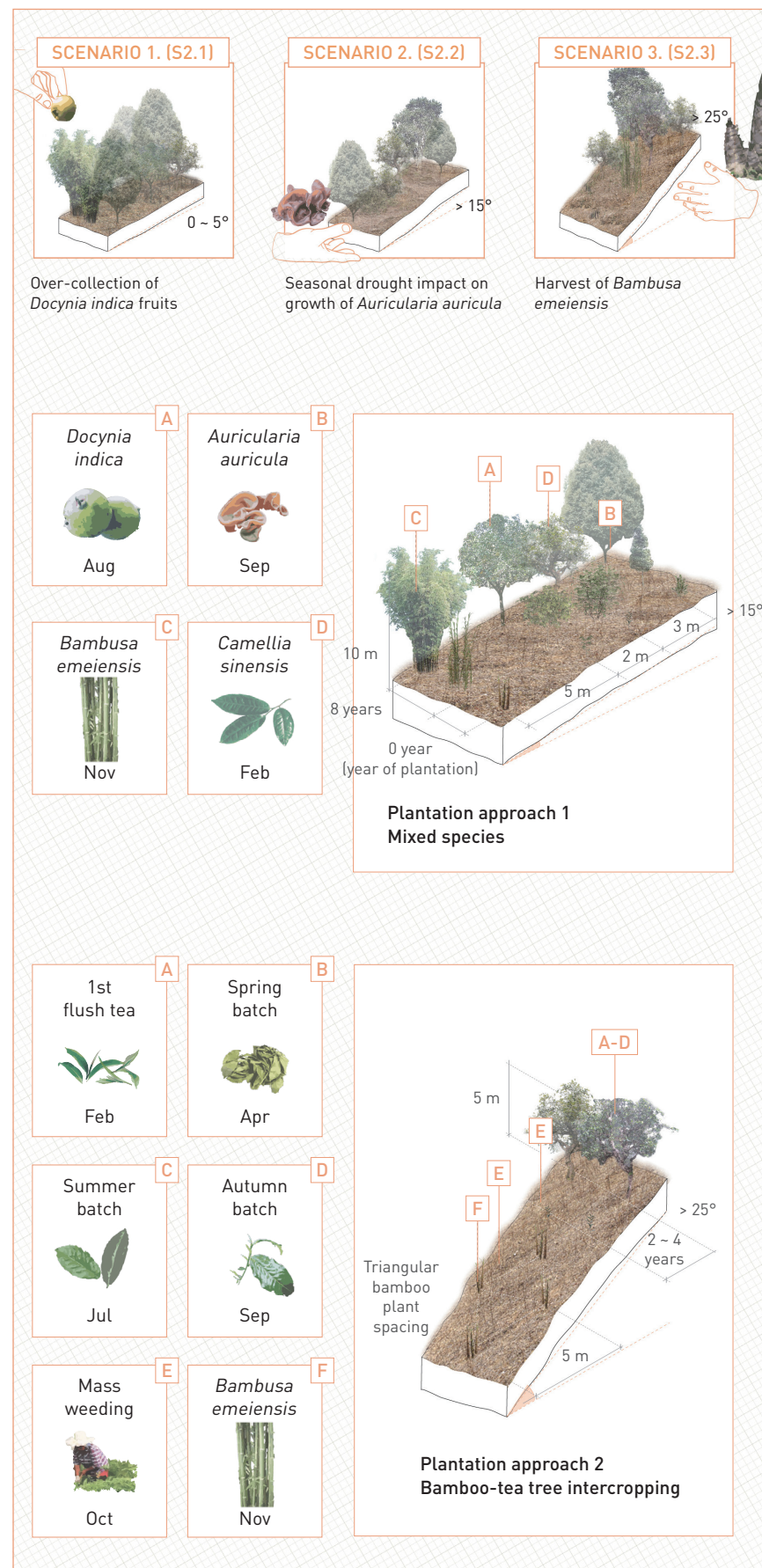
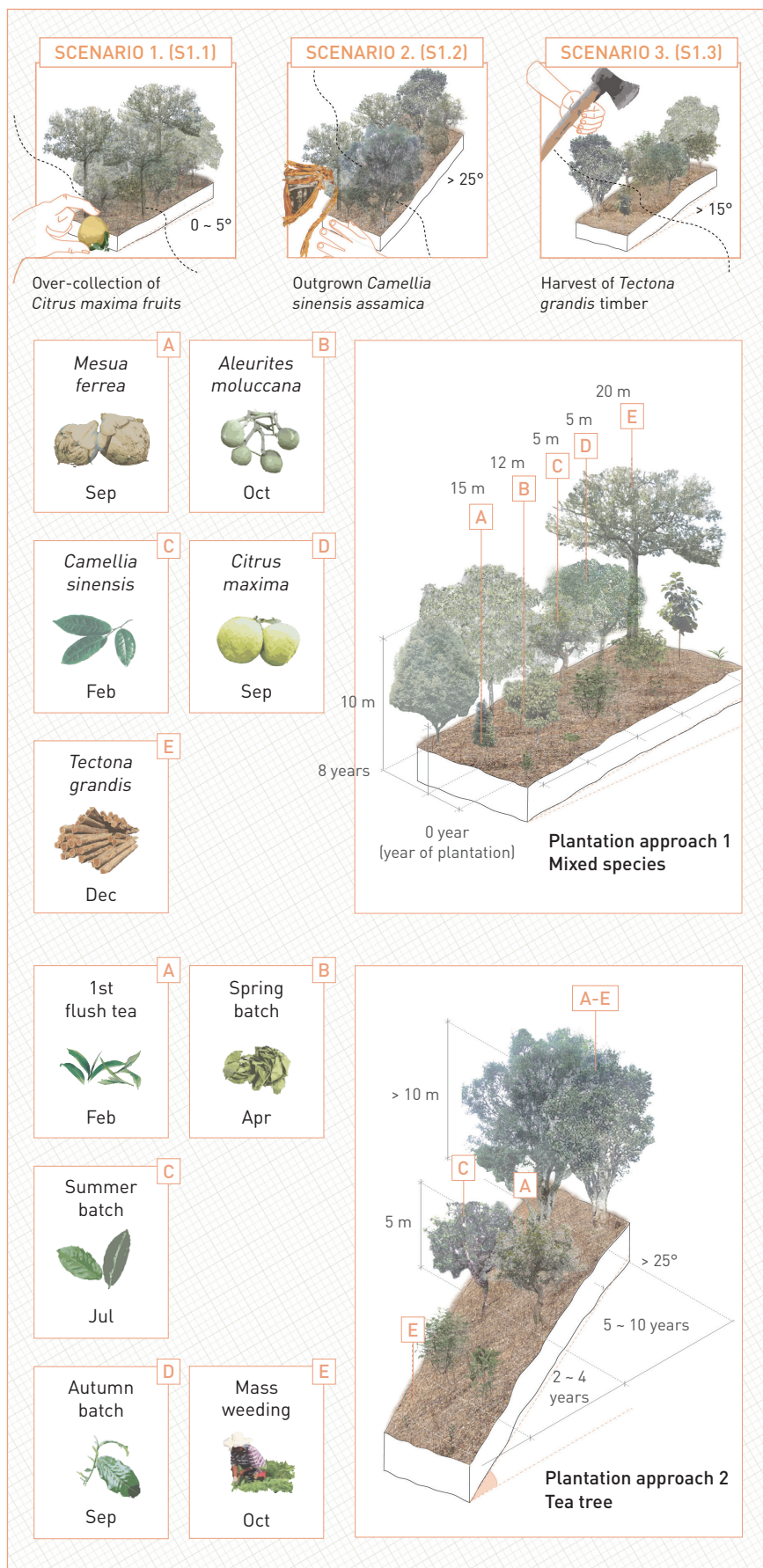
3. The cost of branding at terroir: land use conflicts and livelihoods system.

established tea forest management, Pu'er production, and cultural heritage.

### 3.2 Community Forests as Tea Forest Conservation Mitigation

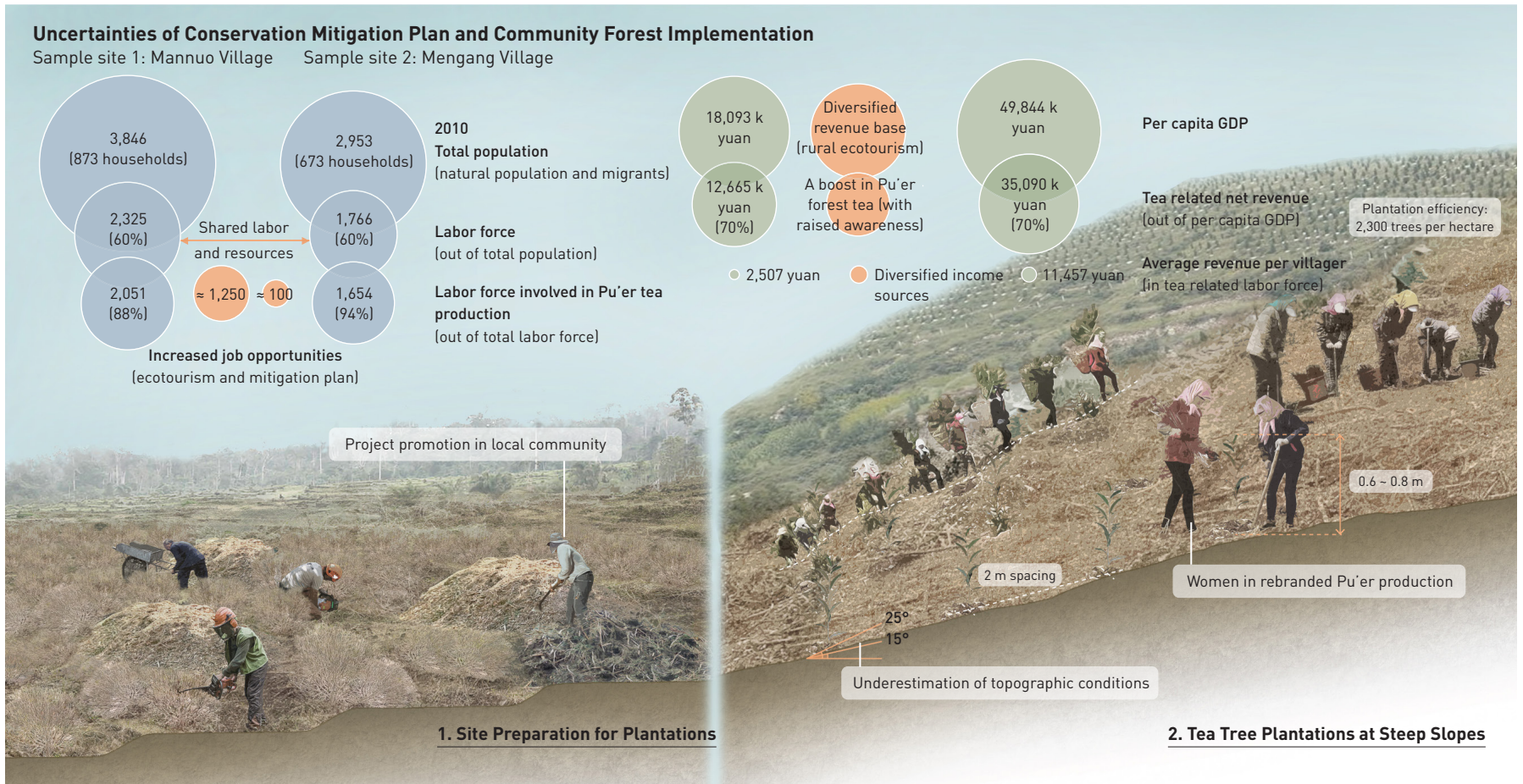
The community forest masterplan aims to reverse tea gardens back to tea forests by site-specific plantations, proposing direction for how villagers can use their resources. This allows local villagers to secure their control over the landscape they have long established, from outsiders, be it private tea enterprises or governments. Incentives for local villagers to participate are strong, as they offer both short- and long-term investment<sup>[18]</sup>, in terms of labor, time, and capital into tea plants and other certain species of locally cultural/ecological significance (such as species for Buddhist statue-making and fruits as offering at Buddhist temple). Implementation of mitigation plan mainly consists of two parts—planting Pu'er tea trees and selecting species for community forests, based upon corresponding scientific research that investigates

non-Pu'er species with locally significant cultural/ecological values<sup>[19][20]</sup>. Project sites are divided into short-term contracts, to be implemented in the first 5 years, followed by maintenance and monitoring period before opening up to village access in the 10th year. Approximately two plantation approaches are applied at each site: tea tree plantation for steep areas ( $> 25^\circ$ ), and mixed species for less steep areas ( $< 25^\circ$ ). They are designed in a way that villagers can collect non-timber forest products (NTFPs, such as forest food, rattan, latex, and resins)<sup>[21]</sup> after 2 ~ 4 years of plantation. Some species require longer time before collection, such as local fruits after the 5th year, and timber extraction in the 8th year at least. For areas with tea trees only, the local residents are able to collect tea leaves with different qualities in four batches each year—the most expensive 1st flush tea in February, Spring batch of Grade 1 ~ 5 small tea leaves in April, Summer batch of Grade 6 ~ 10 large tea leaves in July, and Autumn batch in September (Fig. 4).



4. Pilot project: tea forest conservation mitigation and community forest zoning masterplan (sample site 1).

5. Pilot project: tea forest conservation mitigation and community forest zoning masterplan (sample site 2).



6. Landscape uncertainties of conservation mitigation plan and challenges of human resources during community forest implementation

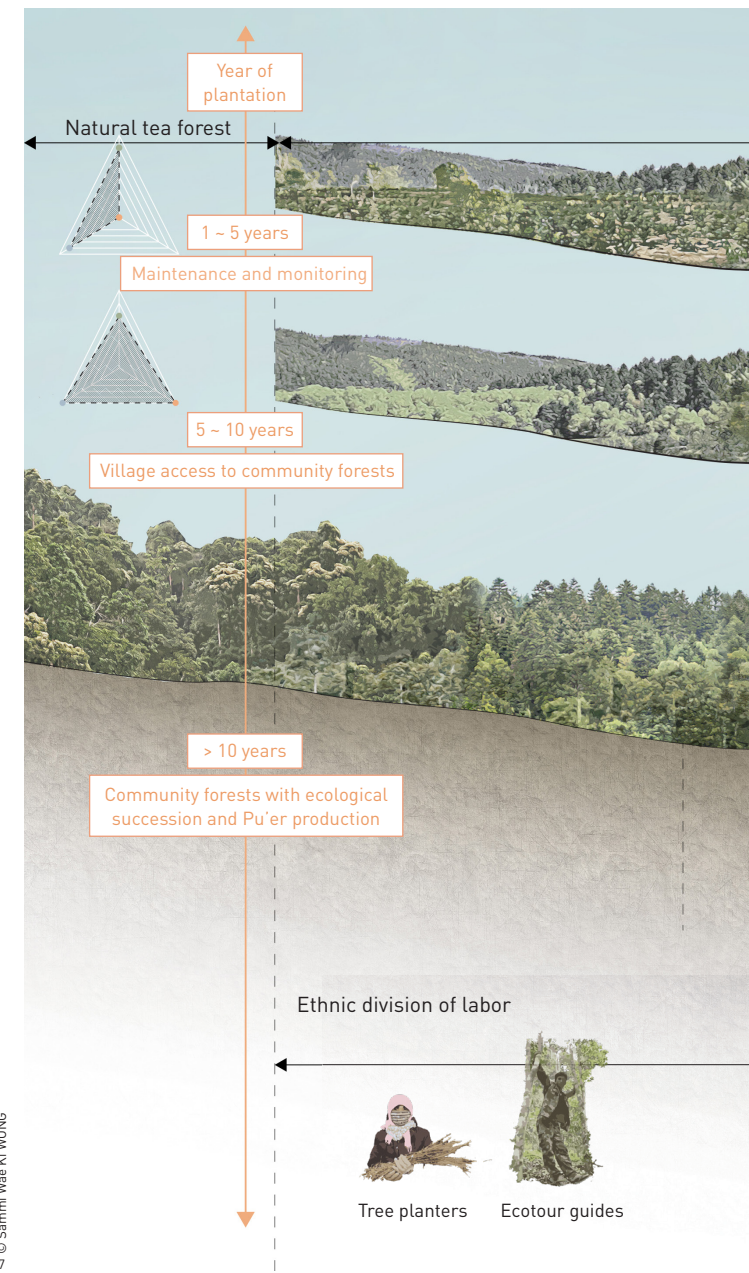
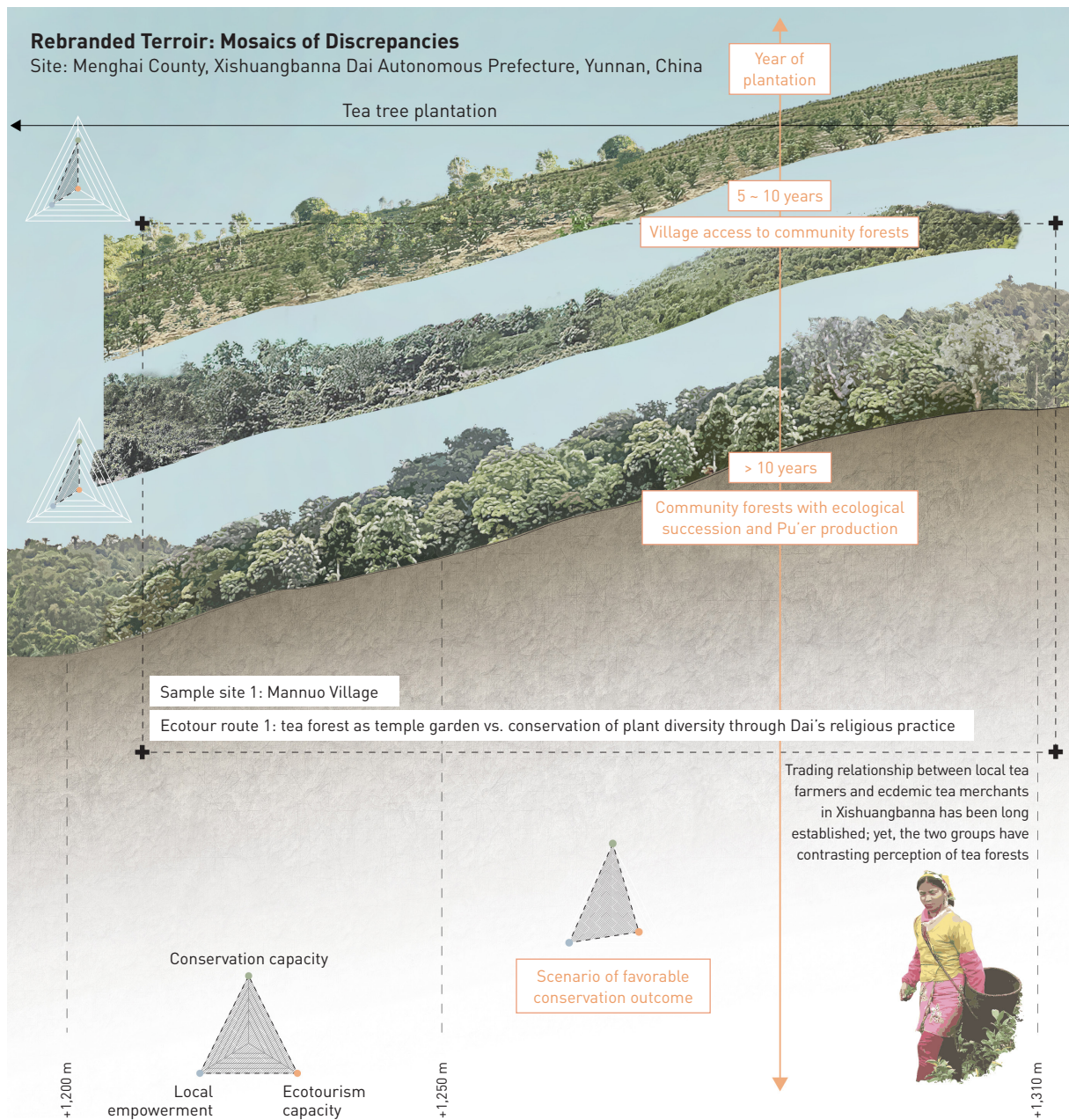
## 4 Landscape Uncertainties and Discrepancies

During project implementation, numerous uncertainties and discrepancies in the overall conservation or eco-tourism capacity can be anticipated. Despite the conceived land use zoning masterplan, local villagers perceive forest space as specific sites of social/economic activities. This results in a set of landscape scenarios depending on social activity patterns, in terms of type and extent of activities and participants (Fig. 5).

Promotion of the whole scheme and vision among villagers is critical of maximizing participation in plantation. The goal in the beginning stages of project implementation, such as site preparation for plantations, is challenging, due to the uncertain project outcomes. And villages with mainly left-behind women and children may experience labor shortage, due to the labor-intensive work of clearing. Still, villagers are more familiar with travelling long hours through forests where slopes are often steeper

than imagined, and harsher working conditions without most machineries. For example, workers are required to sift the mulch from dead tea shrubs by hand, due to unavailability of machineries at distant sites (Fig. 6).

As such, the complex and difficult process of tea forest conversion reaches a final stage, which is a terroir with mosaics of different valued tea forests and different quality Pu'er tea. Areas with tea trees only are steeper than other areas, which are more difficult as an eco-tour route. A smaller number of eco-tourists would be anticipated. Yet, in long term, it may experience less human disturbance, be it non-skilled collectors or eco-tourists, resulting in a scenario reaching closer to the optimum conservation capacity (Fig. 7). In areas with mixed species plantations, there are more diverse activities for local communities and eco-tourists, such as Pu'er production from traditional tea forests, collection of profitable NTFPs, and eco-tours. This may bring about an alternative scenario closer to the optimum level of local empowerment and



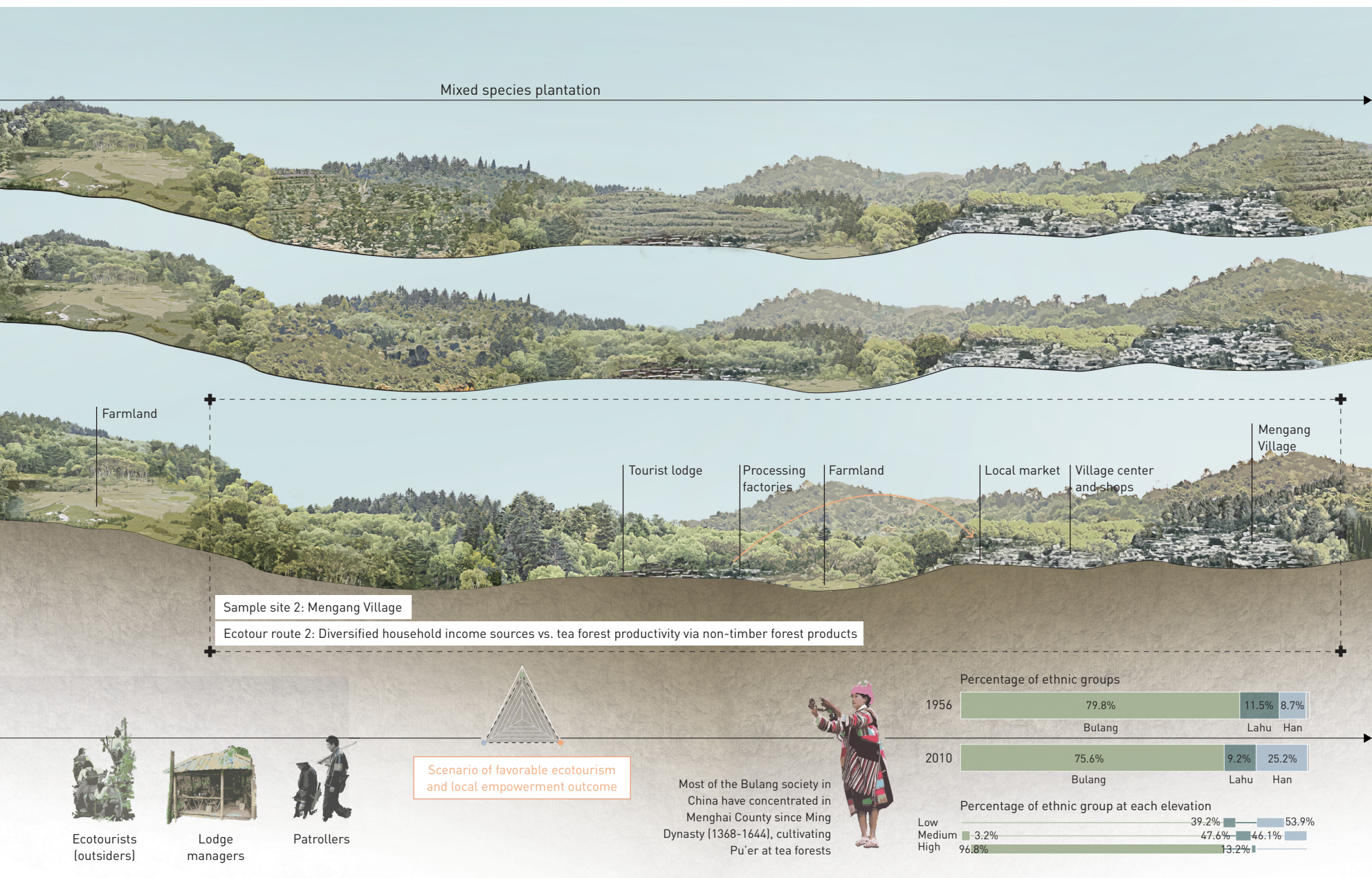
7. Rebranded Terroir: mosaics of discrepancies (scenario of favorable conservation outcome).

8. Rebranded Terroir: mosaics of discrepancies (scenario of favorable ecotourism and local empowerment outcome).

eco-tourism (Fig. 8). By reviewing an overlooked perspective of promoting tea forests over terrace tea gardens from local villagers and landscape point-of-view, it is hoped that economic opportunities are no longer limited by market demand, but driven by the terroir from the perspective of landscape architecture.

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# 重述一方风土： 云南南部市场整合加强背景下的 民族生态学与茶农业生态系统管理

王蔚淇\*

香港大学建筑学院，香港 999077，中国

\*通讯作者邮箱：wsammi2@connect.hku.hk

## 摘要

随着中国和国际市场对普洱茶需求的不断增加，云南南部农业生态系统的集约化发展导致当地出现了众多形态多样的农业生态系统，包括茶园、混合作物系统，以及单一栽培梯田茶园。普洱茶（*Camellia sinensis assamica*）通常为林地乔木，而茶（*C. sinensis sinensis*）则通常在梯田茶园中作为灌木生长。受葡萄酒行业的启发，本文以“风土”（Terroir）概念为框架，分析了形成不同植物学特征的环境和人为因素，从而量化评估种植过程所创造的价值。这种方法可促使人们将茶产品的关注点回归产地源头，而非外在因素，从而解决当地“过度包装”的风土问题。考虑到茶叶种植和营销趋势之间尚存在植物和文化价值方面的差距，本文研究了一种替代方案，该方案能够最大限度地减少茶叶生产和推广模式对环境的影响，同时利用其所带来的经济效益，在社区尺度上推进针对文化复杂性的土地保护工作。

通过景观敏感性生态旅游方法保护茶林和减轻贫困的策略适用于云南古代茶山的较多地区，本文选取布朗古普洱茶山的两个试点社区作为实验项目的场所。设计干预措施主要包括两个部分：基于保护目的的民族生态旅游，以及茶林保护计划。

本文还对项目实施过程中整体保护或生态旅游承载力方面的诸多不确定性和差异进行了分析。尽管制定了土地利用分区总体规划，但鉴于当地村民常在森林空间中开展特定的社会经济活动，研究还根据其社会活动模式、活动类型和范围，以及参与者的不同情况，构想了一系列未来景观场景，希望当地的经济机会不再受市场需求限制，而由被重新设计的“风土”所驱动。

## 文章亮点

- 对比了茶林和茶园两种栽培方式的规模和速度
- 指出茶叶种植和营销趋势之间的植物价值差距日益加大
- 在社区尺度层面构建林地，以确保村民可以切实管控当地景观
- 从景观设计角度提出由“风土”驱动的经济机会

## 关键词

普洱茶栽培；  
风土；  
民族生态学；  
农业生态系统管理；  
民族志；  
植物品质；  
产品原真性

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