

# ICOMOS

conseil international des monuments et des sites

## Tea Landscapes of Asia

A Thematic Study  
October 2021

EDITED BY

Regina Durighello/Rebecca Currie/  
Mónica Luengo

SCIENTIFIC DIRECTOR

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International Council on Monuments and Sites

11, rue du Séminaire de Conflans

94220 Charenton-le-Pont

France

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# Tea Landscapes Introduction

*Regina Durighello*  
*Mónica Luengo*

## 1. Heritage of agricultural landscapes

In the framework of its work as Advisory Body to the World Heritage Convention, ICOMOS undertakes thematic studies that are a synthesis of current research and knowledge on a specific theme and could be used by States Parties as a basis for comparative analysis when nominating a property to the World Heritage List. Thematic studies have been devoted to multiple themes, especially those heritage typologies that are poorly represented on the World Heritage List. However, regarding agricultural landscapes, there is still a lack of thematic studies that can help to assist in their identification, recognition, preservation and management.

Thematic studies regarding specifically agricultural heritage have been dedicated only to vineyards (2004), although some others, like those referring to the heritage of water in the Middle East and the Maghreb (2015 and 2017), are closely linked to the subject. There are some other works and studies, frequently carried out in collaboration with UNESCO and the World Heritage Centre, resulting from cooperation and expert meetings, such as the rice terraces in Asia (1995) or agropastoralism (2012), but if we consider the wide variety of agricultural landscapes and the huge and rich heritage they mean for humanity, there is still a long way to go. Exploring the processes that have shaped agropastoral landscapes and their resulting characteristics, and assessing their heritage significance and potential for World Heritage Listing, would contribute decisively towards the implementation of the Global Strategy for a more balanced World Heritage List, which would be truly representative of diversity of agricultural heritage and landscapes.

The inscription of agropastoral cultural landscapes would not only contribute towards achieving a more balanced and representative World Heritage List, but would also draw the attention of the international community to the importance of agriculture and of its tangible and intangible legacy for humankind, being one of the main productive activities and the basis of livelihood for human communities in the past and in the future. Recognition of this heritage, generated by agricultural practices throughout history, in the UNESCO framework would signify a step forward (Castillo & Martínez, 2014). The ICOMOS report *The World Heritage List: Filling in the Gaps* (ICOMOS, 2005) highlighted that an under-represented category consists of agricultural landscapes reflecting human endeavours to cultivate and process staple or other economic crops, and the traditional techniques for production, together with vernacular architecture and

settlements that are also associated with them. In the 15 years since the Filling the Gaps report was issued, a number of agricultural landscapes have been inscribed on the World Heritage List, but there is clearly still room for more.

Furthermore, traditional agricultural landscapes are at the crossroads of the main four strategic lines of UNESCO - Biodiversity, the World Heritage Convention, Intangible Heritage and Cultural Diversity - but even on the occasions when they represent a perfect example of bio-cultural diversity, they are still not recognized in this international framework. Even so “agricultural and agro-pastoral landscapes are very present in the World Heritage List as living cultural landscapes, but also as relict landscapes or as representations of this important history of humanity in rock art sites, for example” (Rössler & Tournoux, 2013). Most of the inscribed cultural landscapes refer to these agropastoral activities, as the cultural development of humanity is closely linked to them, having shaped our landscapes since prehistoric times. But, paradoxically, we do not yet have in-depth studies on the various types of traditional agricultural landscapes: these studies are much needed in order to determine parameters for assessing their potential outstanding significance and to map those exhibiting such potential.

There is a lack of research on agricultural landscapes, even though they have increasingly become a matter of concern in the last decade, being the leitmotif of different initiatives since 2010, when the heritage of agriculture was chosen as the theme for that year’s International Heritage Day. In 2017, ICOMOS adopted the *Principles Concerning Rural Landscapes as Heritage*, where these types of landscapes are defined as “a vital component of the heritage of humanity. They are also one of the most common types of continuing cultural landscapes. There is a great diversity of rural landscapes around the world that represent cultures and cultural traditions. They provide multiple economic and social benefits, multifunctionality, cultural support and ecosystem services for human societies”. The document also includes the potential opportunities and benefits that rural landscapes can bring in terms of a place’s sustainability and provides principles and criteria for the protection and promotion of heritage related to rural landscapes (Scazzosi, 2018). The Principles also aim to support scientific identification, description, comparison and evaluation during studies for site candidature on the World Heritage List.

Currently, 170 cultural landscapes are inscribed on the World Heritage List, with 42 of them under category 2a) (“organically evolved landscapes”). This is striking, considering that two-thirds of the global territory is covered by some kind of agro-pastoral activity, be it agriculture, livestock grazing or forestry. Agro-pastoral activities can be found in all of the 42 mentioned landscapes, in a more complex or simple way, and especially define 27 of them. Nearly half of these (10) are vineyards, but we can also find rice terraces, tobacco or agave cultivation, and other Mediterranean associations with olive trees, fruit trees and viticulture. Many other landscapes resulting from operations of farming and processing related to other crops – for instance olives, wheat, corn, cotton, potatoes and fruit trees – are totally under-represented or not even included in the List, even though the associated activities have shaped distinctive landscapes while modifying the natural environment. Studying how and to what extent these changes have taken place can help bring into light potential sites eligible for future

nominations and would form a robust basis for future assessment of the parameters and potential of the resulting landscapes.

Extensive industrialized monoculture has ended many of the traditional polyculture and mosaic patterns that maintained a rich biodiversity and adapted wisely to their environment. On the contrary, traditional monoculture is based on respect for ecological and sustainable balance and is always supported by associated crops and even a sensitive forestry, as is frequently the case for rice paddies, for example. These monocultural landscapes are generally the most visually impressive, due to their scale. They are “devoted to a single operation, and the structure they impose upon the territory in terms of a single variable result in large expanses of land that are spectacularly homogenous... all are outstanding examples of social, economic or religious needs that have evolved over time in response to and in conjunction with the natural environment. In this respect, they are repositories of the technical and scientific knowledge of past generations which hold the key that will allow us to face future threats, including climate change” (Luengo, 2013).

## 2. Tea landscapes

Tea landscapes are among the most spectacular landscapes devoted to a single crop, but the heritage of tea has not yet been given a relevant importance as heritage or as comprising valuable cultural landscapes in local and international policy documents. The specific activities of tea cultivation and processing have shaped distinctive organically evolved landscapes that are the result of generations of communities interacting with nature. Even though tea production is one of the major resources of many Asian countries and also has a major religious and traditional aspect, no studies have been developed yet on the specificities of the heritage and cultural significance of tea landscapes. Mapping and studying landscapes shaped by the cultivation and processing of tea are a long-due obligation, especially in the Asian region, where tea crops cover huge surfaces, with characteristic lines of tea bushes combing the hills or tea trees growing under the canopy formed by taller trees, making up valuable landscapes and places of significance. In addition, while, as mentioned above, many of the cultural landscapes inscribed on the List illustrate the production and processing of crops for brewing beverages that have become popular worldwide (wine, coffee, tequila), and though tea is one of the three major beverages of the world, with all that that implies in cultural terms, there are still no inscriptions of this heritage on the List (Wijetunga and Sung, 2018).

Tea (*Camellia sinensis*) is the most-consumed manufactured drink in the world. Discovered in approximately 2700 BC, it is one of the world’s oldest beverages, and today it is available for consumption in six main varieties that are based on the oxidization and fermentation technique applied (Chan, 2015). It is recognised by the Food and Agriculture Organization of the United Nations (FAO), and its contributions to health, culture and socioeconomic development are still as relevant today. Tea is currently grown in more than 35 countries and supports over 13 million people, including smallholder farmers and their households, who depend on the tea sector for their livelihoods (FAO). It is celebrated by the FAO through its annual International Tea Day

(<http://www.fao.org/international-tea-day/en/>), held on 21<sup>st</sup> May, and still represents a vital role in rural development, poverty reduction and food security. It is an outstanding crop that deserves a specific FAO Intergovernmental Group on Tea (<http://www.fao.org/economic/est/est-commodities/tea/tea-meetings/en/>). Four tea-producing sites in Asia (in China, Japan and Korea) have been recognised as Globally Important Agricultural Heritage Systems (<http://www.fao.org/giahs/en/>).

Since it was first cultivated in China around the 3rd millennium BC as a medicinal beverage obtained by boiling fresh leaves in water, tea cultivation spread quickly over China and became a daily drink. It was soon linked with poetry, calligraphy, painting, philosophy and tea drinking rituals, and an intense trade led to important cultural routes such as the tea-horse routes that connected China with other countries. From China, cultivation spread over other Asian countries, and then, much more recently, around the 17th century, it arrived in Europe and was exported in huge quantities by the Portuguese, Dutch and British. During the 19th and 20th centuries, there was a substantial expansion in tea cultivation around the world. By the end of the 20th century, tea cultivation had spread to some 40 countries in Africa, Asia and South America, and around the Black and Caspian Sea, limited to the areas in the world where there is a hot, moist climate, a minimum annual precipitation of 1,250mm, preferably acidic soils, ideally 0.5-10 degree slopes, and elevations up to 2,000 metres (Chang, 2015). Today, tea growing is a major global industry. The four biggest tea-producing countries are China, India, Sri Lanka and Kenya, and these countries represent 75% of global production.

The tea landscapes in Asia are paradigmatic examples of cultural landscapes, embedded with multiple intangible values, and reflecting generations and generations of human activity. They are a demonstration of human ingenuity adapting to the varied geographical and social conditions of tea cultivation. Tea has become a source of religious practices, associated with Buddhism and Taoism, and is the basis of hundreds of traditional rituals, some as important as the tea ceremony. Tea is associated with a significant cultural heritage linked to a major economic sector and is the basis for the survival and well-being of millions of people. Tea landscapes represent a resource for human development and for the richness of biocultural diversity born around the tea bush. It has promoted intercultural dialogue through commerce and trade, migrations and the blend of different ethnic groups, and can be the foundation for sustainable development and the response to current challenges such as climate change.

### **3. Tea landscapes thematic study**

With the aim of providing support for possible nominations to the World Heritage List, achieving a more balanced representation of agricultural cultural landscapes on the List, and highlighting the potential of tea landscapes in Asia to contribute to the List, this study explores the theme of agricultural landscapes related to tea cultivation and processing and outlines preliminary elements for establishing comparative parameters.

In a first stage, a standard plan was set, proposing sub-regional geographic divisions (China, Japan, Korea, Vietnam, Myanmar, India and Sri Lanka) that would be covered by an article in the study. Depending on their importance from a heritage perspective, some sub-regions were subdivided into several intermediate zones. The first difficulty was identifying experts for all the sub-regions, be they ICOMOS members or not, since, as mentioned above, there is a notorious lack of research on the subject from a landscape point of view. Once identified, a simple format and standard plan was sent to the experts. This format or standard plan included sections on the general characteristics; the main tea landscapes and their general geographical and ecological data; the historical context; the description, planting traditions and types of tea trees; harvesting and tea processing; social and cultural systems; associated communities and settlements; links to trade, trade routes and economic opportunities; intangible associations; landscape surveys, photographs and archaeological surveys; archive documents; risks and challenges; authenticity and integrity issues; legal protection; state of conservation; management issues, etc. A short bibliography was also required. The purpose of requesting all of this information was to identify those landscapes that had been shaped distinctively by tea cultivation, and perhaps also by processing, drinking ceremonies and trade, as a reflection of various specific cultural, social and economic forces, especially those that have persisted over time. The aim was also to assess how some of these landscapes might have the potential to justify consideration for inscription on the World Heritage List.

The responses received from consulted experts have clearly shown the challenges of undertaking a multidisciplinary study on the topic as required for cultural landscapes studies, and, equally, the need for involving different specializations (economic, botanical, etc.); it has also highlighted the lack of adequate documentation of these landscapes. All the experts contacted put in an enormous effort and we have to congratulate them all. The editing process has required an intense exercise of communication and exchanges with the consulted experts, in search of a standardization or homogenization that would facilitate the possible comparative analysis. This study includes texts on specific tea landscapes from China, Japan, Korea, India, Sri Lanka, Vietnam and Myanmar: it is not meant to be exhaustive and could be seen as the first contribution of this kind on the exploration of this complex theme. The result reflects the current state of the research on tea landscapes in each country. Each text has captured the national essence, as each tea landscape described is a combination of natural and material elements together with the culture to which it is associated.

Tea landscapes vary widely from one tea-producing region to another. Each is different from the other, reflecting the very diverse ways of life, beliefs and cultures, past and present, of all these rural sites. They keep alive the memory of the history of successive generations of farmers, represent different social organizations, and explain ways of understanding the land and the relationship between humankind and nature. Each cup of tea contains the essence of a terroir where the *Camellia sinensis* is cultivated, with its own special characteristics due to its soil, climate, altitude, latitude and so on. Those specific features, together with the traditional plucking style, the processing and the ways of drinking, provide for a distinctive flavour and a sign of identity; the result of a specific tea landscape (Luengo, 2019).

*The Operational Guidelines for the Implementation of the World Heritage Convention*, in Annex 3 (Guidelines for the inscription of specific types of properties on the World Heritage List), Paragraph 7, state that cultural landscapes should be selected on the basis of both their Outstanding Universal Value and their representativity in terms of a clearly defined geo-cultural region, and also for their capacity to illustrate the essential and distinct cultural elements of such regions. Tea landscapes are indeed representative of the Asian region, and are a reflection of the interaction between humans and their environment, keeping alive the memory of successive generations of tea farmers.

## Bibliography

Castillo Ruiz, J. and Martínez Yáñez, C., "The Agrarian Heritage: definition, characterization and degree of representation on the UNESCO framework", *Boletín de la Asociación de Geógrafos Españoles*, nº 66 -2014, pp. 457-461.

Chang, K., *World tea production and trade. Current and future development*. FAO, 2015.

FAO, *Discussion Paper. Distinction between GIAHS and UNESCO'S cultural landscape category* (GIAHS/STSC/15/3 add. 1), 2015, [www.fao.org/3/a-bp925e.pdf](http://www.fao.org/3/a-bp925e.pdf).

ICOMOS, *The World Heritage List: Filling the Gaps – An Action Plan for the Future*, Paris.

ICOMOS, *ICOMOS-IFLA Principles Concerning Rural Landscapes as Heritage*. [https://www.icomos.org/images/DOCUMENTS/Charters/GA2017\\_6-3-1\\_RuralLandscapesPrinciples\\_EN\\_adopted-15122017.pdf](https://www.icomos.org/images/DOCUMENTS/Charters/GA2017_6-3-1_RuralLandscapesPrinciples_EN_adopted-15122017.pdf), 2017.

Luengo, A., "World Heritage agricultural landscapes", *Agricultural Landscapes, World Heritage*, n. 69, October 2013, pp. 10-14.

Luengo, M., "Cultural and Heritage Values of the Asian Tea Landscapes in an international framework", Boschiero, P, Latini, L. and Paolillo, M., (eds), *The Tea Gardens of Dazhangshan*, Fondazione Benetton Studi Ricerche, pp. 185-199.

Rössler, M. and Tournoux, M-N., "Focus on agricultural and agro-pastoral landscapes", *Agricultural Landscapes, World Heritage*, n. 69, October 2013, p. 15.

Scazzosi, L., "Rural Landscapes as heritage: reasons for and implications of Principles Concerning Rural Landscapes as Heritage ICOMOS- IFLA 2017" *Built heritage* 2, 2018, pp. 39-52.

UNESCO, *Asian Rice Culture and Its Terraced Landscapes. Report on the Regional Thematic Study Meeting*. Manila (Philippines), 28 March to 4 April 1995. <http://whc.unesco.org/en/events/1111/>.

UNESCO, *Operational Guidelines for the Implementation of the World Heritage Convention*, 2019, Paris.

UNESCO, *World Heritage*, 69. October 2013, monographic issue: *Agricultural Landscapes*.

Wijetunga, C.S., and Sung, J.S., 2018. "Valuing the Cultural Landscapes Past and Present: Tea Plantations in Sri Lanka", Ramsay, J. and Taylor, K. (eds), *21st Century Challenges Facing Cultural Landscapes*, Routledge, 2018, pp.668-683.

# Introductory Overview of the History of Global Tea Production

Wataru Ono

## 1. Major tea-producing areas in the world

Tea is enjoyed around the world, and different countries or regions have different cultures or styles of tea drinking. However, as far as cultural landscapes of tea are concerned, it is the place or land of tea cultivation that is pertinent. Tea cultivation is relatively geographically limited on the earth. According to the Food and Agricultural Organization's (FAO) database (FAOSTAT), out of the top 20 countries that produce tea (in 2017), 11 countries are in Asia, eight are in Africa, and one is in Latin America.

**China** is the top tea producer (2.46 million tonnes), followed by **India** (including Assam and Darjeeling regions) (1.33 million tonnes). These two Asian countries are the only countries that produce over one millions tonnes of tea per year. **Kenya** ranks third, producing 440,000 tonnes. Asian countries fill the fourth to eleventh positions: **Sri Lanka** (also known as Ceylon in the tea industry), **Vietnam**, **Turkey**, **Indonesia** (including Java and Sumatra Islands), **Myanmar**, **Iran**, **Japan** and **Bangladesh**. **Argentina** produces 81,000 tonnes, ranking 12th, as the only country included among the top 20 tea producing countries that is located in the Americas (and the Western Hemisphere). **Thailand** produces 59,000 tonnes, ranking 13th. **Uganda** produces 50,000 tonnes, ranking 14th. The 15th to 18th positions are taken up by African countries: **Malawi**, **Tanzania**, **Mozambique** and **Rwanda**. **Nepal** and **Taiwan** complete the list.

In summary, tea is mainly grown in two regions, East and South East Asia, centering around China, and East Africa, centering around Kenya, followed by a few countries outside these regions: Iran and Turkey in West Asia and Argentina in Latin America.

This geological distribution suggests that tea drinkers outside these regions may not be familiar with the landscapes of tea cultivation. For that matter, tea drinkers in one tea-producing place may not be familiar with the landscapes of tea cultivation in another place.

## 2. History of tea cultivation on a global scale

As far as the history of tea cultural landscapes is concerned, neither the origins of wild tea nor the history of the spread and diversification of tea-drinking cultures are so important as the moment when people started the cultivation of tea.

From this perspective, the history of tea cultivation can be boiled down to the following four stages:

*In the beginning, tea was only grown in China; this continued for thousands of years up to the 8<sup>th</sup> century CE*

In the initial stage (China), tea cultivation started in China thousands of years before the common era, and China continued to be the only place that tea was grown for thousand of years up to the 8<sup>th</sup> century.

*Spread of tea cultivation from China to East Asia in the 8<sup>th</sup> century, but not beyond for one thousand years*

In the second stage (tea cultivation spread from China to East Asia), Buddhist monks introduced tea seeds, as well as the habit of tea drinking as a kind of medicine, to Japan in the 8<sup>th</sup> century and tea cultivation spread in the subsequent centuries to a few countries in East Asia, including Korea, to which tea cultivation was introduced in the 9<sup>th</sup> century. But, the tea cultivation continued to be limited in East Asia for more or less one thousand years up to the 19<sup>th</sup> century.



*Image 1. Pruned tea bushes near Kyoto, Japan. Source: M. Luengo.*

*Spread of tea cultivation from East Asia to the Indian subcontinent, South-East Asia, West Asia and East Africa in the 19<sup>th</sup> and 20<sup>th</sup> centuries*

In the third stage, in the 19<sup>th</sup> century, tea spread from a few countries in East Asia to several countries in the Indian subcontinent, South-East Asia, West Asia, and East Africa. Tea-drinking had been unknown in Europe until tea was mentioned in travel accounts of 16<sup>th</sup>-century Europeans who visited the East, such as Venetian geographer Giovanni Battista

Ramusio, Jesuit priests such as Gaspar da Cruz and Luís Fróis (Portuguese) as well as Matteo Ricci and Giovanni Botero (Italian), Dutch navigator Jan Huyghen van Linschoten, and Portuguese sailor João Rodrigues. Afterwards tea was brought to Europe for the first time in history in 1610 by Dutch traders, followed by British traders in 1637. In the subsequent centuries, tea-drinking became popular in Europe, increasing demand for tea from the East and resulting in trade competition. In some important historical events, tea even triggered, or played an important role in, war. It was not until the 19<sup>th</sup> century that European countries succeeded in cultivating tea in their colonies in India, Sri Lanka, Indonesia, Vietnam and other countries. European colonization brought tea cultivation to East Africa, too, such as in Malawi and Kenya. Turkey and Iran in West Asia also started tea cultivation.

#### *To the Western Hemisphere in the 20<sup>th</sup> century*

In the fourth stage, in the 20th century, tea cultivation found its way to the Western Hemisphere, mainly Argentina.

### **3. History of tea cultivation at the regional level (excerpts)**

Many books have been written about tea and are readily available in the market for those who are interested in a more detailed history of tea cultivation in different countries and regions. In the past seven years, new books providing succinct information about the history of tea cultivation, introduction to different tea cultures, and graphic presentation of tea-producing areas in different countries and regions have been published. Among others, the following three books have been particularly informative:

- Kelvin et al. *Tea: History, Terroirs, Varieties.*, (first published 2009 by Éditions de l'Homme,) second ed., Firefly Books, New York, 2014.
- Smith, Krisi. *World Atlas of Tea: from the leaf to the cup, the world's teas explored and enjoyed*, Mitchell Beazley, London, 2016; and
- Gaylard, Linda. *The Tea Book*. Dorling Kindersley Limited, London, 2015.

The following are excerpts from these new books, and W. H. Ukers' classic and encyclopedic 1935 book *All About Tea*, about the history of tea cultivation in different countries and regions, with a focus on when tea cultivation began:

#### **East Asia**

##### **China**

"In 2004, scientists excavating at the foot of Tianluo Hill in the north of Zhejiang Province discovered ancient tea-plant fossils with marks indicating cultivation.... Previously, the

earliest recorded example of tea, which was also found in China, dated back to 3,000 BC. These remarkable new findings place the new date for the origin of tea cultivation at nearly 9,000 years ago.

“The earliest written record of tea is from China and dates back to 600 BC. The first known book about brewing and serving tea, written by the Chinese poet Lu Yu, followed shortly after.”

*(World Atlas of Tea).*

“China is where tea was born. Chinese legends that speak of its discovery are so ancient it would be easy to believe that tea has always existed there. But if tea has been known in China since time immemorial, it has not always existed in its current form. Indeed, different ways of growing and drinking it have evolved over time and according to changing customs.

“Among the Chinese legends that recount the discovery of tea, the oldest dates from 2737 BCE.

“Taking this legend into account, it is possible to say that tea has been used in the Chinese pharmacopoeia for over 4,500 years. According to Lu Yu, author of the first work devoted to tea, it was in the time of the Zhou dynasty (1121-256 BCE) that tea became a popular drink. Until then tea had been used medicinally or as a food, mixed into soup or with other foods. It was not until the Han dynasty (206 BCE-220 CE) that tea was considered a beverage in its own right.

“Chinese feudal society was at its peak in the prosperous days of the Tang dynasty (618-907). During this era, the art of tea was developing along with the arts of painting, calligraphy and poetry....

“During the Tang Dynasty, tea was not prepared in the same way it is today. At that time, tea was compressed into bricks that were then softened so they could be crumbled with a mortar and pestle. The resulting powder was mixed with salt water and sometimes with ginger, onion, orange zest and rice before being boiled....

“During the Song dynasty (960-1279), important changes occurred in the way tea was manufactured and consumed: it was the age of powdered tea. The dried leaves were ground with a millstone to obtain a fine powder that was then beaten in a bowl with a bamboo whip until “jade foam” appeared. The Japanese, who were introduced to tea during this period by Buddhist monks, still use this process during the *chanoyu*, the tea ceremony....

“The end of the 13<sup>th</sup> century was marked in China by the invasion of Mongol hordes, which slowed down the spread of tea. It was not until the cultural renaissance of the Ming dynasty (1368-1644), almost a century later, that tea culture was reborn. It was at this time that tea began to be prepared as we do it today....

“The Qing dynasty (1644-1914) was another important period in the history of tea in China. Indeed, several prestigious teas were named during the Qing dynasty. The famous Bi Luo Chun and Long Jing were named by the Emperor Qianlong.”

*(Tea. History, Terroirs, Varieties).*



*Image 2: Old Village of Nuogang. Pu'er. Jingmai, China. Source: M. Luengo.*

## Japan

“Tea was first brought to Japan around 805 CE by Japanese monks returning from China. However, it was only in the 12<sup>th</sup> century that the tea plant began to thrive in the Uji area of the Kyoto prefecture.”

*(The Tea Book).*

“Japan was one of the earliest countries to cultivate tea....

“Tea was first cultivated in Japan in the 8<sup>th</sup> century in the grounds of Buddhist temples, nestled in the foothills of the Uji mountains. After visiting China, where *Camelia sinensis* was a native species and already popular as a beverage, Buddhist scholars were impressed with the medicinal qualities of green tea and so took tea seeds back home to Japan. The earliest mention of tea in Japanese literature dates to AD 815....

“In the 12<sup>th</sup> century, the Zen Buddhist monk Eisai wrote a treatise called *Kissa Yojoki* (How to Stay Healthy Drinking Tea) about the medicinal benefits of drinking tea, as a result of which plantations began to spring up in Kyoto to produce tea for spiritual and health purposes.”

*(World Atlas of Tea).*

“Tea was introduced to Japan in the eighth century by monks who had spent time in China studying Buddhism. At the time, tea was already a popular beverage in China, and the monks used it as a stimulant to stay awake during their long hours of mediation. History records the monks Saisho as being the first to have brought the custom back to Japan, so we have reason to believe that Japan’s interest in tea was roused at this time.

However, because of the strained relations between China and Japan, it was not until the end of 12<sup>th</sup> century that Japan could truly be considered as having a tea culture.

“In 1191, the monk Eisai (1141-1215), founder of the Rinzaï sect of Zen Buddhism, brought a few tea plant seeds back from a pilgrimage to China.... Eisai spread the idea that tea should be consumed for its medicinal properties. We are also indebted to him for the first Japanese book on tea, published in 1211. In addition to seeds, he also introduced the Japanese to the tea preparation method that was used in China at the time, under the Song dynasty (960-1279). The tea leaves were ground to a fine powder (*matcha*) before being steeped....

“Later, Japanese grand tea masters appeared on the scene. In the 16<sup>th</sup> century, one of them, Sen no Rikyu, codified the tea ceremony (*chanoyu*)... in 1738, Soen Nagatani created a method of leaf dehydration using steam. Thanks to this method, which brings out the fresh aroma of the leaves, he was able to create a green tea that was very different from Chinese green teas and which quickly became quite popular.”

(*Tea. History, Terroirs, Varieties*).

## Korea

“Tea seeds were brought to Korea from China in 828 CE and planted on Mount Jiri in South Gyeongsang province, giving birth to a thriving tea culture.”

(*The Tea Book*).

## Indian Subcontinent

### India

“Tea cultivation began in earnest in India in the 19<sup>th</sup> century to supply the British with their own source of their favourite beverage.”

(*The Tea Book*).

“The true beginning of the history of tea cultivation in India can be attributed in part to Major Robert Bruce. In 1823, as an employee of the East India Company, he discovered wild tea plants growing in the state of Assam, close to the border with Myanmar (former Burma)....

“Even before Bruce’s discovery, several attempts had been made to grow tea plants in India. As early as the beginning of the 19<sup>th</sup> century, C.J. Gordon had brought back approximately 80,000 *Camellia sinensis* var. *sinensis* seeds from China, which he introduced in Darjeeling, Kumaon, Assam and southern India, long before the tea plant discovered in Assam was recognized as a variety of *Camellia sinensis*. However, this first attempt to grow tea failed due to a lack of experience....

“The British decided to send spies to China to try to discover the secrets of growing tea. Botanist Robert Fortune, disguised as a tea merchant, managed to gain access to the

gardens and pick up enough clues to understand the mysterious process that produced China's famous black tea and the important phenomenon involved: oxidation. In 1848, he returned with 20,000 plants, essential information regarding the processing of the leaves and a Chinese labor force of about 80 workers, who were to prove invaluable to the creation of new plantations. It was at this point that the cultivation of tea in India really got under way." (*Tea. History, Terroirs, Varieties*).

### **Sri Lanka**

"Originally a coffee-growing nation, Sri Lanka switched to tea production in 1869, when a devastating blight infested the majority of its coffee plantations." (*The Tea Book*).

"Much as in India, tea was first introduced to Sri Lanka during its time under British rule in the 19<sup>th</sup> century ... Originally, the land was cleared in order for coffee plantations to be set up, but these plantations were quickly converted to tea estates after the coffee plants suffered a crippling crop disease ...

"Loolecondera, the first tea estate in Sri Lanka, was established in 1867 by James Taylor, who saw an opportunity to supply tea to the United Kingdom." (*World Atlas of Tea*).

"Although Sri Lanka is now one of the world's major tea exporters, and the appellation "Ceylon Tea" is still in use, its tea industry is relatively young. Before 1860, not a single tea plant grew on the island. It was entirely covered with coffee plantations, which represented the country's primary economic resource.

"The establishment of the first tea gardens on the island is attributed to a young Scot, James Taylor, who worked for a large coffee grower. Taylor managed to obtain a few tea-plant seeds from the Royal Botanical Gardens of Peradeniya, with which to try to create a first plantation. Throughout the 1860s, he experimented with different growing and leaf-processing methods on a few acres of the Loolecondera Estate, which were referred to as Field No. 7. This garden, in Kandy, is considered the pioneer of tea growing in Sri Lanka."

(*Tea. History, Terroirs, Varieties*).

### **South-East Asia**

#### **Vietnam**

"The indigenous wild tea tree, or "shan", has been growing in Vietnam for at least 1,000 years. However, it was only in the 1820s that tea plantations were established by French immigrants."

(*The Tea Book*).

“Although green tea has been enjoyed for many centuries in Vietnam, after first being introduced by the neighbouring Chinese, it wasn’t until the 1800s that commercial tea cultivation was established in the country, by the French colonialists who settled there.”  
(*World Atlas of Tea*).

### **Indonesia**

“The Dutch first planted var. *sinensis* seeds in Indonesia in 1684. However, this variety failed to flourish, and in the mid-1800s, they found that var. *assamica* was more suited to Indonesia’s tropical climate. In the late 19<sup>th</sup> century, the first batch of black tea was shipped to Europe.”

(*The Tea Book*).

“For many years it was thought tea could not be grown and manufactured successfully except in China and Japan, so it was a long time after the Portuguese navigators had shown the way to the Indies and the Far East that the Dutch and the English were inspired to try it in their Indian possessions.

“The German naturalist and doctor of medicine, Andreas Cleyer, first thought of growing tea in Java... In 1684, he brought tea seeds from Japan, from which he successfully grew several tea bushes... The conquest of Java by the tea plant was started with tea from Japan, followed by plants from China; but it was not until Assam tea seed was brought from British India, in 1878, that the victory was complete.”

(*All About Tea*).

### **Taiwan**

“In the 1800s, when the black tea industry was booming in Ceylon (now Sri Lanka), Indonesia and India, a British businessman named John Dodd decided to make Taiwan his base for creating a unique brand of tea for the island to export. ... Prior to the 19<sup>th</sup> century, the people of Taiwan had been drinking and growing tea for a hundred years, since some of the plants had been brought from mainland China’s Fujian Province.”

(*World Atlas of Tea*).

“China is not the only country that influenced the development of the Taiwanese tea industry, as various peoples have sought to control the territory, due to its ideal strategic position for exporting goods to Europe. The Portuguese, Spanish, Dutch and English all occupied the island at various points during the 16<sup>th</sup> and 17<sup>th</sup> centuries. The Dutch, who occupied Taiwan from 1624 to 1662, were the first to develop the tea trade in this territory. “In 1662, under the Qing dynasty, Admiral Zheng Cheng Gong reconquered the territory, and it was annexed to China in 1683. Following unification, a wave of Chinese immigration into Taiwan completely changed the territory’s culture. The new immigrants, most of whom came from Fujian Province, especially the area around Anxi and the Wuyi

Mountains, brought with them tea seeds and plants, as well as their expertise in tea growing, which was still unknown in Taiwan.”

*(Tea. History, Terroirs, Varieties).*

### **Thailand**

“Bringing var. *sinensis* cuttings from Taiwan, the Chinese began to cultivate tea in Thailand in the 1960s.”

*(The Tea Book).*

“Tea was introduced to Thailand by the Chinese, both through centuries of trade and by Chinese settlers in northern Thailand. The knowledge, skills and techniques developed in mainland China and, later, on the island of Taiwan were used to establish the production of oolong and green teas in Thailand. The same ancient tea trees grow in the forests in the mountains of northern Thailand that grow in northern Vietnam, spanning a vast area from Assam in India to Yunnan in China.”

*(World Atlas of Tea).*

## **West Asia**

### **Iran**

“Tea production was first introduced to Iran by Prince Mohammad Mirza, who served as Iran’s ambassador to India. In the 1890s he smuggled Indian tea saplings out of India and then planted them in his home town of Lahijan.... Tea has been enjoyed widely in Iran since ancient trade routes brought goods from China to the West.... Iran built its first tea factory in the 1930s and the industry has since grown.”

*(World of Tea Atlas).*

### **Turkey**

“Tea is grown in the picturesque province of Rize in northeast Turkey, an area located between the Pontic mountains and the Black Sea....

“The Rize province is quite rural and was an economically poor area before tea was first planted there in the 1940s....

“Japanese tea plants were first planted in Turkey in the late 1800s, but cultivation did not take off on a large scale at the time. ... It was not until the 1930s that three important factors combined to really kickstart Turkey’s tea production.”

*(World Atlas of Tea).*

## **Africa**

### **Malawi**

“The first tea in Africa was planted in Malawi in the late 1800s.”

*(World Atlas of Tea).*

“One of the first African countries to market its tea production, Mawali is still one of the major African growers... The first plantations were established in 1878 and gradually spread to the regions of Malanje and Thyolo.”

*(Tea. History, Terroirs, Varieties).*



*Image 3: Tea landscape in Kericho, Kenya. Source: Ahero dala.*

## **Kenya**

“Tea was first introduced to Kenya in 1903, and its commercial production began in 1924.”  
*(The Tea Book).*

“Tea was first introduced to Kenya in the early 1900s when seeds from India were planted in the Highlands by the British brothers, the Caines.”  
*(World Atlas of Tea).*

## **The Americas (Western Hemisphere)**

### **United States of America**

“In the 1880s, the US government began to experiment with tea growing in the states of Georgia and South Carolina. These farms failed within the first few decades....

“Since then, a number of farms around the country have been planting tea with positive

results. One in particular, the Charleston Tea Plantation in South Carolina is well established.”

*(The Tea Book).*

### **Argentina**

“Argentina is the only nation from this region (South America) to produce tea on a large commercial scale.... Yerba mate, a plant similar to tea, had already been cultivated and consumed in Argentina for hundreds of years before tea was introduced to the country from the Soviet Union in the 1920s.”

*(World Atlas of Tea).*

### **Bibliography**

- Cheadle, L. and Kilby, N. *The Tea Book. All Things Tea*. Sterling Epicure, New York, 2015.
- Gascoyne, K. et al. *Tea: History, Terroirs, Varieties* (first published 2009 by Éditions de l'Homme,) 3rd ed., Firefly Books, New York, 2018.
- Gaylard, L. *The Tea Book*. Dorling Kindersley Limited, London, 2015.
- Hohenegger, B. *Liquid Jade: The Story of Tea from East to West*. St. Martin's Press, New York, 2006.
- Matsuzaki, Y. *Nempyo Cha no Sekaishi [A Chronological Table of World History of Tea]*. Yasakashobo, Tokyo, 2012.
- Smith, K. *World Atlas of Tea: from the leaf to the cup, the world's teas explored and enjoyed*, Mitchell Beazley, London, 2016.
- Tsunoyama, S. *Cha no Sekaishi [World History of Tea]*. Chukoron-Shinsha, Inc., Tokyo, 1980.
- Ukers, W.H. *All About Tea*, The Tea and Coffee Trade Journal Company, New York, 1935.

# Overview of the Asian Tea Culture Landscape

*Han Feng, Professor,  
Department of Landscape Architecture  
Tongji University, Shanghai, China*

From an economic perspective, the discovery of tea by humans began in the economic era of primitive collection. Later, in the middle and late Neolithic period, humans gradually identified tea with medicinal functions from various edible plants and herbs. After entering the threshold of civilization, the planting of tea trees began immediately following agricultural production. In the following thousands of years, as a part of the feudal farming economy, it played an important role in promoting social and economic development.

Tea is an important material and culture carrier that has participated in the East-West cultural exchange and interacted with the nomadic civilization in the hinterland of Eurasia, the European Mediterranean marine civilization, and the colonial trade of the modern Western world. China was the first country in the world to discover tea, grow tea and drink tea. It is also the birthplace of tea culture in the world (Chen, 2011, 2013; Chen and Yao, 2019; Gascoyne, 2018; Smit, h 2016; Ukers, 1935). Archaeological remains testify that China had already started planting tea trees 6,000 years ago (Chen and Yang, 2012; Chen, 1984). About 3000 BC, Shennong, or the Divine Farmer, discovered the detoxification properties of tea. In 1000 BC, the tea of the Zhou dynasty was used as a royal tribute. During the Wei, Jin, Southern and Northern dynasties (220-581), tea was spread rapidly through the practice of Taoism and Buddhism. As of the Tang dynasty (7th century), almost all the people in China were drinking tea, and the world's first treatise on tea, *The Classic of Tea*, by tea saint Lu Yu, was published (Zhou and Yao, 2004; 2019). In the 9th century, tea was introduced to Japan and the Korean Peninsula from China. After the Tang dynasty, Chinese tea began to spread to Asia and the rest of the world through the Silk Road, the Ancient Tea-Horse Road, and the Tea Road of Ten Thousand Miles along with trade and cultural activities. In the 19th century, Indian cultivation broke the monopoly of China and started large-scale tea production and business worldwide (Guo, 2002; Zhou and Yao, 2019).

## 1. Overview of the geographical distribution of tea areas in the world and Asia

Tea trees are native to southern China, northern Myanmar and Vietnam. Nowadays, the geographical distribution of global cultivated tea areas spreads across 64 countries on five continents, including 22 tea-producing countries and regions in Asia, 21 in Africa, 12 in the Americas, 5 in Europe, and 4 in Oceania. In terms of climate, tea cultivation is mainly distributed in tropical, subtropical and warm temperature regions, with the northernmost boundary being Ukraine's Transkars and the Pathian region at 49 degrees north latitude, and the southernmost being the Natal of South Africa at 28 degrees south latitude. Among them, tea planting is most concentrated between 6 and 32 degrees north latitude, with this area producing the largest output (Zhou and Yao, 2019).

Among the five continents of the world, Asia has the largest tea planting area. The tea planting area in Asia accounts for about 90% of the world's total, and its production accounts for about 84% of the world's total. China has the largest tea plantation area and tea production output in the world. The other 21 tea producing countries in Asia are India, Sri Lanka, Indonesia, Japan, Turkey, Bangladesh, Iran, Myanmar, Vietnam, Thailand, Laos, Malaysia, Cambodia, Nepal, Georgia, Azerbaijan, the Philippines, South Korea, North Korea, Afghanistan and Pakistan (Zhou and Yao, 2019).

There is no doubt that Asia has a remarkable heritage among the world's tea landscapes, and the tea landscape system in Asia has made outstanding contributions to the world's agricultural economy and cultural system.



Map 1. Tea producing countries. Source: Ratetea.

## 2. Natural ecological conditions for tea planting

The widely distributed tea areas in Asia are based on an understanding of the natural attributes of tea trees in various countries, and the result of continuous introduction, cultivation and selection of different types of tea seedlings to suit local climatic conditions and consumption habits. The different biological habits of tea trees and tea planting and cultivation methods have formed a rich and vivid tea cultural landscape in various countries, and have commonalities and differences between various regions and types.

Tea trees in Asia are distributed in tropical, subtropical and warm temperate regions, and the optimum temperature for growth is from 20 to 29 degrees Celsius. Water is critical for tea planting. The micro-environment suitable for tea planting generally comprises slopes near valleys, rivers and lakes. Such terrain is conducive to the evaporation of water vapour to form clouds. Cloudy slopes of a certain altitude or abundant rain brought by the ocean monsoon provide the water needed for the lush growth of tea trees. The annual rainfall in tea areas is generally above 1,000 mm, and tea areas are distributed from low altitude areas to altitudes of 2,500 m and even higher (Chen, 1984, Chen and Yang, 2013).

Tea trees enjoy cool to warm temperatures and high humidity and light is the primary condition for their survival. Therefore, it is preferred to cultivate tea on slopes facing the sun. Southern slopes that face the sun receive a large amount of solar radiation, while tea planted on shaded mountain slopes and slope valleys tastes bitter (Lu, 2019). However, tea plantations must avoid strong sunlight. The covered tea plantations in Japan and the plantations in the plains of Assam in India protect tea trees from high temperatures and strong light and create “shady forests” where they can grow. The environment is in line with the tea tree’s characteristic of enjoying diffused light (Chen, 1984).

Tea planting requires well-drained hillside slopes, with terrain slopes between 5 and 20 degrees, and preferably not more than 25 degrees. For the growth of tea trees, soil with fully weathered rocks is the best, followed by gravel soil with stones. Suitable soils are red soil, yellow brown soil, brown soil, yellow brown earth, and other fertile, deep and weakly acidic sandy soils, which have good aeration, water permeability or water storage performance, and an appropriate pH value of 4.5 to 6.5 (Chen, 1984).

Following changes in the natural environment, such as temperature, humidity, and altitude, tea trees have evolved into an arboreous type, a small arboreous type, and a shrub type. The arboreous type is a relatively primitive type of tea tree, with tall plants, and is distributed in close proximity to natural

areas with similar natural conditions to those where tea originated. The small arboreous type is an evolutionary type, with taller plants and stronger stress resistance than arboreous types. The shrub type is an evolutionary type, with low plants, no obvious branches, and a wide variety of species.

### **3. Different types and characteristics of asian tea landscape**

The Asian tea landscape is a typical organically-evolving and associative cultural landscape. It records and displays the process from the discovery and use of wild tea trees to domestication and production in Asian countries over the past 6,000 years. The cultural landscape reflects tea-related ecological civilization achievements, tea landscape morphologies and tea culture, which have been created through Asian tea production and life practices. The natural environment, ecological conditions and the types of tea trees grown show a rich diversity of landscape ecology. At the same time, there are differences in the structure and functionality of tea plantation operations due to the main body of tea planting and cultivation, the social and economic organization of tea plantations, and tea plantation management systems. The tea landscape also encompasses the philosophy, aesthetics, religion, medical wisdom, technology and folk traditions associated with the tea of Asian countries, so that Asian tea landscapes have a certain ecological similarity and obvious regional culture.

From the perspective of the domestication of wild tea trees and the evolution of social and economic production organizations, tea landscapes can be roughly divided into ancient tea forest plantations, traditional agricultural tea plantations and modern agricultural tea plantations. Many famous ancient tea forests and traditional agricultural tea plantations with a long history are often temple tea plantations or tribute tea plantations (for royal use), and some have ruins and have become relict tea landscapes (Chen, 1984; Zhou and Yao, 1991).

#### **3.1 Ancient tea forest plantation**

Wild tea trees are mostly distributed in southwest China, northern Myanmar and Vietnam. The term “ancient tea forest” refers to the artificial domestication and cultivation of wild ancient tea trees. Arboreous-type ancient tea trees are tall, of high quality and with low yield. They are distributed in natural areas with similar natural conditions to those where tea trees originated and grow in relatively primitive natural forests.

Jingmai, on the banks of the Lancang River in southwest China, has the world’s largest, best-preserved, and longest history of tea forest cultivation. Jingmai ancient tea became a tribute tea in

the 15th century. The ancient tea forest of Jingmai Mountain has a subtropical mountain monsoon climate with an average elevation of 1,400 metres. The artificial domestication of wild ancient tea trees has a 1,300-year history and is known as the “World Museum of Tea Trees”. The larger tea trees here are up to 12 metres tall and are between 100 and 300 years old (Tong et al., 2015; Chen and Zhang, 2015). The historic tea forest is surrounded by traditional villages, and is reclaimed in a limited form among the forests. The surrounding forests are preserved to prevent wind and insects, and serve as the boundary of the village. Tea tree planting simulates and utilizes the forest’s ecological environment, makes use of forest reclamation and under-forest planting techniques, and leads to the cutting of some trees and shrubs in natural forests while retaining certain shade trees. Tea trees are planted under forests, showing the three-dimensional structure of the plant community, that is the large arboreous upper layer, the arboreous and shrub layer (tea trees’ main distribution layer), and the lower herb layer. Local residents make rational use of land at different altitudes. The vertical landscape, from high to low elevation, comprises sacred mountains, forests, historic tea forests, villages, farmlands and rivers, and is an outstanding example of traditional human settlements and land use (Chen and Zhang, 2015).

### **3.2 Traditional agricultural tea plantations**

Before tea spread to India for large-scale production planting in the 19th century, most of the tea plantations in countries with a long history of growing tea were traditional tea plantations, which were closely related to the countries’ traditional agricultural economy and social settlements. The landscape of traditional agricultural tea plantations fully reflects the characteristics of feudal agricultural economy and traditional ecological wisdom. In Chinese history, many famous mountains in tea areas were called “Tea Mountain” (Chen and Yao, 2019).

Unlike the ancient domesticated forest tea landscape, the traditional agricultural tea landscape basically comprises shrubs about 1 metre high to facilitate picking. Small families are often used as production units, so the tea plants’ spatial distribution is closely related to village settlements, usually within walking distance from the village. They are distributed in the cracks of rocks suitable for tea tree growth, on the slopes of river valleys, or in cloudy mountains according to local conditions. The complex and steep terrains are transformed into small platforms with stones, and are irregularly embedded in the natural ecosystems of forests, rocks and rivers to form a new landscape ecosystem. Tea trees are sparsely distributed in natural mountains and waters, so that each tea tree has sufficient growth space and a superior growth environment. The rich biodiversity prevents the spread of pests and diseases.

In traditional agricultural tea plantations, intercropping between tea trees and crops is very common. The intercropping of tea plantations can increase the coverage of the topsoil, effectively maintain

water and soil, and improve the matured soil. It can also increase the land utilization rate of tea plantations and the economic benefits for farmers. Near villages, especially near houses, crops such as soybeans, mung beans, corn and konjac are often interplanted with tea trees to form a beautiful rural landscape. Tea tree and forest tree intercropping planting techniques have also been widely used. Deciduous trees such as the fir, masson pine, sweet-scented osmanthus, locust tree, persimmon, chestnut and others are planted in and around tea plantations to maintain the species diversity of tea plantations, improve the natural ecological environment of tea plantations, and provide proper shade for tea trees. In Japan, Ohishita-chaen tea plantations, in which tea bushes are shaded by reed and straw screens to produce tea leaves for Matcha, appeared in the Uji area, giving birth to the powdered tea unique to Japan characterized by a vivid deep green colour and rich flavour.

The Mengding Mountain Tea Plantation and the Wuyi Mountain Tea Plantation in China, and the traditional tea plantations in the Hwagaegok Valley, South Korea, and in Wazuka, Japan, are all representative of this type of tea plantation landscape.



*Image 1. Choui Fong tea plantation in Chiang Rai province, Northern Thailand.*

### 3.3 Modern agricultural tea plantations

In order to select the natural environment and ecological conditions suitable for the growth of tea trees, traditional agricultural tea plantations are often scattered in the natural landscape due to their mountainous location, and are usually small in size, low in yield and unsuitable for modern operations and large-scale commercial production. After the successful introduction of Chinese tea to India in the middle of the 19th century, Japan and India began large-scale mechanized production and continued to expand the planting of modern agricultural tea plantations to supplement the insufficient output of traditional tea plantations.

Modern agricultural tea plantations form large-scale terraced tea landscapes. Tea plantations are usually built on clean and well-drained hillsides. The tea trees are picked and trimmed to a height of about 1 metre. They are arranged in a regular pattern along the contour terraces, presenting a spectacular tea plantation terrace landscape. However, the relationship between tea farmers, villages, tea plantations and nature is not as close as in traditional agricultural tea plantations. Reflected in the tea landscape, the ecological landscape is relatively artificial and simplistic, and it is not closely related to traditional village settlements and tea farmers' cultural customs and beliefs, lacking traditional agricultural and folk customs. The related tea factory facilities and new settlements have formed a new cultural exchange system and social structure, which is a form of tea industry based on mechanized production.

Tea forest intercropping planting techniques and other traditional tea growing techniques have been passed down and developed in large-scale modern agricultural tea plantations. The plains of Assam State in northeast India are one of the most important tea producing areas in the world, with large-scale commercial tea farms. Tea trees are planted at intervals of 1 to 1.5 metres, and tall and shady trees are regularly planted between tea trees to protect them from high temperatures and strong light. Sri Lanka has cut down tropical rain forests to ensure sufficient sunlight for tea trees, and has established drainage systems to reduce soil erosion and ensure the good drainage of tea plantations.

### 3.4 Temple tea plantations and tea gardens

In Asia, especially northeast Asia, tea is closely related to religion and famous mountains.

During the Wei, Jin and Southern and Northern dynasties of China (220-589), the habit of drinking tea spread quickly, with Taoist priests taking elixirs, meditating and cultivating immortality, and Buddhist monks sitting in meditation to refresh their minds and offering tea to Buddha (HCCEB, 2008). Most of China's famous mountains are religious mountains and are also famous "tea mountains", renowned for producing good tea. Temple tea plantations are generally attached to religious buildings and established in suitable mountain areas within the scope of the temple for its

own use. The landscape of temples and tea plantations includes temple complexes, tea plantations, cliff inscriptions, archways, famous springs, historic trees and famous trees. China's Mengding Mountain is famous for its Zen tea culture and the tribute tea system is closely integrated into the temple and tea garden cultural landscape; the sacred Taoist Wudang Mountain has famous Taoist temples and tea landscapes (Guo, 2002).

From the 8th to the 9th century CE, Chinese tea and culture spread to the Korean Peninsula and Japan due to Buddhist exchanges. The Ssanggyesa Temple and the Hwaeomsa Temple in Jirisan Mountain in South Korea, and the Butsuryu-ji Temple and the Kosanji Temple in Japan, are all famous Buddhist temples, where tea trees from ancient China are grown in temple tea gardens (Zhou and Yao, 2019). Arya Tea Estate in Darjeeling, India, was founded by Buddhist monks in 1885. The estate grew different kinds of tea from China and maintained the houses where the monks lived (Zhou and Yao, 2019).

### 3.5 Tribute tea landscapes

Tribute tea refers to the precious tea that was historically offered to the emperor by courtiers, and it was an important part of ancient royal life. Chinese tribute tea began in the Zhou dynasty, 3,000 years ago. Many famous "tea mountains" and temple tea plantations were designated as tribute tea producers, such as the historic tea forest of Mount Jingmai, Mount Qingcheng (inscribed on the World Heritage List), and Mount Lushan. There are also similar types of tea plantations in Japanese history. In the Edo period (1600-1868), Matcha of Uji was a special product by appointment to the Tokugawa Shogunate in Edo (present-day Tokyo), the imperial household in Kyoto, and feudal lords throughout Japan.

China formed a tribute tea system in the Tang dynasty (7th century) and tribute tea became a form of taxation. The government often set up royal tea plantations, tribute tea houses and tea making houses in the tribute tea area to supervise the quality of tea production and facilitate the formulation and promotion of tea standards. Tribute tea house ruins, memorabilia and cliff inscriptions have become an important historical part of the tribute tea landscape.

## 4. Associative culture of Asian tea landscapes

Tea was first eaten and cultivated 6,000 years ago, and its medicinal value was discovered 5,000 years ago. It was only determined that it has the identity of both a traditional Chinese medicine and beverage 2,000 years ago, and it has become a global beverage with worldwide popularity today.

The high correlation between tea and its associative culture is the internal driving force that truly promotes the global tea industry. The Asian tea landscape is an associative cultural landscape highly related to philosophy, religion, art, medicine, technology and folk beliefs.

#### **4.1 Tea is an important carrier of Chinese medicine culture**

Shennong, the divine ancestor of agriculture and medicine in China, is said to have “tasted hundreds of herbs” and learned about the medicinal effects of tea 5,000 years ago. Since then, tea and medicine have been mixed, complemented and separated. In Chinese classics, “Chinese medicine” has always been called “Materia Medica”, and tea is a kind of Materia Medica. In the Western Han dynasty (206 BCE-25 AD), there was a clear record of the medicinal use of tea. Tea was used as medicine and other medicines were mixed into tea. The “originator of tea therapy”, Chen Zangqi (387-757) in the Tang dynasty, said that “tea is the medicine for all diseases.” There are more than 500 records on the medical use of tea in China, of which 10 are from the Tang dynasty (618-907), 14 from the Song dynasty (960-1279), 4 from the Yuan dynasty (1206-1368), 22 from the Ming dynasty (1368-1644) and 23 from the Qing dynasty (Zhou and Yao, 2019).

The medicinal effect of tea has made it popular. The tea tree is regarded as a god, and it has become the object of primitive religion worship in southwest China, northern Myanmar and other places. In addition, the different production processes of tea affect its medicinal characteristics, so that different tea producing areas, such as black tea, green tea, Pu'er tea, etc., have distinct cultures associated with tea landscape characteristics.

#### **4.2 Tea landscapes are the carriers of Confucianism, Buddhism and Taoism culture in East Asia**

Tea ceremonies and tea ethics contain the essence of mainstream Asian Confucianism, Buddhism and Taoism. The tea landscape is a material carrier, important component and practice space of the three religions. China is the birthplace of tea culture. The Korean Peninsula and Japan brought back tea and tea culture after visiting China for the first time in the heyday of the Tang dynasty, and were deeply influenced by Chinese Confucianism and Buddhism (Chen, 1984). Japan and South Korea have now developed their own unique tea ceremony. In the long history of tea, tea landscapes and traditional Confucianism, Buddhism and Taoism have become inextricably intertwined.

The origins of tea, in the 3rd century, were associated with traditional Chinese Taoism, Confucianism and Buddhism, which gave birth to the spiritual and cultural uses of tea. Confucianism associated tea with the characteristics of “diligence and thrift” and “simplicity”. Compared with wine, tea has a neutral and peaceful nature, which is in line with the Confucian aesthetics of “neutralization”,

thus opening the Confucian tradition of “probity integrity with tea”. Taoist priests pursued immortality and regarded tea as an elixir that could offer longevity. They believed that drinking tea could lighten the body and they could evolve into immortals, so they planted tea in famous mountains and temples to stay healthy. Buddhism believes in “Tea and Zen in common”, and the nature of tea is interlinked with Buddhism (HCCEB, 2002). Monks plant tea trees in Buddhist temples, harvest tea leaves to narrate and teach Buddhism, drink tea to drive away fatigue and sit in meditation, and use tea to give to Buddha in rituals to maintain peace of mind.



Image 2. Japanese Tea Ceremony. Mizuno Toshikata (1886-1980).

#### 4.3 The tea landscape is strongly associated with literature, calligraphy and painting

The tea landscape in Asia is strongly related to poetry, literature and painting, and has developed into a refined and systematic spiritual cultural aesthetic system. China, Japan and South Korea all have tea poems, tea paintings and tea literary works, among which China has the most. According to the *New Tea Classic*, 6,097 tea poems were written in the Tang and Song dynasties (Liu, 2015). They integrated tea, humans and scenery, vividly recording the history, natural environment, planting methods and landscape characteristics of tea plantations in various places, as well as the

taste, aesthetics and emotions of tea. They not only discussed tea planting and tea making techniques, and the use and the pleasure of tea drinking, but also promoted tea drinking to the level of philosophy, aesthetics and art. They are important historical narrative documents of tea landscapes and important achievements of tea culture. Literature, poetry, painting and art form a precious historical heritage, providing valuable historical evidence for understanding the cultural connotations and significance of the Asian tea landscape.

#### **4.4 Tea landscapes are the carriers of traditional culture and ecological wisdom**

The tea culture landscape in Asia has remained intact in various historical periods and is rich and diverse. Planting and production in different geographical locations and ecological conditions in tropical, subtropical and warm temperate zones intensively reflect the ecological wisdom, cultural traditions, management techniques and customs and beliefs of various cultural groups in the discovery, cognition, development and utilization of tea. Many cultural groups believe in “tea ancestors”. Based on different social organizations and management systems in northeast Asia, southeast Asia, south Asia and west Asia, tea landscapes include accumulated planting, breeding, protection, processing and comprehensive utilization techniques. These form an important intangible culture and are technological achievements of Asian tea landscapes.

### Selective Bibliography

- Chen, Chuan, *A General History of Tea* [茶叶通史] Chinese. Beijing: China Agriculture Press, 1984.
- Chen, Zongmao and Yang Yajun (eds.), *Dictionary of Chinese Tea* [中国茶叶词典] Chinese. Shanghai Culture Press, 2013.
- Chen, Zongmao and Yang Yajun (eds.), *The Classics of Chinese Tea* [中国茶经] Chinese. Shanghai Culture Press, 2011.
- Chen, Yaohua and Zhang, Ou, "World Heritage Perspective on Ancient Tea Forests of the Jingmai Mountain in Pu'er, Yunnan", Yunnan [J]. *Tropical Geography*, 2015,35 (4): 541-548.
- Guo, Mengliang, *History of Chinese Tea* [中国茶史] Chinese. Shanxi: Ancient Books Publishing House, 2002.
- Gascoyne, Kelvin et al., *Tea: History, Terroirs, Varieties* (first published 2009 by Éditions de l'Homme) 3rd ed., New York: Firefly Books, 2018.
- History of Chinese Civilization Editorial Board (HCCEB), *History of Tea Drinking*, Beijing: Encyclopedia of China Publishing House, 2008.
- Liu, Feng. ed. *New Book of Tea* [新茶经]. Beijing: Central Literature Publishing House, 2015.
- [Tang Dynasty] Lu, Yu (author), *The Classic of Tea* [茶经] Chinese. Wang Jianrong (compiled). Nanjing: Jiangsu Phoenix Science and Technology Publishing House, 2019.
- Tong, Jia-yin; Lu, Li-ping; Ma, Yu-qing; Lv, Cai-you, "The Investigation and Analysis of the Current Situation of Ancient Tea Resources in Jingmai of Yunnan". *Journal of Anhui Agri.Sci.* 2015, 43 (5): 208 -210.
- Smith, K., *World Atlas of Tea: from the leaf to the cup, the world's teas explored and enjoyed*. London: Mitchell Beazley, 2016.
- Ukers, W.H., *All About Tea*. New York: The Tea and Coffee Trade Journal Company, 1935.
- Yao, Guokun, Jiang, Yufa and Chen, Peizhen, *Tea Culture Sites in China* [中国茶文化遗迹] Chinese. Shanghai Culture Press, 2004.
- Zhou, Guofu and Yao, Guokun (ed.), *The Chinese Tea Culture* [中国茶文化] Chinese. Shanghai Culture Press, 1991.
- Zhou, Guofu and Yao, Guokun (ed.), *A Compendium of Global Tea Culture* [世界茶文化大全], Beijing: China Agricultural Press, 2019.

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Dr. SHEN Dongmei, Researcher, Institute of History, Chinese Academy of Social Sciences;

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# Overview of Chinese Tea Culture Landscape

Zou Yiqing  
Beijing Guowenyu Cultural Heritage Protection  
Center Co., Ltd.

## 1. Geo-ecological information

### 1.1 Origins and evolution of the tea plant

Tea is among the world's beverage plants with the longest history of human consumption and is an important commodity in international trade. The tea plant (*Camellia sinensis* (L.) O. Kuntze), which is widely grown around the world today, belongs to the Theaceae family, is of the genus *Camellia*, and belongs to Sect. *Thea* (L.) Dyer. Tea plants comprise several species and varieties, as well as cross-breeds from mixing these varieties.

The origins of the tea plant are much more ancient than human civilization. The academic community widely believes that southwest China was the centre of distribution and the place of origin of *Camellia*.<sup>1</sup> The area that spans from the intersection between Yunnan, Guangxi and Guizhou down to the north of Southeast Asia was less affected by the Quaternary Glaciation period, and thus became one of the world's safe havens for plants of the Neogene (Tertiary) period, which included the ancestors of the tea plant. Various species of the ancestors of the tea plant were able to continuously evolve in this area. Due to the variety of geographical and climatic conditions in which they were situated, the morphological structures, physiological characteristics and material metabolisms of tea plants local to each area gradually adapted to their new environments. As a result, a variety of modern tea plants and species related to *Camellia* are observable today.

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<sup>1</sup> Modern crop science regards specific crop related species, that is, the region with the most gene accumulation in this group, as the diversity centre of the species to which the crop belongs, and it is often the domestication and origin centre of the species.

Modern tea plants, naturally distributed in tropical mountain monsoon rain forests and mid-mountain moist evergreen broad-leaved forests, take the form of arboreous or small trees that enjoy high temperatures and high humidity or cool temperatures and high humidity, and are resistant to acidity and shade. However, modern tea plants that are naturally distributed from the northern subtropics to warm temperate climates have developed cold and drought resistance, and the plants have evolved to become more shrub-like with smaller leaves. The tea plants naturally distributed from the southern to mid-subtropics have morphological and physiological characteristics in between. The accumulated genetic diversity of these tea plants through the long geological time scale and their excellent potential for human consumption became the material basis for the origin of China's colourful cultivated tea trees, which have spread in modern times throughout vast areas of Eurasia, Africa and South America, where climates are suited to growing tea trees.

野生茶组植物种类分布  
Distribution Map of Wild Tea Plants in China



Image 1. Distribution Map of Wild Tea Plants in China by Province.  
Source: Gu Yiyun, Zhang Xuechun.

According to the theoretical deductions and investigations of scholars from many countries in modern times, the view that southwestern China and its adjacent areas are the origin of the world's tea trees has been widely accepted. A large number of tea plants can be observed in places such as southwest China, including cultivated tea trees and their wild relatives. This shows that the evolution of tea trees is indeed a complex process based on the diversity of tea plants, intertwining the domestication and use of tea by different people and the exchange of tea culture

among different people. Cultivated tea originated from wild tea plants. The evolution of cultivated tea trees in China is mainly manifested in the morphological change from large-arboreous tree forms to smaller arboreous forms and shrub forms. During this process, artificial breeding, natural and artificial hybridization, and natural selection under different geographical and climatic conditions produced extremely rich genotypes in cultivated tea trees, and the mutations are very complicated. Their morphological characteristics, physiological characteristics, quality and adaptability as beverage crops are very different. Like many crops, many traits of cultivated tea trees that have deviated from those of their wild ancestors cannot be reversed.

## 1.2 Spread and distribution of tea plants in China

During the natural spread of the tea plant from the centre of its geographical origin to surrounding areas, owing to the obstacles of mountains and rivers and the changes in climatic conditions, four paths of propagation were formed. The tea plant has formed a series of different species along four propagation paths, and some of them have become the basis for domestication and cultivation by humans.

### 1 RED, MEKONG AND NU RIVER SYSTEMS

Tea plants spread along the Red River, Mekong River and Nu River (also known as the Salween River) along the Hengduan Mountains that run from north to south. Tea plants are widely distributed in the central and western mountainous areas of Yunnan Province, China, south of 24°N and 800–2,500 m above sea level. The average annual temperature in this area is 18–24°C, with the lowest temperatures never going below 0 °C. The average length of the frost-free period is over 300 days, annual precipitation is 1,500–2,000 mm, the soil is mainly lateritic red soil and red soil, and the native dominant vegetation is south subtropical evergreen broad-leaved forests. Originally, there were tropical monsoon forests growing at extremely low altitudes, while moss dwarf forests were distributed at extremely high altitudes. The long-light, high-humidity, and high-cumulative-temperature environmental conditions at low latitudes and high altitudes allowed various tea groups to fully reproduce at different altitudes. It is the region with the largest number of large wild tea plants and the largest tree sizes in China. The inhabitants of this area, including people from the Blang and the Dai ethnicities, have a long history of tea growing and consumption. The tea trees they traditionally cultivate are mainly used for Pu'er tea, Dali tea<sup>2</sup> and natural hybrids of Pu'er tea. These tea trees are arboreous, with large leaves, and fat, hairy buds. The Chinese World Heritage Tentative List site “Ancient Tea Plantations of Jingmai Mountain in Pu'er”, China’s agricultural cultural heritage site

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<sup>2</sup> Some crop scientists believe that Dali tea is a wild-type tea tree, while Pu'er tea is a cultivated tea tree with a long history and extensive cultivation the distribution area of which completely overlaps with Dali tea (only the altitude is different). Pu'er tea is thought to have evolved naturally from Dali tea and is generally considered to be a variant of tea.

“Mengku Ancient Tea Forest” at Lincang, and the Qing Dynasty Tribute Tea on Xishuangbanna Mengla County’s six major tea mountains are all located in this area.

## 2 XIJIANG AND HONGSHUI RIVER SYSTEMS

These river systems extend east and southeast along the Xijiang and Hongshui Rivers, with one branch spreading along the Xijiang River to Guangxi, southern Guangdong and Vietnam at 23°N. This area is south of the Tropic of Cancer, where altitudes are below 550 m, annual average temperatures are 20-26 °C, the extreme minimum temperature is above 0 °C, annual precipitation is 1,800–2,000 mm, and the soil is mainly lateritic red soil and red soil. The area consists of tropical monsoon rainforests and tropical rainforests. This area is also the most suitable ecological area for tea trees. It is frost-free the whole year and the trees can grow here all year round. The tea trees are mostly arboreous, with large leaves and hairy buds. They have weak cold resistance and poor adaptability. The native cultivated tea trees are mainly cultivated types of tea species or hybrids, such as Bai Mao Tea and Pu’er Tea. Guangxi Cangwu Liubao Black Tea is also in this area.

The other branch runs along the Hongshui River deep into the Nanling Mountains, and includes Guangxi, northern Guangdong, the southern part of Hunan on the northern side of the Nanling Mountains and southern Jiangxi. The altitude of this area is 300–1,000 m, with annual average temperatures of 18-22 °C. The extreme minimum temperature can reach below 0 °C, annual precipitation is 1,200–1,800 mm, the soil is mainly red soil, and it belongs to the south subtropical evergreen monsoon rain forest area. Cultivated tea trees have spread from Guangdong to the eastern coast and north to the hills of southern Fujian. The cultivated tea trees in this area are mostly small arboreous tea trees with occasional shrub-type tea trees. The leaves are large or medium sized, and the buds are hairy. These tea trees have strong cold and drought resistance, as well as strong adaptability. Teas such as Guangdong Chaozhou Phoenix Shancong and Fujian Anxi Tieguanyin all grow in this area.

## 3 NORTHEAST SLOPE OF YUNNAN-GUIZHOU PLATEAU

Spreading along the Jinsha and Yangtze River systems to the northeast slope of the Yunnan-Guizhou Plateau, the tea-tree clusters are formed of Zhaotong on the northeast Yunnan Plateau, and Zunyi in the Loushan Mountains of Guizhou and the southern part of the Sichuan-Chongqing Basin. This area has a subtropical monsoon climate, with high altitudes, a complex terrain, large climatic differences, annual average temperatures of 17 °C in the Sichuan Basin and of 14-15 °C in the Yunnan-Guizhou Plateau, and with extreme minimum temperatures between -8 and -5 °C. Altitudes are 700–3,000 m, annual precipitation is 1,000–1,300 mm, and the soil includes red soil, yellow soil and purple soil. The native tea trees traditionally planted in this area are cultivated small trees or arboreous tree types with occasional shrub-type tea trees. Guizhou Meitan Central Experimental Tea Farm is located in this area.

The introduction and domestication of tea by humans expanded the cultivation area of the Sichuan-Chongqing Basin, with one branch heading northwards to the tea plantation areas of Hanzhong and the Ankang Basin south of the Qinling Mountains, and the other branch extending along the Daba, Funiu and Tongbai Mountains to the Dabie Mountains. This is the northernmost tea tree growing zone in China and is located to the south of the Qinling Mountains and east of the Daba Mountains at 32-35°N, with altitudes below 200 m. It has a north subtropical and warm temperate monsoon climate, with annual average temperatures of 13-16 °C. Extreme minimum temperatures can reach -15 °C, with 240 frost-free days and annual rainfall below 1,000 mm. The soil is mainly yellow brown, yellow cinnamon and purple. The vegetation is dominated by coniferous and broad-leaved forests, with occasional mixed evergreen broad-leaved forests. This area is a sub-suitable ecological area for tea trees. The tea-producing areas have a scattered distribution. Because of the high latitude, tea trees here evolved into shrubs with medium-small leaf types, slender buds and leaves, and strong cold resistance. Hanzhong of Shaanxi, Enshi Yulu in Hubei, and Maojian in Xinyang, Henan, are located in this area.

#### 4 YANGTZE RIVER SYSTEM

Extending from the Yunnan-Guizhou Plateau along the Yangtze River system, entering the western Hubei platform and spreading downstream to Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Jiangsu and other provinces, this area south of the Yangtze River is located at 26-30°N, with altitudes mostly below 800 m, annual average temperatures of 16-19 °C, and extreme temperatures that can reach below -5 °C. The frost-free period is about 300 days long, and annual rainfall is 1,200–1,500 mm. Red soil and yellow soil are the main soil types, and the area belongs to the mid-subtropical evergreen broad-leaved forest area. This area is also suitable for tea trees. The traditionally cultivated tea trees in this area are classified as *C. sinensis*. Most of these are small arboreous types, with occasional shrub types. There are many morphological variations, with large or medium-sized leaves, and buds that have many hairs and some that have fewer. The tea trees have strong cold and drought resistance and strong adaptability. The northern bank region of the middle and lower reaches of the Yangtze River has a latitude of 30-32°N, with altitudes mostly below 300 m, annual average temperatures of 15-18 °C, a 220-250-day frost-free period, extreme low temperatures that can reach between -8 and -10 °C, and annual precipitation between 900–1,200 mm. The soil here includes red soil, red yellow soil and yellow brown soil. The area belongs to the transition zone from the mid-subtropical evergreen broadleaf forest region to the warm temperate deciduous broadleaf and coniferous mixed forest region. This area is a suitable ecological area for tea trees and forms the northern edge of tea tree distribution. The traditionally cultivated tea trees in this area are classified as tea (*C. sinensis*). They are shrub-type small leaf teas. The tea trees here have strong cold and drought resistance, strong adaptability, and can survive low temperatures. This area is home to the most famous teas in the history of China, such as Sichuan Mengshan Tea, Zhejiang West Lake Longjing, Jiangsu Guzhi

Purple Bamboo Shoot Tea, Anhui Huangshan Maofeng, Jiangxi Lushan Cloud Tea, Hunan Anhua Black Tea, Fujian Wuyi Mountain Rock Tea and so on.

茶树的传播与分布

Spreading and Distribution of Tea Plants

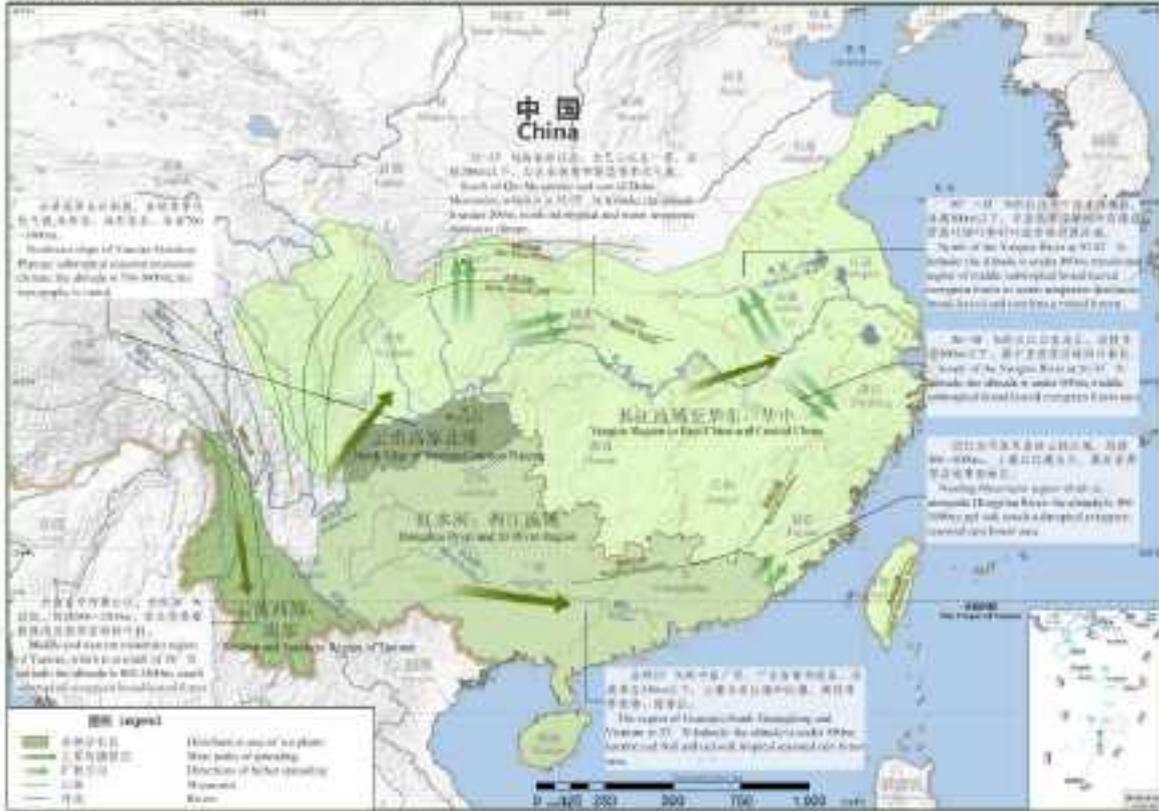


Image 2: Map of Tea Tree Spread and Distribution. Source: Gu Yiyun and Zhang Xuechun.

1.3 China’s tea producing areas

China’s tea producing areas are vast and the ecological conditions are complex. With the long-term natural selection and artificial introduction and domestication of tea trees, the distribution of the flora shows two characteristics: the first is that wild relatives are basically confined to their original natural distribution areas due to their strong genetic conservation and are distributed around the five provinces of Yunnan, Sichuan, Guizhou, Guangxi and Guangdong; the second is that cultivars have continued to spread to ex situ areas with the expansion of artificial introduction, which has led to them covering all areas suitable for tea cultivation. This area is to the north of the Qinling Mountains and Huaihe River. Due to the cold and dry climate and slightly alkaline soil, it is not suitable for tea tree survival. Therefore, historically, the northern boundary of Chinese tea tree growth has not crossed 34°N, which is basically consistent with the northern subtropical line.

At present, China’s tea tree growing areas range from Hainan Island at 18°48’N to Shandong at 36°04’N, and from Nyingchi in Tibet at 94°15’E to Taiwan at 121°45’E, spanning tropical,

subtropical and warm temperate zones. The history of tea introduction in Taiwan dates from the Jiaqing years of the Qing dynasty. The variety of tea here is Wuyi tea from Fujian.<sup>3</sup> Immigrants from the mainland first planted tea in Taipei and the hilly belts along the upper reaches and tributaries of the Tamsui River, and later expanded to mountainous areas such as Ali Mountain and Sun Moon Lake in the centre of the island. Shandong Province's "Southern Tea Grown in the North" began in 1959 with Rizhao as an experimental county, and the experiment was successful in 1966. In the 1960s, Tibet successfully planted tea in Yigong Township, Bomi County, Nyingchi Prefecture. As of now, tea gardens in China are distributed over 21 provinces (autonomous regions and municipalities) across the country. The economic planting areas of tea trees are mainly concentrated across a territory of nearly 2.6 million square kilometres at 98°E and 32°S. The provinces with the largest planting areas are Guizhou, Yunnan, Sichuan, Hubei and Fujian; the provinces with the largest yields are Fujian, Yunnan, Sichuan and Zhejiang.

The division of China's tea producing areas into four major tea areas - Southwest, South China, Jiangnan (south of the Yangtze) and Jiangbei (north of the Yangtze) - takes into account administrative divisions, geographical locations and tea tree varieties. The Southwest tea area is the oldest tea area in China and includes Yunnan, Guizhou, Sichuan, Chongqing and southeast Tibet. Resources for cultivating tea trees are rich here. The south is dominated by arboreous large leaf species, and the north by shrub-type medium and small leaf species. The South China tea area is located in the south of China, to the east of the geographical origin and differentiation centre of *Camellia* plants, and includes Guangdong, Guangxi, Fujian, Taiwan and Hainan. It is the most suitable area for growing tea trees in China. Resources for cultivating tea are extremely rich. The tea trees here are mainly arboreous large leaf species, but there are also semi-arboreous types and shrub types. The Jiangnan Tea Area is located in the hilly areas south of the Yangtze River and north of the Nanling Mountains, and includes Zhejiang, Jiangxi, Hunan, southern Anhui, southern Jiangsu and southern Hubei. It is the main tea producing area in China. Tea trees are mainly shrub-type but also semi-arboreous type, with medium and small leaf species mostly used. The Jiangbei production area is located south of the Qinling Mountains, north of the Yangtze River and east of the Daba Mountains to the coast, and includes Henan, Shaanxi, Longnan, Gansu and Shandong, as well as northern Anhui, northern Jiangsu and northern Hubei. The tea trees are mainly shrub-type small and medium leaf species.

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<sup>3</sup>Lien Heng: General History of Taiwan, *Journal of Agriculture*, vol. 27.

## 中国传统茶产区分布图

### Traditional Tea Producing Regions in China



Image 3. Distribution of Traditional Chinese Tea Production Areas.  
Source: Zhang Yimei and Li Pengpeng.

## 2. History

### 2.1 Archaeological evidence of the earliest tea cultivation

In 2011, more than 10 plant roots from the Neolithic period were unearthed during the fifth excavation of the Tianluoshan site in Yuyao City, Zhejiang Province. The theanine content in the plant roots was close to that found in the main roots of modern tea trees, confirming that the roots found were indeed those of tea trees. This indicates that people living in the Zhejiang area 6,000 years ago were already artificially cultivating tea trees.

### 2.2 The history and scope of tea planting

According to *The Classic of Tea* (761) written by Lu Yu of the Tang dynasty, “Tea is a drink that originated from the Shennong family (about 3000 BC), and first tasted by Lu Zhougong (about 1000 BC).” According to *The Records of Ba*, which is volume one in *The Chronicles of Huayang* (348-354) by Chang Qu of the Eastern Jin dynasty, by the Battle of Muye between King Wu of Zhou and King Zhou of Shang (1046 BC), the state of Bashu was already using tea as a

commodity of tribute. *The Book of Rites* (1st century BC) compiled by the Western Han dynasty, records the use of tea as a sacrificial offering. The tea unearthed from the tomb of Emperor Jing of Han (153-126 BC) proves that the royal family living in Shaanxi in the Western Han dynasty had formed a habit of drinking tea. In 59 BC, Wang Bao's Children's Covenant recorded "the cooking of tea and full preparation of tea implements" and "buying tea in Wuyang," indicating that tea was a relatively common commodity in Sichuan Province at that time. From this, it can be seen that as early as the Han dynasty, the State of Bashu and the Yangtze River Basin region already had a certain scale of tea planting and trading. Tea had different functions, serving as a medicine, beverage and sacrificial offering, and was gradually integrated into the daily lives of Chinese people.

According to literature records, before the Tang dynasty (618-907), tea cultivation in China was mainly concentrated in the southwest and the Yangtze River Basin, but was also being cultivated by the southeast coast. After the mid-Tang dynasty (8th century), China's tea plantations developed rapidly. Chapter eight (Growing Regions) in *The Classic of Tea* recorded the tea production of eight dao and 43 zhou (administrative divisions in ancient China), indicating that tea production in the Tang dynasty was well developed and the custom of tea drinking was prevalent. In the Song dynasty (960-1279), due to the cooling of the climate and territorial changes, the centre of tea production shifted towards the southeast.<sup>4</sup> Tea-producing areas of the Song dynasty were distributed between 15 regions and 98 zhou. During the Yuan dynasty (1271-1368), the distribution of tea producing areas changed little. The main tea production areas were Jiangxi Xingzhong Shu Province and Huguang Xingzhong Shu Province, which includes present-day Hunan, Hubei, Guangdong, Guangxi, Guizhou, Chongqing, Sichuan, Yunnan and other places. In the Ming dynasty (1368-1644), tea was produced in 96 prefectures in 13 provinces, with planting areas increasing but otherwise not changing significantly compared to the Song and Yuan dynasties. Starting from the Ming dynasty, tea production in China developed from solely green tea to fermented tea, white tea, yellow tea and so on. In the Qing dynasty (1616-1911), due to the stimulation of internal and external demand, the range of tea planting expanded, and the area of production and output increased sharply, with 144 prefectures planting tea. Tea varieties including black and oolong teas were further researched and developed, forming cultivation and production areas centred around certain teas, for example: Jiangxi's Wuyuan and Dexing, Zhejiang's Hangzhou and Shaoxing, and Jiangsu's Suzhou and Taihu formed green tea production centres; Anhui's Qimen and Jingde, and Jiangxi's Wuning, Xiushui and Fuliang formed black tea production centres; Fujian's Anxi, Jian'ou, Chongan and other counties formed oolong tea production centres; Hubei's Chibi and Xianning, Hunan's Anhua, Linxiang, Yueyang and other counties formed brick tea (fermented tea) production centres; Sichuan's Ya'an Tianquan, Mingshan, Yingjing, Dayi, Anxian, Pingwu,

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<sup>4</sup> Zhu Zizhen, *A Preliminary Study of Tea History*, 67.

Shifang and Wenchuan formed border tea (fermented tea) production centres; and Yunnan's Pu'er, Simao, Banna and Lincang formed Pu'er tea (fermented tea) production centres.

Since the 1930s, China has explored the modern industrial transformation of the traditional tea industry. The Central Experimental Tea Plantation was established in Xiangshan, Meitan County, Guizhou in 1939. It is the largest and most concentrated thousand-acre mountain tea cultivation garden in western contemporary China, and is one of China's modern tea research and planting promotion centres. Wu Juenong, Zhang Tianfu, Zhuang Wanfang and other tea research experts carried out tea improvement experiments in Wuyi Mountain, Fujian Province, establishing the first tea research institute, The Tea Research Institute of the Trade Commission of the Central Ministry of Finance, in 1942. Since the 1950s, some agricultural colleges have established degrees in tea research, systematically training scientific and technological talents in the tea industry, and have set up professional tea research institutes in Beijing, Hangzhou, Kunming and other places. After the founding of the People's Republic of China, the country's tea industry developed rapidly. As of 2012, there were 153 tea-producing cities (including those in Taiwan), a record high. In 2018, the area of tea plantations in China's 18 major tea-producing provinces and cities reached 2.93 million hectares, with an extraction area of about 2.47 million hectares. National tea output reached 2.61 million tonnes, with domestic sales of 1.91 million tonnes and exports of 365,000 tonnes. General production values for the whole industry exceeded 600 billion yuan.

唐代茶叶种植地域分布图  
Map of Tea Planting Regions in Tang Dynasty



宋代茶叶种植地域分布图  
Map of Tea Planting Regions in Song Dynasty



元代茶叶种植地域分布图  
Map of Tea Planting Regions in Yuan Dynasty



明代茶叶种植地域分布图  
Map of Tea Planting Regions in Ming Dynasty



清代茶叶种植地域分布图  
Map of Tea Planting Regions in Qing Dynasty



Images 4-8. Distribution of Tea Planting Areas Through the Ages.<sup>5</sup> Source: Li Pengpeng.

<sup>5</sup> Documents cited in the delimitation of tea production areas in various dynasties: For the Tang dynasty,

### 3. Scale of landscape features

Tea planting is not suited to all of the land in the aforementioned tea producing areas in China. As a plant, the tea tree has its own environmental adaptability. In tea producing regions, suitable sites for tea gardens still need to be carefully selected. In addition to the natural environmental conditions in which tea trees grow, which limit the locations and size of tea plantations, different tea plantation methods and their historical changes also affect the scale of tea culture landscapes. According to the main body of cultivation and planting of tea gardens in Chinese history, the economic organization and management systems of tea gardens can be roughly divided into three categories: temple tea gardens, tribute tea gardens and tea farmers (plantation owners).

#### 1 TEMPLE TEA GARDENS

Some famous Buddhist temples and Taoist temples in China occupy large areas of mountainous and pastoral forests, and generally run their own tea gardens; “The rest have places for tea cultivation, half go to the monks, and half go to the common people <sup>6</sup>”. The tea produced could be used for personal use, rituals, hospitality, gifts, or sold for profit. Famous teas are produced in tea gardens like Jingshan Temple in Hangzhou, Zhejiang Province, Guoqing Temple in Tiantai County, Zhejiang Province, Yongxing Temple in Mengding Mountain, Ya’an City, Sichuan Province, the Taoist Temple on Qingcheng Mountain in Sichuan Province, and the Taoist Temple in Wudang Mountain in Hubei Province. Tea gardens like these are distributed in mountainous areas near temples, where monks and priests plant tea trees to make tea part of their religious practice. This practice is similar to the history of Western Christian monastic priests who ran vineyards to make wine. The welfare of this type of tea garden is closely related to the monks of the temple, where the tea gardens grow or are deserted along with the rise and fall of the temple. The size of the tea garden is limited by the area of the temple’s production land and the number of monks, with areas ranging from a dozen acres to hundreds of acres. The rise and fall of such tea gardens has often been affected by religious policies, social stability and economic development throughout the dynasties. Some

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Lu Yu’s *The Classic of Tea*, Wu Juenong’s *Review of The Classic of Tea*, (Tang) Fan Chao’s *Manshu*, and Han Xu’s *Study of the Historical Changes of China’s Tea Planting Areas* have been cited. For the Song dynasty, Zhu Chong’s *Production and Operation of Tea in the Northern Song Dynasty* and Han Xu’s *Study of the Historical Changes of China’s Tea Planting Areas* have been cited and Bozhou and Dali Weichu Houses have been added. For the Yuan dynasty, a mix of Song and Ming dynasty sources have been taken, and further confirmed with *History of the Yuan – Food*, Xia Tao’s *History of Chinese Tea*, and Wang Sitong’s *Planting and Distribution of Economic Crops in the Yuan Dynasty*. For the Ming dynasty, (Ming) Huang Yizheng’s *Shiwu Zuzhu*, (Qing) Tan Qian’s *Sailin Miscellaneous Group*, Chen Zongmao’s *Review of the Classic of Tea*, and Han Xu’s *Study of the Historical Changes of China’s Tea Planting Areas* have been cited, and records have been modified for Shandong and Yunnan. For the Qing dynasty, Chen Zongmao’s *China Tea Classic* and Han Xu’s *Study of the Historical Changes of China’s Tea Planting Areas* have been cited and records have been modified for Shandong and Yunnan.

<sup>6</sup> Jiang Heng, Yun Liaoshan, *Humanities* copy vol. 4, 27.

temple tea gardens that were famous in the past have already been abandoned, such as Wudang Mountain Road Tea Garden and Huangshan Songluo Tea, but some have had the fortune of being preserved and have become important historical relics of such tea gardens as witnesses to the important contributions of Buddhism and Taoism to Chinese tea culture.

## 2 TRIBUTE TEA GARDENS

From the 8th century to the 14th century, during the Tang, Song and Yuan dynasties, there were tribute tea gardens and tea production sites. In the third year of the Tang dynasty's Dali (768), Changzhou Yixing began paying tribute with Purple Bamboo Tea, and a tea house was later set up. In the 17th year of Tang Zhenyuan (801), Huzhou established the Tribute Tea House in Guzhusan, which was directly managed by officials. Guzhu Mountain covers an area of about two square kilometres and produced 18,400 jin (about 11,040 kg) of tea annually. In 801, 30 east corridor rooms were built for the Tribute Tea House.<sup>7</sup> In its prime, there were "more than 1,000 craftsmen and 30,000 service workers". In the Northern Song dynasty, the Beiyuan Tribute Tea House was built on the east and west sides of Jian'an and Jianxi in Fujian Province. It stretched for eight kilometres and was made up of 25 tea gardens, with as many as 30 locations used for tribute tea production; "In its heyday, for every 40 hues, there was in excess of 47,100 leaves." Jian'an Tribute Tea Garden was still dominant in the Yuan dynasty, but its size had decreased when compared to that of the Song dynasty. A new imperial tea garden was opened in Siquxi, Wuyi Mountain, Fujian Province, where 360 kg of tribute tea was paid each year. In the Ming and Qing dynasties, tea was mainly relied on for tea tribute. Except for the establishment of 500 tea households in Fujian Jianning during the Ming dynasty to specialize in collecting tea, there were basically no official gardens<sup>8</sup> in other places and no tribute tea gardens were set up in the Qing dynasty. Therefore, this type of tea plantation was only around for a short time, and the area it makes up of tea producing areas in the country is also very low. Tribute tea gardens were core production areas for famous teas at that time, with areas ranging from a few to dozens of square kilometres, with clear tea garden management boundaries. As a government-run forbidden garden, only gardeners were permitted in the garden, and tea could not be picked for personal use. Therefore, the size of settlements there ought to have been small or even non-existent, and even the cultivation of other crops might have been controlled. With the changes in the tribute tea system, tribute tea gardens were gradually classified as private, and settlements in the tea gardens developed accordingly, but the core tea plantation areas have continued to be maintained.

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<sup>7</sup> Hu Yaofei, *Between Tributes – Tea and Politics in the Tang Dynasty*, 18-20

<sup>8</sup> Guo Mengliang, "The Tribute Tea System in the Ming Dynasty and Its Social Impact: The Second Study of Tea Laws in the Ming Dynasty", [*Journal of Zhengzhou University*], 1990, No. 3.

### 3 TEA FARM PLANTATIONS

Ancient China was a country founded on agriculture. Therefore, the best farmland was used to grow food crops, with tea cultivation serving as more of a secondary undertaking. Farmers generally chose to plant tea trees in hilly mountains or around houses rather than on land that was suitable for farming, forming a complex economic model of agricultural production. Because of China's tradition of heavy agriculture and suppression of business, for a long time agricultural production was based on families, with each family maintaining their own tea garden and engaging in processing and sales. When an entire village relied on tea as an important source of income, tea gardens such as Xiamei Village, Wuyi Mountain, Fujian, Jingmai Village in Jingmai Mountain, and Mangjing Village in Yunnan were formed into a contiguous garden of a certain size, covering an area from hundreds to thousands of hectares. As more and more villages and towns produced tea and their distribution became more concentrated, the main tea producing areas in the region were formed, such as Yiwu Town and Xiangming Township, Mengla County, Xishuangbanna Prefecture, Yunnan, and Mingshan District and Yucheng District in Ya'an City, Sichuan. Therefore, tea plantations where tea farmers are the main planters have continued to grow in size along with the development of the regional tea industry. The continuous increase of the distribution area and planting area of tea production areas in China mainly depends on the development of such tea gardens. Of course, there are also plantation owners or landowners who have strong economic strength, and tea gardens that have been developed by modern tea companies, but they all rely on hired farmers or workers for daily management. Therefore, the characteristics of the landscape and form of tea culture as well as the scale development rules of planting have been relatively consistent, so they fall into one category.

## 4. Distribution and characteristics of the landscape

The distribution and characteristics of the tea cultural landscape are determined by the natural attributes of the tea tree, the growing environment, and the economic method of tea plantation, which is also in line with the core concept of cultural landscapes as "products of man and nature". The widely distributed tea producing areas formed in China are based on the Chinese people's understanding of the natural attributes of tea trees and are the result of adapting to local climate conditions and drinking consumption habits through the continuous introduction, cultivation and selection of different types of tea seedlings. Because of the different tea garden planting methods, the Chinese tea culture landscape has both commonalities and subtle differences in various regions and types.

Tang Lu Yu's *The Classic of Tea* gives an extremely accurate summary of the planting conditions suitable for tea trees. The soil conditions should be thus: "broken stones should be

on top, gravelly soil should be in the centre and sandy soil should be at the bottom.” Regarding the ideal plantation environment, he stated: “the quality of the tea depends more on the natural environment than the farmer; the cliffside should be sunny and the forest should be shaded.” He also believed that “tea in shaded valleys cannot be picked. Drinking it will result in upset digestion.” This will be analysed below with examples.

#### 4.1 Spatial distribution

Generally speaking, the Chinese tea culture landscape is spatially distributed in the southern region from the Qinling-Huaihe River to the East China Sea and the South China Sea. There are tea plantations from the Hengduan Mountains in the west to the Yunnan-Guizhou Plateau and the central mountainous areas, and up to the coastal hilly areas, where the altitude of the tea plantations drops from 2,500 m to about 100 m. Rainfall is generally above 1,000 mm, and the optimum temperature for tea tree growth is 20-25 °C. Following changes in the natural environment, tea plants have evolved into arboreous types, semi-arboreous types and shrub types.

Tea trees like humid and warm climates, and are fond of ultraviolet rays, traits summarized by the Chinese proverb: “Good tea is produced in the high, misty mountains.” “High” refers to both the absolute altitude and relative altitude. For example, the West Lake Longjing Tea Garden in Zhejiang Province is at about 100 m above sea level, which is very low compared to tea areas in Western China. However, the Longjing Tea Garden is located on a relatively high gentle hill. Slopes near rivers and lakes are generally chosen as micro-environments suitable for tea cultivation. Such terrain is conducive to the evaporation of water vapour to form clouds. For example, the major tea mountains in Yunnan are distributed on both sides of the Mekong River; Dongting Mountain by Taihu Lake, Junshan Mountain by Dongting Lake and Lushan Mountain by Poyang Lake are all historically famous tea producing areas in China. The mountainous area from Pingwu to Ya’an on the western edge of the Sichuan Basin is also a main tea-producing area, represented by Mengshan Mountain, and, due to the special geographical environment, has rainy and foggy climatic conditions.

#### 4.2 The tea planting and growing environment

The traditional method of plantation in Chinese tea gardens “is similar to melon cultivation,” and tea seeds are collected for sowing. The growth environment of the tea garden follows the principle of “the natural environment being more important than the gardener”. Tea trees should be planted far apart from each other to ensure that the tea garden has good ventilation conditions and to effectively reduce pests and diseases. Arboreous tea trees are about 3-8 m high, and the crown can reach 2-3 m. Therefore, the optimal distance between trees is 3-4 m. Shrub tea trees are generally less than 1 m in height, with a crown of 30-60 cm, and a planting distance of a few dozen centimetres. Generally, tea trees are planted in a line along the contours of the land. Light is a primary condition in the survival of tea trees. The sunny side of

slopes and the southern slopes facing the sun that receive a large amount of solar radiation are preferred, while tea grown on shady hillsides and valleys tends to taste bitter. The terrain slope should be between 5 and 20 degrees, and preferably not more than 25 degrees. The ability of the land to retain water, soil and fertilizer is suited to the growth of tea trees, as is what is known as “yangya” (sunny cliffs). *The Classic of Tea* summarizes it thus: “broken stones should be on top, gravelly soil should be in the centre”. Tea garden soil is generally sandy loam with good drainage, with an organic matter content of 1% to 2%, good air ventilation, good water permeability or storage, and an ideal pH value of 4.5-6.5.

Traditional tea gardens are planted or preserved with arboreous trees that can create shade, creating a “shaded forest” environment, which is consistent with the characteristic of tea trees being fond of diffused light. In southern central Yunnan, in places such as Xishuangbanna, Pu’er, Lincang and other prefectures and cities, ancient tea forests with large areas and complete natural “planting beneath forest” methods have also been preserved. From a distance, the tea gardens appear to be forests, but when approaching the gardens, the tea trees emerge. They are a living sample of the unique tea cultivation methods of southwestern China. Central to eastern China is mainly home to shrub-type tea gardens with low plants, and the trees used for shading are sparser. Japan’s “covered tea gardens” are also based on this characteristic of tea trees: due to the lack of the ecological conditions of “planting beneath forests”, they artificially reform the tea garden preservation methods created by the tea growing environment.

Through comparative research, it is known that the structure of the biological community of tea forests or tea gardens that have undergone artificial intervention and maintenance is different from that of “natural forests”. In the native natural forests, in the natural distribution areas of tea trees, the plant community is complex, the canopy layer is scattered, there are many vine plants, undergrowth shrubs and herbaceous communities being developed, and the tea group plants rarely form dominant communities. In addition, in native natural forests, there are many young trees under the canopy that are the same as the species that make up the canopy. In ancient tea forests, due to high-intensity artificial management measures, other tree species, shrubs, and even herbaceous plants under the canopy were removed or kept to a low-density state. After selective thinning, the distribution density of the canopy trees became sparser, leaving room for tea tree growth and ensuring them a certain amount of sunlight. Tea farmers select or retain plants that are not prone to insects and that emit aromatic substances to optimize the ecological environment of tea plantations. After artificial domestication and cultivation, the shape of the tea tree also becomes different from that of wild tea and tea grown in the wild. Tea farmers prune the branches of the tea tree to increase the yield of tea buds, and “dwarf” the trunk for easy picking. Tea can be harvested in small quantities after three years, and the trees reach their full production period after five to six years. Their maturity period is 20 to 30 years. The output of trees over 100 years old is lower.

With the modernization of the Chinese tea industry in the middle of the 20th century, especially after 1950, dense planting, fast-growing and no-till cultivation methods gradually appeared in various places. The shape of tea plants evolved to a low type, with a high planting density and fast-growing early maturity to increase yield. This is called a “terraced tea garden,” which is similar to the tea garden landscapes developed by Japan, India, Sri Lanka, Kenya and other countries in modern times. Terraced tea gardens are either planted in lower altitude areas outside historical tea plantations, or are newly opened directly on woodland. Mengding Mountain in Sichuan, Jingmai Mountain in Yunnan, and Wuyi Mountain in Fujian all have new terraced tea gardens on the outskirts of historical tea gardens to form a tea garden landscape incorporating the traditional and the modern. The landscape characteristics of the different stages of the continuous evolution of the Chinese tea culture landscape can be observed.



*Image 9. Hekai Ancient Tea Forest in Xishuangbanna Prefecture, Yunnan.*



*Image 10. Ancient Tea Forest at Jingmai Mountain, Pu'er, Yunnan (Source: Zou Yiqing).*



*Image 11. Longwu Tea Plantation and Strip Tea Plantation at West Lake, Zhejiang (Source: Chen Liang).*



*Image 12. Jingmai Mountain Terraced Tea Garden, Yunnan (Source: Peng Rong).*



*Image 13. Royal Tea Garden at Ganlu Temple, Mengding Mountain, Ya'an, Sichuan.*



*Image 14. Terraced Tea Garden at Yongxing Temple, Mengding Mountain (Source: Zou Yiqing).*



*Image 15. Dahongpao Tea Garden at Wuyi Mountain, Fujian (Source: Internet).*



*Image 16. Terraced Tea Plantation at Wuyishan (Source: Chen Yaohua).*

### 4.3 Spatial features of the tea plantation landscape

Above, the general rules of Chinese tea plantation landscapes resulting from natural factors such as natural environment and tea strains have been analysed. The spatial features of various tea plantation landscapes will be analysed from the perspective of cultivation and organizing models in the following sections.

#### 1 TEMPLE-OWNED TEA PLANTATIONS

Tea plantations owned by Buddhist and/or Taoist temples usually surround the religious architecture complex and are cultivated by monks in favourable mountainous areas within the temple property. These tea plantations usually enjoy great fame, though they are humble in size. The temple architecture complex itself constitutes a prominent component of tea plantations, while other cultural elements including inscriptions on cliffs, memorial archways, renowned springs and ancient trees are also presented as contributions to tea culture by monks and other religious followers with proper literary accomplishment. There is a Chinese saying that “Where there are sacred mountains, there are Buddhist/Taoist temples”. On sacred mountains where many temples are built, such as Mengding Mountain in Sichuan Province, small sized tea plantations will be built along the paths and surrounding the temples. This category of tea plantation demonstrates the spatial feature of small sized tea plantations

surrounding the temple architecture complex in the centre, where tea related cultural relics can be found in the temples and tea plantations, a showcase of profound history and humanity.



*Image 17. Tea Plantation of Jingshan Temple, Yuhang, Zhejiang. Source: Pictures online.*

## 2 TRIBUTE TEA PLANTATIONS

The history of tribute tea plantations was quite short, and only relics of them have been preserved to date. Representative plantations include the Northern Garden Imperial Tea Production Site and the Guzhu Tribute Tea Garden Relics and Cliffs, listed in the 6th batch of Major Historical and Cultural Sites Protected at National Level. The Northern Garden Imperial Tea Production Site is located in Beiqian Village, Dongfeng Township, Jianou City, occupying an area of approximately 20,000 square metres. The excavation in 1995 unearthed a huge amount of porcelain pieces and relics of the imperial well (Dragon Well), bricks, the wall base, the stylobate, the retaining wall base, the courtyard, paths, the dooryard, ditches, the pool, earthenware drainage pipes, the brick kitchen and pits, within an area of over 600 square metres onsite. Inscriptions on the cliffs of Linlong Mountain in Beiqian Village provide evidence that the 600-square-metre area was the centre of the Northern Garden Imperial Tea Plantation in the Song dynasty. The Guzhu Tribute Tea Garden Relics and Cliffs are located on Guzhu Mountain, Guzhu Village, Shuikou Township, Changxing County, Zhejiang Province. The relics include the site of the Tribute Tea Garden (together with Jixiang Temple) behind the Tiger Head Rock of Guzhu Mountain, three inscriptions dating back to the Tang and Song dynasties found on cliffs above Bawang Pond in Xuanjiu Valley, three inscriptions dating back to the Tang dynasty found on cliffs nicknamed the Crow Nest in Zhuoshe Valley, and one inscription dating back to the Tang dynasty found on the cliffs of Xigu Mountain. Based on the findings above, it can be concluded that such tribute tea plantations usually have officially managed, large scale

tea production agencies, and that the inscriptions on nearby cliffs both reflect the great fame of such tribute tea plantations on the one hand, while recording the anecdotes of officials who supervised tea production and scholars who went sightseeing and had tea drinking experiences on the other. These relics, inscriptions on cliffs and tea plantations together mirror the history of tribute tea plantations in China.

### 3 FARMERS' TEA PLANTATIONS

Usually, farmers' tea plantations are closely related to their settlement as far as spatial layout is concerned. Tea plantations are generally located on slopes with water and heat conditions favourable for tea growth, within walking distance of villages. Where the villages are built halfway up the hills, tea plantations will scatter around the villages. Such spatial layout connections between tea plantations and villages are typically common for villages relying on tea cultivation in Yunnan, Hunan, Guizhou and Guangxi provinces in China. However, in relation to the long history of self-sufficient rural economy in China, tea as a cash crop cannot completely replace other crops such as grains and vegetables and trees for wood, so these villages often utilize land to its best value and develop diverse land use models subject to various crop growth requirements.

Within such settlements, there are usually tea production facilities of various sizes. Manual tea processing workshops are fairly small in size and may directly use tea farmers' residences, for instance, courtyards or an indoor flat area. There are also tea plants or gardens with larger sizes invested in by tea dealers, of which the Russian tea-dealer-invested tea plant in Yangloundong, Xianning City, Hubei Province, is an example in modern history. For tea plantations located in areas where the tea collecting and distributing business takes place, there are tea trading facilities in the settlement as well. The Yushan Ancient Tea Trading Houses in Zhejiang and Yiwu Township, along the Tea-Horse Route in Yunnan and respectively listed in the 6th and 7th batch of Major Historical and Cultural Sites Protected at National Level, are two examples. The Yushan Ancient Tea Trading House at the foot of Chachang Mountain, Matang Village, Yushan Township, Panan County, was established in the Song dynasty and then rebuilt in the 47th year of the reign of Emperor Qianlong in the Qing dynasty (1781). The Tea Trading House mainly consists of a temple, an administration office and tea factory, occupying an area of 2,940 square metres and a floor area of 1,502 square metres. Yiwu Township of Mengla County, Xishuangbanna, Yunnan Province, was an important hub for the collecting and processing of tribute Pu'er tea in the Qing dynasty, and was also one of the core Pu'er production areas in Yunnan. A number of tea trading houses (for tea processing and dealing), integrating both business and dwelling functions, extend along the ancient routes, and there is also a square where ancient horse caravans used to gather.

Additionally, some minority ethnic groups (the Blang people, for example) living in southwest and southern China still maintain their primitive worship, and altars for the worship of the Tea Ancestor, the Sacred Trees of the Tea Spirit and relics related to ancestor worship can be found



in their tea plantations, which reflect the influence of tea culture on the tea plantation landscape. Thus, such tea plantations are more than fields with tea trees, but countryside landscapes, combining tea plantations, other agriculture crops and settlements. Apart from dwelling buildings, there are production facilities (or functions) for tea processing, religious buildings or relics related to tea culture, and places and facilities for tea trading.

*Image 18. Land Use Models in Mangjing Village, Jingmai Mountain, Yunnan.  
Source: Zhao Junxiang.*

#### 4.4 Tea cultivation and tea strains

In the beginning, people planted tea by transplanting wild tea saplings and sowing seeds that were collected. Later, relatively closed, concentrated “strain groups” came into being, along with the expansion of cultivation areas and generations of multiple strains. Most tea strains cultivated in China’s history fall into this category, for instance the broad-leaf tea of Jingmai Mountain in Yunnan, Longjing in Zhejiang and Taiping Houkui in Anhui. These tea strains have fixed cultivation areas and corresponding tea varieties; for example, Longjing green tea in Zhejiang, Ganlu tea of Mengding Mountain in Sichuan, Pu’er tea in Yunnan and Oolong tea in Fujian are all made from local tea strains.

Selections of tea strains based on local strains were first practiced in Wuyi Mountain in Fujian and Fenghuang Mountain in Chaozhou City, Guangdong, during the Ming and Qing dynasties; Dahongpao (Great Red Robe), Rougui and Fenghuang Dancong are such selected strains. In 1780, the people of Anxi, Fujian, attempted propagation using cuttings from selected tea plants and cultivated the Tieguanyin (Iron Goddess) tea strain, a successful start to vegetative propagation. Other vegetative tea strains, including Fuding white tea and Fujian-shuixian, were cultivated and are still being planted today. After the 1950s, thanks to the development of new technology, a great batch of new strains were gradually cultivated by strain selection based on single plants and hybridization from local tea strains. By the end of 2017, 134 tea strains cultivated in 16 provinces, including Zhejiang, Fujian, Anhui, Guangdong and Yunnan, had been verified at national level.

#### 4.5 Tea picking

Due to the vast distribution of tea production areas in China, sharp differences in climate and ecological conditions and large numbers of tea strains and tea varieties, tea picking habits vary. Tea picking falls into different categories based on the criteria of: (a) picking model, such as handpicking or machine picking; (b) which parts of the plants are picked, such as tip-and-bud picking, all-buds-but-tip picking or selected tip-and-bud picking; and (c) tenderness of tea leaf, such as tender bud (only bud or bud with one fresh leaf) picking, medium-tender leaf (bud with two to three fresh leaves) picking, fully-developed leaf picking, fresh twig (bud with four to five leaves) picking or matured twig cutting. Tea picking seasons are classified based on the growth periods of tea buds, namely spring, summer, autumn and winter (for the warmer Southern China tea production area).

Traditional tea picking requirements are fairly strict in China. According to *The Classic of Tea*, “Tea picking should be done between the second and the fourth lunar month (approximately March to May),” and it is believed that tea picked in the period of early to late April, between Clear and Bright and Grain Rain (two of China’s twenty-four solar terms) is the best quality tea, a theory that is particularly true for green tea. The tender tea leaves for making tribute tea for

the imperial court were strictly required to be picked before Clear and Bright Festival (Qingming), and, even today, the tea before Clear and Bright Festival is still highly praised as precious in the market. That said, autumn is also a good season for tea picking. Generally speaking, the tea picked in summer when there is strong sunlight, high temperatures and heavy rain is lower in quality than spring tea, and its flavour is light and bitter.

It is recorded that the picking should be done on early dewy mornings, with 4am to 7am being the best period of time. As far as the weather is concerned, there is a saying that “tea picking should be done when it is sunny other than rainy or cloudy,” because wet tea leaves go bad easily and rainy or cloudy days do not allow timely processing of freshly picked tea leaves. The tenderness and evenness of fresh tea leaves determine the rating of tea quality. Tenderness varies depending on whether the tea leaves are picked with only tender buds, bud with one leaf, bud with two leaves, bud with three leaves or even with as many as five leaves. As recorded in *The Classic of Tea*, “Tea buds grow on top of the plants, and there may be three to five leaves growing surrounding the buds, and those leaves growing upright should be picked”.

## 5. The social and cultural system

Tea is more than a drink; it represents a culture. Tea suits both refined and popular tastes so well that it is a common drink nationwide in China and has become an essential part of traditional Chinese culture. Tea culture presents itself in so many ways that it can be appreciated along the whole chain connecting tea cultivation, processing, trading, transportation, consumption and drinking. China's long history of tea planting and drinking, its vast tea production areas as well as its diverse tea strains and varieties contribute to the diversity and local features of Chinese tea culture. As a “slightly addictive hobby,” not only does tea drinking form an indispensable part of Chinese life, which is echoed by the saying “one cannot survive each single day without food and tea,” but has also gained popularity across the world. Importantly, tea has become a significant source of China's finance and a commodity in international trades.

### 5.1 Tea related regulations and administration

Tea consumption grew tremendously after tea drinking developed into a habit in Chinese society, and tea became an important object of taxation at national level. Tax offices were set up in tea production areas nationwide to collect tea tax in the 3rd year of the Jianzhong era by Dezong of the Tang dynasty (782), and “Tea Administration” and “Tea Regulations” henceforth became significant national economic measures. During the 9th year of the Dahe era of Wenzong of the Tang dynasty (835), the policy of imposing tax on tea changed into government monopoly of tea sales. Tea related regulations were increasingly strict, and the earliest

regulation on tea in China's history, the Tea Decrees, was compiled in the 2nd year of the Dazhong Xiangfu era by Zhenzong of the Song dynasty (1009). Later, tea drinking developed into a custom for nomadic tribes in western China, and this, coupled with the fact that the jurisdiction of central governments during the Song and Ming dynasties did not produce quality horses, meant that trading tea for horses became a strategic policy of states. In the 7th year of the Xining era of Shenzong of the Song dynasty (1074), the government monopolized tea sales in the Chuanshan administrative area (present day Sichuan Province) and conducted tea-horse trading businesses with tribes living in northwest China. During the Ming dynasty, the official tea authority implemented tea-horse trading regulations and traded tea for horses at borders with western nomadic tribes, and these regulations worked together with horse affairs administration and border control policies. The vast territory accrued during the Qing dynasty meant that there was no longer a necessity for horse trading after the reign of Kangxi (mid-17th century); however, the reliance on tea by nomadic tribes made border control through tea trading a significant central government policy towards ethnic groups in border areas. After the Chinese Communist Revolution (in 1949), the National Committee for Ethnic Affairs set up the Border Tea Trading Office, which was responsible for supplying tea to minority ethnic groups in bordering areas. Today, the National Ethnic Affairs Commission of China subsidizes over 100 million yuan each year for supplying nomadic areas with quality tea at lower prices. Anhua dark tea from Hunan, Ya'an Tibet tea from Sichuan and Pu'er tea from Yunnan are all favoured by the people in nomadic areas.

The site of the Administration Office for Tea-Horse Trading Affairs is now preserved in Mingshan District, Ya'an City, Sichuan Province. The Office was first set up in the 7th year of the Xisong era by Shenzong of the Song dynasty (1072), and the preserved site dates back to the 27th year of the Daoguang era of the Qing dynasty (1849). At the site stood the designated government agency that had managed tea related affairs ever since the Song dynasty, and the current relics include the main hall and wing-rooms on both sides, occupying an area of 1,300 square metres. The Administration Office for Tea-Horse Trading Affairs took charge of Mingshan tea collection from two counties, namely Mingshan and Baizhang, and then of the tea-horse trading businesses. At its prime, the Office "transported Mingshan tea with 200,000 pack horses" (each pack weighing 50 kg), accounting for over half of the total tea destined for the government. The Official Border-Trading Tea Storehouse located in Tianquan County, Ya'an City, Sichuan Province, was the official administration agency in charge of the collection of Ya'an-produced tea for border trading and its sale to the Tibetan area in the mid-late Qing dynasty. Occupying an area of 1,500 square metres, the facility was first built during the Kangxi era of the Qing dynasty, and incorporated a traditional Chinese courtyard house with three yards, comprising five principal rooms, five wing-rooms, courtyards and open space.

## 5.2 The tribute tea system

Tribute tea was one of the precious specialties paid by local authorities to the imperial court in ancient China, and was an essential part of imperial court life. Tribute tea existed throughout Chinese history, from the Western Zhou dynasty to the Qing dynasty. As recorded by a scholar, “Tribute tea can better demonstrate one’s loyalty to the emperor”. Tribute tea as a form of taxation reflects the establishment of the political monarch-subject relationship, and is a cultural phenomenon in specific historical stages. Among existing literature, the earliest record with exact figures of tribute tea is found in *Herbal Collection* (Ben Cao Yan Yi) in the 6th year of the Zhenghe era of the Northern Song dynasty (1116): “During the reign of Yuandi in Eastern Jin dynasty, 1,000 jin (800 kg) of tribute tea leaves and 300 jin (240 kg) of tribute tea buds were paid to the imperial court”.

Starting from the Tang dynasty, tribute tea was not only an exclusive drink for the imperial family, but became a tax in kind imposed by the central government on local jurisdictions, involving more tribute regions and tea varieties with greater randomness. The Tang dynasty witnessed the final establishment of China’s tribute tea system, which was carried on through later dynasties until its termination in the Qing dynasty. The tribute tea system was implemented through two mechanisms in the Tang dynasty, namely quota-based tribute obligations for the regions producing quality tea and authorities managing tribute tea affairs in core areas of renowned tea production. The Song dynasty followed suit in its tribute tea system. During the Song dynasty, the Northern Garden Imperial Tea Production Site produced larger amounts of tea, and made great progress in tea processing technology, packing and storage. During the Yuan dynasty, imperial tea plantations continued to operate in Wuyi Mountain, Fujian Province. During the Ming dynasty, 44 county level jurisdictions in five provinces (South Zhili, Jiangxi, Huguang, Zhejiang and Fujian) paid tribute tea to the imperial court. During the Qing dynasty, the Tribute Tea Plantations no longer existed; however, 13 provinces with tea production capacity across the nation paid tribute tea to the imperial court, with more tea varieties and optimized tribute tea policies. According to the policies, local officials in tea production areas would be responsible for the collection of tribute tea; for instance, the provincial governor in Guizhou would supervise the collection of Cloud mist tea produced in Guiding (a sub-jurisdiction of Guizhou), and the county governor would carry out the detailed work. For example, in relation to Pu’er, in the first year of the Qianlong era of the Qing dynasty (1736), a grass-roots governing official and tea bureau were set up in Simao, a renowned Pu’er production area, and branches of the tea bureau were set up in Six Top Tea Mountains (present day Mengla County, Xishuangbanna, Yunnan) to manage tea taxation and collection.

As a national economic policy, the influence of the tribute tea system was not confined only to imperial court life, but was also reflected socio-economically. To cater to the tastes of the imperial court, generations of local officials spared no effort to cultivate new tea strains and improve tea processing technology, gradually creating a tribute tea system integrating both universal Chinese

cultural characteristics and local features. While the tribute tea system posed a huge burden to tea farmers and tea production areas, it promoted the development of the tea economy and the expansion of tea production areas, creating a batch of renowned tea varieties and tea production areas in China that still exist today. In the meantime, tea culture in the imperial courts evolved regularly and drove the trend, leaving a profound influence on civilian tea culture.

### 5.3 The cultural phenomenon of the tea ancestor

For almost all of the renowned tea production areas with a long history across China, there are historical figures and legendary tales pertaining to the introduction, cultivation and strain selection of tea, for instance: Lizhen Wu and Zen Master Ganlu from Mengding Mountain in Sichuan; Zen Master Faqin from Jingshan Temple in Zhejiang (Tang dynasty); Pa'aileng, the Tea Ancestor of the Blang ethnic group in Yunnan; and Geliang Zhu, the Tea Ancestor in southern Yunnan. The legends, and even worship, of tea ancestors form a cultural phenomenon reflecting the cultivation and planting of tea in China. These legends, whether verifiable or not, can be regarded as an inverted image of tea introduction in specific areas and show the respect and admiration by local people for those who first introduced tea to their areas. However, there is still a chance that such legends were only created to gain more fame for local tea brands in the fierce competitions between various tea varieties. Doubtlessly, attractive legends concerning tea cultivation, and celebrity charms from real or even fabled historical figures, did enhance the historical value and market reaction of renowned tea production areas. The same story can be found in Japan, too: the monks who introduced tea seeds and tea culture from China into Japan, namely Zuicheng, Konghai and Rongxi, and Nagatani Soen, who invented Sencha (a tea processing method) in Japan, are all commemorated by way of memorial tea gardens, worship in temples and at Shinto shrines, and other ritual activities. This illustrates that the tea ancestor as a cultural phenomenon is not a case unique to China, and that the phenomenon is popular in countries with a long history of tea cultivation and with cultural traditions of worshipping ancestors.

### 5.4 Tea processing techniques

Tea processing has a long history in China, and has witnessed complicated reforms and evolved in many ways. For instance, tea evolved from raw leaves (to be directly boiled and then drunk) to cake tea and loose tea; the varieties of tea increased to six types (namely green tea, dark tea, white tea, yellow tea, black tea and oolong tea) instead of only green tea at the beginning; and tea processing underwent a development from manual methods to mechanical methods. The quality characteristics of each tea variety are influenced not only by the quality of tea strains and fresh tea leaves, but also by the processing conditions and methods.

Tea processing techniques started to form during the Three Kingdoms period, when the tea leaves were dried by sunlight or heat and then made into cakes. In the Tang dynasty, the

techniques of green tea steaming-fixation and cake making were gradually optimized, and steaming-fixation green tea balls and loose tea came into being in the Song dynasty. Tea balls and tea cakes were only used for tribute tea for the imperial court in the Yuan dynasty. In the 24th year of the Hongwu era of the Ming dynasty (1391), the imperial court decree abandoned the tea balls, and loose tea subsequently prevailed, which drove the rapid development of pan-fried-fixation green tea techniques, a common green tea processing method today. *The Joy of Tea* (Cha Jie), written in the Ming dynasty, introduced the essential techniques of the whole procedure of stirring-fixation green tea processing, including fixation, cooling, rolling and baking, an illustration of the fairly high standards of stirring-fixation in the Ming dynasty. The most important reforms in the development of tea processing in ancient China were only finalized after having evolved throughout four dynasties, namely Tang, Song, Yuan and Ming. In the process of green tea making, farmers found that the quality of tea varied according to different processing conditions, so they developed various tea processing techniques and finally created the six tea varieties, namely green tea, dark tea, white tea, yellow tea, black tea and oolong tea. Flower tea can be obtained after further processing of the six tea varieties.

#### Appendix 1. Chinese Tea Varieties

Items	Processing Techniques	Occurrence	Representatives
Green Tea	Non-fermented, with different fixation and drying methods including steaming, stir-frying, heating and drying	Tang dynasty to Ming dynasty	Maofeng of Yellow Mountain in Anhui, West Lake Longjing in Zhejiang, Biluochun of Taihu Lake in Jiangsu, Yulu of Enshi in Hubei, Ganlu of Mengding Mountain in Sichuan
Dark Tea	Has a special flavour naturally formed during the lengthy transportation of compact green tea for border trading purposes	Ming dynasty	Border-trading tea in Sichuan, Dark tea of Anhua in Hunan, Dark tea in Hubei, Dark tea of Liubu in Guangxi, Pu'er in Yunnan
White Tea	Slightly fermented, with only withering and drying procedures, and a more natural flavour	Ming dynasty to Qing dynasty	White tea of Fuding in Fujian
Yellow Tea	Gradually formed by adding "yellowing" procedure to green tea processing	Ming dynasty to Qing dynasty	Yellow bud of Huoshan in Anhui, Yellow bud of Mengding Mountain in Sichuan
Black Tea	Fully-fermented; tea farmers in Fujian acquired the fermentation techniques of black tea in various tea processing practices, including the sunlight drying of white tea (withering), rolling of green tea (reddening), and fermentation of dark tea (darkening)	Qing dynasty to the Republic of China	Black tea in Fujian, Keemun Black tea in Anhui, Black tea in Yunnan

Oolong Tea	Semi-fermented, firstly created in Fujian, with its processing procedures recorded in <i>About Tea</i> written in the Qing dynasty, and an appearance of green leaves with red edge	Qing dynasty	Tie Guan Yin of Anxi in Fujian, Rock tea of Wuyi Mountain in Fujian, Oolong tea in Taiwan, Fenghuang Dancong in Guangdong
Flower Tea	Scented by blending tea with fragrant flowers such as jasmine, rose, plum blossom, lotus, gardenia, elecampane and orange blossom	Dates back to early Song dynasty, and matured in Ming dynasty	Jasmine tea and Rose Black tea of Fuzhou in Fujian

### 5.5 History of tea

Tea was mostly used as a herb or ingredient before the Han dynasty (1st century BC). Since the Tang dynasty (7th century), it has been integrated into the daily life of the Chinese people, who have not only selected tea products carefully, but have also paid special attention to the methods of tea drinking. "Boiling tea" and "frying tea" were the main ways of tea drinking in the Tang dynasty. *The Classic of Tea* written by Lu Yu, the earliest and most complete classic of Chinese tea culture, promoted tea drinking to an art. It is said that "the art of tea drinking was so flourishing that the imperial princes and court ministers were all tea drinkers," thus Lu Yu was hailed as the "sage of tea" by later generations. The Four Devices in *The Classic of Tea* records the tools for making tea, drinking tea, and tasting tea. According to The Four Devices, "tea cannot be made without even one of the twenty-four vessels." A good many tea vessels from the Tang dynasty have been unearthed in various places, and tea vessels seen in paintings and murals are similar to those recorded in *The Classic of Tea*, including bottles, stoves, tea mills, tea pans, tea kettles, tea pots, tea spoons, tea bowls and saucers, etc. Various tea-ware worked together in the process of brewing tea to form the methods of tea frying and tea tasting. Imperial tea-ware was made of precious materials, including gold, silver and coloured glaze. Scholars often used porcelain, with Xing Kiln white porcelain and Yue Kiln celadon more common.

In the Song dynasty, tea was divided into pieces (also known as tea cakes) and loose tea (leaf tea, also known as grass tea), which were ground before drinking. The popular "tea contest" in the Song dynasty brought attention to tea-making techniques and the transformation of tea derived from the tea-making process, using thick black glaze tea cups, such as the Fujian Kiln tea cup, to keep the tea warm and set off its colour. In general, grass tea and tea powder were mostly contained in vessels of white porcelain, celadon, white porcelain (shadow celadon), and even silverware, stoneware and other tea cups. *The Great View of Tea*, written by Emperor Huizong of the Song dynasty, is the only emperor's monograph on tea in China. Since the Song dynasty, tea drinking has been combined with literature, painting, music, flower ceremonies and incense ceremonies, and it has become a fashionable activity with scholars. Due to

Mongolian rule in the Yuan dynasty, tea drinking culture was less predominant; this time can be characterised as a transition period. At this time, the tea brewing method was popular in the south, while the north was still at the stage of powdered tea drinking.

In the early Ming dynasty, the tea system evolved to the drinking of loose tea from the habit of drinking powdered tea. Due to the fall in popularity of powdered tea, the tea whisking method also gradually disappeared. Japan, on the other hand, has retained the steamed green tea method of the Tang dynasty and the powdered tea method of the Song dynasty, learned from China, in a more complete way. The tea used in this way was originally called “rolling tea” and then “matcha” in the 20th century. The tea culture in the Ming dynasty entered a new realm, and the method of frying green tea became the main way of tea making. Loose tea is strip-shaped, so people in the Ming dynasty used teapots to contain the tea, brewing it with boiling water and infusing it into a tea cup before finally drinking. This basic combination of pots and cups is still used today. The teapot became the most important item in the tea making method. Yixing purple clay teapots or red clay teapots in Jiangsu province were strongly recommended in the Ming dynasty. In order to present the colour of the tea, white porcelain and blue and white porcelain tea cups were widely used. This custom influenced Japan. The purple clay pot carried by Zen Master Yinyuan when travelling to Japan in 1654, in the late Ming and early Qing dynasties, was treasured in the Huang Po Temple of Kyoto. The purple clay pot was said to be made by Shi Dabin, a craftsman of the Ming dynasty. People in the Ming dynasty attached great importance to tea tasting, especially in the Wuzhong area to the south of the Yangtze River, where famous tea and renowned springs harmonized with each other. In the Ming dynasty, the literati and scholars took possession of the tea house as a necessity. At that time, independent tea houses appeared.

The mountains and springs, the beautiful artistic conception of the tea tasting space and elegant furnishings show that during the Ming dynasty, people attached great importance to the construction of the tea tasting environment. Practices of tea drinking in the Qing dynasty were roughly the same as those in the Ming dynasty, and tea species and utensils were not very different from those used in the Ming dynasty. During the reigns of Emperors Kangxi, Yongzheng and Qianlong, which saw the heyday of the Qing dynasty, the official kiln of Jingdezhen made breakthroughs in firing, glazing, and decoration techniques, thus tea-ware from the Qing dynasty achieved the artistic peak. The preferences of the three emperors for tea also promoted refined tea-ware and the prosperity of tea drinking in the Qing dynasty, especially Emperor Qianlong, who left in the archives photographic evidence of the specific construction of the tea house and of tea-ware making. He was deeply influenced by the act of tea drinking by ancient people and scholars, and was elegant and respectful, indicating that the imperial family was also affected by folk tea culture. In the Qing dynasty, tea-ware with porcelain enamel and purple clay enamel were developed, as well as tea-ware with different colours such as glaze, jade, agate, lacquer-ware and carved lacquer. Tea-ware of simple and elegant literati style in Jiangnan (the region south of the Yangtze River) was also popular. In order to satisfy

the overseas market during the Ming and Qing dynasties, there were many innovations in painting themes, paints, techniques and shapes.

The prosperity of the social economy led to the transmission of tea drinking. During the Song dynasty, tea drinking gradually spread from the upper class of society to the ordinary people. Folk tea drinking culture flourished, with many tea houses appearing along the roadsides, which became important places for city life. In the Ming and Qing dynasties, a national Chinese tea culture began to emerge, and the market tea culture became the mainstream. With different climates, customs and public sentiments, different regional tea cultures gradually formed, such as Kung Fu tea in southern Fujian and Guangdong; sour tea, roasted tea and Sandao tea in Yunnan; butter tea in the Tibetan area; milk tea in northern Mongolian and Manchu; and sanpaotai in Gansu. Tea culture also combined with folk arts. For example, tea picking music and opera appeared in Fujian, Jiangxi and other major tea-producing provinces. From the beginning, Chinese tea culture was closely related to Confucianism, Buddhism and Taoism. The Taoist monks in their religious activities, and the literati in their artistic creations and tea parties, were not only drinking tea to quench their thirst, but also for spiritual clarity and pleasure. Tea tasting reflects traditional Chinese aesthetics and philosophical spirit. It is an important carrier of traditional Chinese culture and an “ambassador” for cultural transmission.

## 5.6 Tea and religions

The close relationship between tea and Chinese religions can be compared with that between wine and Christianity. In China, the development and transmission of tea culture also has its roots deep in the history of Buddhism and Taoism.

### 1 TEA AND TAOISM

Being the indigenous religion of China, Taoism has influenced the history, culture and traditions of the Chinese nation profoundly, and its connection with tea is deep and long-standing. Indeed, the involvement of tea in Chinese cultural life should firstly be attributed to Taoism. The elaboration of “Tao” by Laozi and Zhuangzi corresponds with the origin of tea, namely “the design of nature.” When Zhang Daoling founded his Taoist temple at Mount Minghe in Sichuan Province in the first year of Han’an (142 AD), the 4th era name of Emperor Shun of Han, he planted tea trees all around the temple wherever possible. It can be drawn from here that Taoism came into being in the Han dynasty in Sichuan, and so did the tradition of drinking tea. In *Shenyiji (Stories of Gods and Freaks)*, which was compiled at the turn of the Wei and Jin dynasties (3rd century), it is noted that “Yu Hong went into the mountain to pick tea. There he encountered a Taoist monk, who told him that great tea can be found in this mountain and can be given as gifts.” This record shows that Taoists did not only possess knowledge regarding tea at an early stage, but also planted and produced some of the ancient breeds of tea in China.

Apart from this, they also related tea with their spiritual life of pursuing eternity. During the Northern and Southern dynasties (420-589), people were seeking ways to achieve immortality and divinity, and those who believed in Taoism hoped to acquire the method of immortality from nature. This is where tea and Taoism combined initially. Tao Hongjing, the Taoist thinker and medical scientist in the Southern dynasty (5th century), wrote in *Mingyi bielu* (*Supplementary Records of Famous Physicians*) that “drinking tea has the effect of alleviating one’s body and replacing their bones.” Taoists advocated a quiet, inactive and natural way to reach divinity, and the characteristics of tea happened to be helpful in their practice of Taoism. Lu Tong, the “Tea Immortal” of the Tang dynasty, who was also called by his art name Yuchuanzi, once wrote that he “wishe[d] to ride on this sweet breeze and go to Penglai Island,” indicating his willingness to ascend to heaven and achieve divinity with the assistance of tea.

Taoism continued to flourish in the Tang and Song dynasties and the dynasties thereafter, with a multitude of temples being established and “tea monks” (monks who specialized in serving tea to visitors) appointed. People enjoyed discussing subjects in Taoism while drinking tea, and tea gardens were opened up to cultivate famous tea. “Taoist tea” was mostly produced and consumed by temples in various places, serving primarily to monks for their divinity aims, while sharing of tea came second. There were three benefits of having “Taoist tea”: treating diseases, keeping in good health, and cultivating one’s nature, all in accordance with the ultimate pursuit of Taoism, which is to eventually become an immortal through practice. The culture of “Taoist tea” was established by Taoism, and the long-standing and deeply-interwoven relationship between the two lasts still today.

## 2 TEA AND BUDDHISM

The prevailing trend of drinking tea in the Tang dynasty was closely related to monks in the Buddhist temples. In Feng Yan’s *Fengshi Jianwenji* (*Records Seen and Heard by Scholar Feng*), it is already mentioned that tea-drinking in the north emerged from the Buddhist temples. Originally, monks had to drink tea in their meditation, as tea could keep them awake, help them with digestion and control their sexual desires, and this was how tea and Zen were initially combined. After many years, drinking tea gradually became the “family tradition” for monks, and eventually “Chan Cha Yi Wei” (meaning that Zen and the tea ceremony are the same), which was popular among both monks and laymen, took shape. Manifestations of “Chan Cha Yi Wei” include the planting of tea trees, the making and drinking of tea, and the holding of tea ceremonies at temples by monks. However, only through the communication and integration of tea and Zen on the level of ideological connotation can “Chan Cha Yi Wei” in a real sense be obtained. Zen is the product of Indian Buddhism in China, and it advocates “seeing people’s minds rightly and enlightening the real nature of the mind” via meditation and the practice of Buddhism. It is believed that, instead of existing beyond the living world, all forms of initial approaches to become a believer of Buddhism and to Buddha-nature can be found in daily life. In the Southern School of Zen, insight is attached with more significance. When people are

drinking tea, their minds are calm and their senses of taste, touch and smell are all being deployed so as to taste the tea and the flavour beyond that, which corresponds to the emphasis of inner experience in Zen thought. For Buddhist monks, drinking tea helps them to purify their minds and become noble people.

Buddhist Master Nanquan once said, “the ordinary mind is the way” and this nature of Zen is intimately tied up with the spirit of the tea ceremony. Sen no Rikyu, master of the Japanese “way of tea,” also pointed out that “the basis of tea is naught but boiling water and making tea,” implying that the essence of the tea ceremony is to perceive the philosophy of life from the trivialities and the ordinary life of the everyday. To practice Buddhism by planting tea trees embodies the special feature of Chinese Zen, which is to attach equal importance to both agriculture and production, both body and mind. Based on practice, tea-making also serves to offer, give and bring benefit to as many people as possible, and to stay in good health so as to practice Buddhism and achieve enlightenment. Buddhist temples have incorporated tea into their daily routines, and regulations regarding tea have also been formulated. Varieties of tea affairs in temples from the Tang dynasty to the Yuan dynasty, when boiling and presenting tea were prevalent, are documented in detail in *Chanmen Guishi (Rules and Regulations for the Zen Buddhism)* by Baizhang Huaihai, Master of the Tang dynasty, in *Chanyuan Qinggui (Rules in Zen Temples)* by Zongze, Master of the Song dynasty, and in *Chixiu Baizhang Qinggui (Rules and Regulations for the Zen Buddhism Revised under Imperial Order)* by Dehui, Master from Dongyang of the Yuan dynasty. All aspects of practices in Buddhist temples are covered in these records, ranging from worshipping, confessing, providing offerings, conducting funerals and offering sacrifices, to tea ceremonies for appointing and dismissing abbots and for the general public, daily tea affairs and daily tea rituals. Visiting monks from Japan across different dynasties served as bridges to spread tea culture to Japan as well. Among them, Master Yosai, pioneer of the Japanese “way of tea,” brought not only the laws and rules of Buddhist temples to Japan, but also tea seeds, which were presented to Monk Myoe and planted by the latter on Togaosan and then transplanted to Uji. This was the origin of what is known as Uji tea today.

## 6. Related communities and associations

Through the above analysis of the development and contents of Chinese tea culture, it can be concluded that it is the Buddhist and Taoist religious communities and tea farmers that have had an important impact on the formation and development of Chinese tea culture.

## 6.1 Religious community

Because of the close relationship between Chinese tea and Buddhism and Taoism, the tea gardens affiliated with temples and opened by monks and Taoists are the origin of many famous historical tea gardens in China. As the Chinese saying goes, “famous temples have produced famous tea since ancient times”. Most temples and palaces were located in the prime locations of mountains and rivers, and the magnificent mountain environment was especially suitable for tea growing. After tea tasting became indispensable for the monks in their practice, when the temple was built, tea was grown at the same time. Each temple has its own characteristics of growing, picking and making tea, and also fits the practice rituals of its sect. The main religious groups are Tiantai and Zen of Buddhism, and Zhengyi and Quanzhen of Taoism.

Famous kinds of Buddhist tea from ancient times to today include: “Mengding Ganlu” in Mengding Mountain Ganlu Temple; “Jingshan Tea” in Yuhang Jingshan Temple, Zhejiang Province; “Huangshan Maofeng tea (Yellow Mountain fuzz tip)” in Songgu Temple, Diaqiao Temple and Yungu Temple in Huangshan Mountain, Anhui Province; “Songluo tea” in Songluo Temple in the city of Huizhou, Anhui Province; “Biluochun tea (Spring Spiral)” in Dongting Temple in Suzhou, Jiangsu Province; “Longjing tea” in Longjing Temple in Hangzhou, Zhejiang Province; and “Red Robe Tea” in Tianxin Yongle Temple in Wuxin Mountain, Fujian Province. Taoist tea is found in many geomantic treasure lands of Taoism, and in many spiritual mountains and blessings of Taoism, the most famous of which are “Taoist Tea” in Qingcheng Mountain, Sichuan Province, selected by Taoist ancestral master Zhang Tianshi; “Taihe tea” in Wudang Mountain, the birthplace of “Taoist Tea”;<sup>9</sup> and “Chongtao tea” in Mount Tai, Shandong Province. There is no doubt that monks’ travelling and preaching spread the tea culture of monasteries to other areas and affected the secular society with which they intersected.

## 6.2 Tea-producing areas

The main and most important tea growing groups in China are tea farmers and gardeners in tea producing areas. According to ethnic groups, these can be divided into Han, Brown, Dai, Hani, Wa, Tujia and others. Tea farmers of Han nationality are distributed in the tea areas south of the Yangtze, north of the Yangtze, south China and the southwest, while the ethnic minorities are mainly distributed in Yunnan, Guizhou, Guangxi and other provinces in southwest China and in Hunan and Hubei provinces in regions south of the Yangtze River. The introduction and cultivation of tea is generally considered to have many origins. At first, tea plantation scales were small and the growing areas were relatively sporadic. The formation of settlements was more affected by farming, hunting, gathering and the production methods of other crops. With the development of the tea industry, agricultural settlements with tea growing as the main method of crop production might have formed in the Tang dynasty in Zhejiang, Jiangsu, Jiangxi,

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<sup>9</sup> Taishan Taoist Tea is not a kind of tea, but is made of local wild green flower buds.

Fujian, Sichuan, Yunnan and other places. The development of the tea industry might also have led to suitable areas for tea growing opening up as tea gardens. With the migration and settlement of immigrants who had mastered tea growing and cultivation techniques, more and more tea garden settlements were built and developed. In terms of the social organization structure of tea villages, Han villages were generally connected by consanguinity or geography, while other ethnic groups were mostly composed of branches and tribes. These tea-growing communities contributed not only to the world's rich indigenous tea-growing communities; in addition, their culture combined with the national culture to form a tea culture with different regional characteristics that reflected tea growing, production, trade and drinking, enriching the connotation of Chinese tea culture.

## **7. Links to trade, trade routes and economic development opportunities**

### **7.1 Tea trade and routes**

Areas suitable for the cultivation of tea depend on natural attributes. Following the rise in popularity of tea, the large and continuous demand for tea in non-tea producing areas promoted the formation of trade routes from tea producing areas to tea consumption markets. These trade routes were not only distributed in China, but even involved shipping routes over the ocean, forming a global tea trade route.

China's domestic tea trade is mainly conducted in the southern provinces such as Zhejiang, Jiangsu, Anhui, Jiangxi, Sichuan and Fujian, and transported through the south sea, official trains and the Grand Canal to northern China, where tea is not produced, including ancient China's political and cultural centres, such as Chang'an (now Xi'an) in the Sui and Tang dynasties; Liang (now Kaifeng) in the Northern Song dynasty; and Beijing in the Yuan, Ming and Qing dynasties, etc.

The demand for tea by ethnic groups in the pastoral areas of western China is no less than that in the north. Since the Tang dynasty (the 7th century), there have been records of tea "originating from the Central Plains and flowing out of the continent. After the ethnic minorities in the border areas began to drink tea, they traded horses for tea with envoys and merchants." Between the Song and Qing dynasties (the 11th century to the early 20th century), tea was traded and transported to Tibet, Qinghai, Gansu, Ningxia Xinjiang, Inner Mongolia and other places by humans or animals from the tea-producing regions of southwest China such as Sichuan, Yunnan, Guizhou and so on, driven by the national policy of the "Tea-Horse Trade" or "Governing the Borders with Tea". In the Ming dynasty, due to the insufficient supply of Sichuan tea, even "Hu Cha" - that is, tea from Hunan and Hubei - was collected for the tea-horse trade. Chinese scholars have named the route the Tea-Horse Ancient Road, a land transportation

network covering eight provinces and cities in western China that promoted political, economic and cultural exchanges between the central government and the border regions.

Tea was introduced into the Western Regions and the Qinghai-Tibet Plateau through the "Silk Road" and the "Tea-Horse Road", and spread to Western Asia and the Arab region. According to the documents, tea was probably introduced into Central Asia, Persia and India via Khotan, and to India and Persia via Tibet. With the rise of the Mongolian Yuan Empire, tea spread further into Central and Western Asia. From the 14th century to the early 17th century, Chinese tea was spread by land to varying degrees in Central Asia, Persia, northwest India and the Arab region.

From eastern China, Chinese tea was introduced to Japan in the 8th century by monks such as Zuicheng and Konghai, and to the Korean Peninsula in the 9th century by envoys of Silla. In the 10th century, the Northern Song dynasty established shipping companies in Guangzhou, Quanzhou, Mingzhou and Hangzhou on the east coast to manage foreign trade. Tea was among the goods exported to South Asia. In the 12th century, Fujian tea was exported to South Asia in large quantities. Zheng He, a navigator in the Ming dynasty, made seven voyages to the western seas (1405-1433), bringing Chinese tea and tea culture to the countries of South Asia, the east coast of Africa and the Red Sea. During the Age of Sail, which began in the late 15th and early 16th centuries, Europe began to learn about Chinese tea. In the 17th century, the maritime transport that connected Eurasia developed rapidly. Commercial ships from Portugal, Spain, the Netherlands and Britain sailed to the Far East on a regular basis, returning to the sea after being stocked with tea, and berthing at ports along the way. This route became a new way for tea to spread around the world so that people in the Middle East, Northwest Africa and Europe could drink tea from China on a daily basis. As the Ming and Qing dynasties implemented stricter sea embargo policies, tea trade only took place in Guangzhou before the First Opium War (1839). The tea from Fujian and Jiangxi Provinces was transported overland to Guangzhou before it was shipped abroad. After the First Opium War ended (1842), the trade ports of Xiamen, Fuzhou, Ningbo and Shanghai enabled tea from Fujian, Jiangxi, Anhui, Zhejiang and Hunan provinces to be exported directly by sea. After the Second Opium War ended (1860), the opening of new ports such as Hankou and Danshui in Hubei and Taiwan, respectively, led to the two provinces and others also exporting tea to Europe and the United States.

While the western Europeans reached China by sea, the Russians were crossing Siberia and advancing to northern China. In the mid-17th century, the Russians arrived in Heilongjiang. After the Treaty of Nerchinsk was signed in 1689, Russia gained some privileges in trade with China, and the tea trade was the core of Sino-Russian trade. Originally, tea from Fujian, Jiangxi and other provinces passed through Henan, Shanxi, Hebei and all the way to the Mongolian grasslands, finally reaching Kaktu on the Sino-Russian border, before being transported by Russian merchants to Moscow and St Petersburg. In 1860, the newly opened Hankou Port allowed Russian merchants to directly purchase and process tea, and to trade with each other in Kulun, Zhangjiakou, Kashgar and other places. In the mid-19th century, with Russia's

demand for brick tea, the export volume of tea from Hubei and Hunan surpassed that of Fujian. Tea from Hunan and Hubei was shipped to Shanghai and to Vladivostok via the Yangtze River, and then transported to Moscow by rail (the Siberian railway opened in 1904).

中国茶叶贸易线路图  
Trade Routes of Chinese Tea



Image 19. Trade Routes of Chinese Tea. Source: Zhang Yimei.



Image 20. “Cha/Tea” Distribution around the Globe. Source: [www.wals.info](http://www.wals.info)

## 7.2 Global tea growing

If the formation and development of tea trade routes reflect the path of Chinese tea culture, as shown in the figure above, the pronunciation of “tea” in global languages is directly related to the tea trade routes. The global tea cultivation map reflects the influence of tea as an economic attribute of commodities, especially after tea became a popular beverage worldwide in the 18th century. Like the two sides of a coin, tea as a drinking plant has a mutually reinforcing relationship between its cultural and economic attributes.

In 805, Zuicheng, a Chan Master, introduced tea seeds to Hezi, Japan, making Japan the first country to grow Chinese tea. After centuries of cultivation, some tea gardens with certain foundations and scales sprung up in the city of Uji, Shizuoka and other places in Japan. In the 1860s, Japanese tea entered onto the global stage, and was exported to Britain, the United States and Europe. In the early 20th century, it competed with Chinese green tea and gained an absolute advantage in the American market. Tea cultivation in Indonesia began in 1684 when the Dutch introduced Japanese tea seeds and successfully grew them. In the 1920s, the Dutch established a tea planting and processing base in Indonesia and developed it into an industry at the end of the 19th century, mainly for export. From the early 19th century, in order to reduce the Sino-British trade deficit caused by a large number of imported teas, Britain tried to develop the tea industry outside of China, giving priority to the British colonies at that time. From 1834 to 1848, tea seeds and seedlings from Fujian, Zhejiang and Anhui in China were brought back to Britain several times. Furthermore, Fujian tea workers were invited and successfully grew tea in the foothills of the Himalayas. Assam became a well-known tea producing region in India. In 1841, tea plantations were established in Darjeeling and it became a famous producing area of high-quality black tea. In 1841, Britain introduced tea trees from China to Sri Lanka, and tea plantations were developed in the 1870s. After 1880, due to China's domestic troubles and foreign invasion, tea production and trade plummeted. The rise of Indian tea ended China's monopoly in the world tea market. As Britain gradually withdrew from the Indian peninsula, the focus of the development of British tea plantations shifted to East Africa, and tea plantations were set up along the surrounding area of Lake Victoria. By the first half of the 20th century, Kenya had gradually developed into an important global tea producer. All of the above countries are important global tea exporters.

Tea gardens were also introduced and opened in other countries. From 826 to 840, Jin Dalian, an envoy of Silla, introduced Chinese tea seeds around the Huayan Temple at the foot of Zhi Yi Mountain. In 1812, Chinese tea was introduced to Brazil, which was the start of tea growing in South America. In 1893, Russia introduced Chinese tea to the Caucasus, opening the first tea garden of the Russian Empire. In 1924, Turkey introduced tea tree seeds from Russia and planted them in Rizespor, southeast of the Black Sea. In the early 20th century, Persian consuls in India smuggled 3,000 Assam tea trees into Iran to be planted in the Rashidiya region of the Caspian Sea. In the 1960s and 1980s, Chinese tea was introduced to Guinea, Mali, Morocco, Algeria and Pakistan. Tea is now grown in more than 50 countries.



Image 21. Distribution of Major Tea Growing Countries. Source: Zhang Yimei.

## 8. Links to other cultural landscapes and their regions / countries

In the mountainous counties of the southern provinces of China, patches of tea plantations, mainly planted by tea farmers, are found near rivers and lakes or on hillsides susceptible to warm and humid air. All tea growing areas are the most suitable (or relatively suitable) sites for tea group plants, selected by local people based on their accumulated experience over the years. In this process, tea farmers were constantly introducing, selecting, cultivating and maintaining tea types with better quality under the growth conditions. In order to make the best use of the contents contained in tea, tea growers and tea workers constantly improved the tea-making process and the techniques, tools and processing mechanisms of tea making, and persistently pursued the ultimate display of the nature of tea as a plant and the characteristics of each tea through highly creative labour. This long term process of development fully reflects the interaction between man and nature: man understands the proper growing conditions of tea and creates a more suitable environment for its growth. At the same time, man also changes the character of tea, making it more suitable for people's drinking habits.

In addition, the process of tea culture evolution is not confined to a small space within a closed loop. In fact, tea farmers learned from each other actively, exchanging techniques and experiences and introducing varieties. Several large migrations in China's history brought people who had mastered the art of tea growing to other regions, which promoted the development of the tea industry on a larger scale and in more places. The national policy of treating tea as an important tax, strategic material and export commodity has further stimulated the development of tea growing areas, production and varieties. Senior officials in feudal China, monks, and even royal nobles with high cultural literacy, guided and contributed to the establishment of Chinese tea standards, tea-drinking art and aesthetics from the perspective

of consumption appreciation through the tribute tea system, religious rituals, cultural collections and other means. From tea producing areas to consumption markets, via tea trade and transportation routes throughout China, tea consumers of different occupations, regions and classes were closely linked together. They had a common understanding of tea culture, developed the habit of drinking tea, and became lovers of drinking tea.

It is precisely because of the large number of consumers that the tea growing scope has been continuously expanded. Plus, the development of tea culture has promoted the continuous enrichment of tea categories, which was the internal reason for the formation of China's tea culture landscape. On the material level, the Chinese tea culture landscape heritage formed by the continuous evolution process is characterized by the rich and complete elements of the cultural landscape. Every link of the tea industry, such as tea growing, making, selling and drinking, has corresponding manifestations that are not limited only to the tea growing landscape. Because of the wide range of tea growing in China, the specific differences in geographical environment, natural conditions, tea tree species and conservation requirements make the tea growing landscape in China present different regional characteristics. The types of human activity areas adjacent to tea gardens also differ, due to different tea growing economic methods. There are agricultural settlements, religious buildings, officially managed Gong tea gardens, etc., in addition to tea plantations, tea houses, tea rooms and other cultural relics closely related to events, activities and beliefs in history, which are all important vehicles of poetry, calligraphy, oral history, etc., related to Chinese tea culture. Venues, buildings and even official management institutions (relics) for tea trading are found near the roads at the Chinese borders. These seemingly loose material elements all follow the regular distribution of the tea industry chain and connect the tea consumption market through tea trade and transportation routes; that is, along the way, towns of different sizes are distributed, especially in northern and western China, where no tea is produced. Furthermore, grain, salt, metal, cotton and other essential living supplies that may be in short supply in the tea-producing areas are imported from other places, thus making those areas closely related to each other.

As the earliest country where tea was cultivated, and the birthplace of tea culture in the world, tea has not only been integrated into the daily life of Chinese people, but has also become an integral part and important manifestation of traditional Chinese culture. The core producing areas of important historical teas in China have been highly valued and protected by the country and its people, which is an important cultural heritage that continues today. At present, there are dozens of tea cultural landscapes in China with the status of Protected Historical and Cultural Site and Agricultural Heritage. They form a representative and typical cultural heritage of China's abundant tea producing areas, tea tree types and tea categories, the authenticity and integrity of which are well preserved. Case studies of important Chinese tea culture landscapes will be presented in subsequent articles.

**Appendix 2: Heritage Sites of Important Tea Cultural Landscapes**

Types of Tea Plantations		Main Tea Producing Areas			Varieties of Tea	Current Status of Protection
Types of Tea Plantations	Tea Producing Regions	Provinces	Cities	Place Names		
Tea-farmers' Plantations	Jiangbei Tea Area	Shandong	Rizhao		green tea	
	Jiangnan Tea Area	Hubei	Enshi		green tea- Jade Leaf Tea	China National Important Agricultural Heritage, National-level Intangible Cultural Heritage
			Xianning	Chibi Yangloudong	dark tea/brick tea	China National Important Agricultural Heritage, National-level Intangible Cultural Heritage
		Hu'nan	Yiyang	Anhua	dark tea/brick tea	National-level Intangible Cultural Heritage
			Yueyang	Yueyang	dark tea/brick tea	
				Linxiang	dark tea/brick tea	
		Jiangxi	Jiujiang	Xiushui	black tea, green tea	
				Wuning		
			Jingdezhen	Fuliang		
			Shangrao	Wuyuan	green tea	National-level Intangible Cultural Heritage
		Dexing		green tea		
		Anhui	Huangshan	Qimen	Keemun black tea	National-level Intangible Cultural Heritage
				Taipinghu	Taiping Monkey	National-level Intangible Cultural Heritage
			Xuancheng	Jingde	green tea	
		Jiangsu	Suzhou	Taihu	green tea	
		Zhejiang	Shaoxing	Tea Plantation of Six Mausoleums of Song Dynasty	green tea	
			Jinhua	Yu Shan Mountain Ancient Tea-making Houses	green tea	Major National-level Protected Historical and Cultural Site
		Southwestern Tea Area	Tibet	Nyingchi	Yigong Village, Bomi County	dark tea-Tibetan tea
	Sichuan		Mianyang	Pingwu	green tea, dark tea-border-tea	
				Anzhou		
			Aba	Wenchuan		
			Deyang	Shifang		
			Chengtu	Dayi		
Ya'an	Mingshan					

South China Tea Area			Tianquan	green tea, dark tea-border-tea	National-level Intangible Cultural Heritage
			Yingjing		
	Guizhou	Zunyi	The Central Experimental Tea Farm in Xiangshan Mountain, Meitan County	green tea, black tea	Provincial-level Protected Historical and Cultural Site
		Guiyang	Huaxi	green tea	China National Important Agricultural Heritage
	Yunnan	Lincang	The Ancient Tea Forest in Mengku Town, Shuangjiang County	Pu'er tea, Yunnan red tea	China National Important Agricultural Heritage, National-level Intangible Cultural Heritage
		Pu'er	The Ancient Tea Forest in Jingmai Mountain, Lancang County	Pu'er tea	Major National-level Protected Historical and Cultural Site, Globally Important Agricultural Heritage, Provincial-level Intangible Cultural Heritage, World Heritage Tentative List
		Xishuangbanna	The Six Tea Mountains in Mengla County	Yunnan red tea	Major National-Level Protected Historical and Cultural Site
	Fujian	Fuzhou		jasmine tea, rose tea, black tea	China National Important Agricultural Heritage, National-level Intangible Cultural Heritage
		Nanping	Wuyi Mountain	Lapsang Souchong, Yan Cha (rock tea)	Mixed Heritage
			Jian'ou	oolong tea	
		Ningde	Fuding	white tea	China National Important Agricultural Heritage, National-level intangible cultural heritage
		Quanzhou	Anxi	Tie Guanyin Tea (Tat-Kuan-Yin Tea)	China National Important Agricultural Heritage, National-level Intangible Cultural Heritage
	Guangxi	Wuzhou	Liupao	Liu Pao Tea	National-level Intangible Cultural Heritage
	Guangdong	Chaozhou	Fenghuang Mountain	Fenghuang Dancong (phoenix single cluster)	China National Important Agricultural Heritage
	Taiwan	Taipei	Freshwater river basin	oolong tea	
		Nantou	Riyuetan Pool		
Jiayi		Ali Mountain			

Temple Tea Plantations	Sichuan	Ya'an	Mengding Mountain Yongxing Temple	green tea-Ganlu, yellow tea- yellow-bud tea	Provincial-level Protected Historical and Cultural site
			Mengding Mountain Ganlu Temple		Major National-level Protected Historical and Cultural Site
	Anhui	Huangshan	Huangshan Songgu Temple, Diaoqiao Temple, Yungu Temple	Huangshan Maofeng tea (Yellow Mountain fuzz tip)	National-level Intangible Cultural Heritage
			Xiuning Songluo Temple	Songluo tea	
	Jiangsu	Suzhou	Dongting Temple	Biluo Chun tea (Spring Spiral)	National-level Intangible Cultural Heritage
	Zhejiang	Hangzhou	Jingshan Temple	Jingshan tea	
			Longjing Temple	Longjing tea	China National Important Agricultural Heritage, National-level Intangible Cultural Heritage
	Fujian	Nanping	Wuyi Mountain Tianxin Yongle Zen Temple	Red Robe Tea	National-level Intangible Cultural Heritage
Sichuan	Chengdu	Qingcheng Mountain Quanzhen Taoist Temple	Qingchen Mountain Taoist tea	Mixed World Heritage property	
Hubei	Shiyan	Wudang Mountain Yuxu Palace	Taihe tea	Cultural World Heritage property	
Shandong	Taian	Mount Tai Taoist Temple	Chongtao tea	Mixed Heritage	
Imperial Tribute Tea Plantations	Zhejiang	Huzhou	Guzhu Mountain Tribute Tea Yard	Tang Dynasty tribute tea	Major National-level Protected Historical and Cultural Site
	Fujian	Nanping	Jian'ou North Imperial Tea Garden	Song and Yuan Dynasties tribute tea	Major National-level Protected Historical and Cultural Site
			Wuyi Mountain Siquxi Imperial Tea Garden	Yuan Dynasty tribute tea	

## Bibliography

### Books

- Chen, Chuan, *A General History of Tea* [茶叶通史] Chinese. Beijing: China Agriculture Press, 1984.
- Chen Ciyu, *The Development of the Tea Industry in Modern China*, Beijing: China Renmin University Press, 2013.
- Chen Zongmao and Yang Yajun (chief editors), *Dictionary of Chinese Tea*, Shanghai: Shanghai Culture Press, 2013.
- Editorial Committee of Chinese Botany, Chinese Academy of Sciences, *Records of Chinese Plants (the 1st of 50 Volumes)*, Beijing: Science Press, 2004.
- Hu Yaofei, *Between Tribute and Grant-Tea and Politics of Tang Dynasty*, Chengdu: Sichuan People's Publishing House, 2019.
- Liao Baoxiu, *The History of Tea Ware and Tea Culture*, Beijing: Imperial Palace Publishing House, 2017.
- [Tang Dynasty] Lu Yu (author), Wang Jianrong (compiled), *The Classic of Tea*, Nanjing: Jiangsu Phoenix Science and Technology Publishing House, 2019.
- Sharma, V.S. and Gunasekare, M.T.K., editors. *Global Tea Science: Current Status and Future Needs*. Burleigh Dodds Science Publishing, Cambridge, UK, 2018.
- Victor H. Mair, Erling Hoh, *The True History of Tea*, Beijing: SDX Joint Publishing Company, 2018.
- Wan Xiufeng, Liu Baojian, Wanghui, Fuchao, *A Study on the Tribute Tea in the Qing Dynasty*, Beijing: Imperial Palace Publishing House, 2014.
- Xu Zhongyue, *The Rise of Modern China: 1600--2000 (the 6th edition)*, Beijing: Hina Book, 2013.
- Yao Guokun, Jiang Yufa, Chen Peizhen, *Tea Culture Sites in China*, Shanghai: Shanghai Culture Press, 2004.
- Yu Fulian, *Ancient Chinese Tea Bushes*, Kunming: Yunnan Science and Technology Press, 2016.

### Papers

- Han Xu, *A Study on Changes in Tea Planting Regions in the History of China*, Master's Thesis of Zhejiang University, 2013.
- Ming Tianlu, *A Revision of Camellia Sect. Thea, Plant Diversity*, the 14th Volume, 1992.
- Min Tianlu and Zhang Wenju, *The Evolution and Distribution of Genus Camellia*, Plant Diversity, the 18th Volume, 1996.
- Min Tianlu, *A Systematic Synopsis of the Genus Camellia*, Plant Diversity, the 21th Volume, 1999.
- Meegahakumbura, Muditha K., M.C. Wambulwa, MM Li, et al. Domestication origin and breeding history of the Tea plant (*Camellia sinensis*) in China and India based on nuclear microsatellites and cpDNA sequence data. *frontiers in Plant Science*. 2018: doi: 10.3389/fpls.2017.02270.
- Sun Hua, *Series of a Study on the Heritage of Chinese Tea Industry: Preface*, 2017.
- Wei Zhijing, *The Study of the Monopoly System of Tea in Ming Dynasty*, Ph. D Dissertation of China University of Political Science and Law, 2007.
- Zhang Wenju, Rong Jun, Wei Chaoling, Gao Lianming, Chen Jiakuan. *Domestication Origin and Spread of Cultivated Tea Plants*. Biodiversity Science. the 4th Issue, 2018.

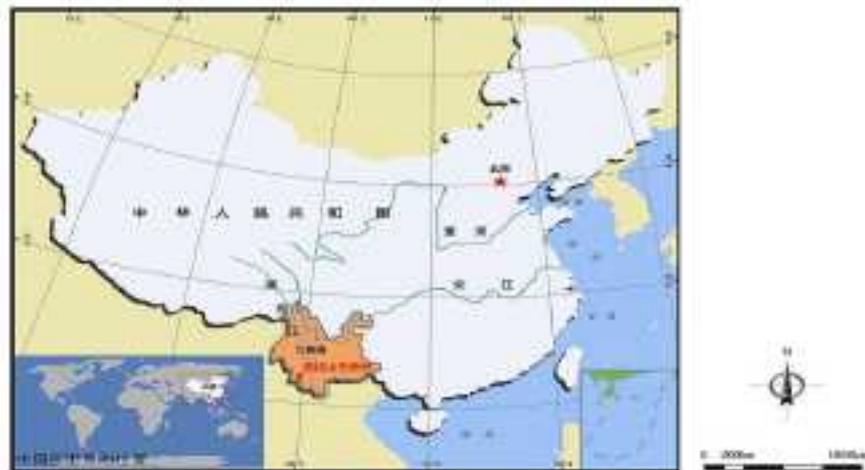
# Cultural Landscape of Pu'er Tea Forest of Jingmai Mountain in Yunnan Province

*Chen Yaohua*  
Professor of College of Urban and  
Environmental Sciences, Peking University

## 1. The introduction of the tea-planting region

### 1.1 The geographic information

Yunnan province, which sits in the southwest corner of China and borders Myanmar, Laos and Vietnam, is the main production area of Pu'er tea on both a national and global scale. The total area of the province is 394,000 square kilometres. Diandong Plateau and Dianzhong Plateau are located in its east, which are parts of Yungui Plateau. In the west, it connects with the Tibetan Plateau and is filled with mountains and valleys. The climate of the region belongs to the subtropical and tropical monsoon climate. This vast land covers six major water systems - Yangtze River, Pearl River, Yuanjiang River, Lancang River, Nujiang River and Dayingjiang River - which contribute to a rich biodiversity. The unique landform, especially the Tibetan Plateau and Hengduan Mountains, block the cold air coming from the northwest and increase precipitation. Therefore, a large number of plants survived the multiple glaciers of the Quaternary period, including the ancestor of the tea tree - Chinese Magnolia in an early phase.



*Map 1. The location of Jingmai Mountain Ancient Tea Forest in China. Source: Peking University.*

## 1.2 The history

Manufactured from Shaiqingmao tea, which was made of Yunnan large-leaf tea species, traditional Yunnan Pu'er tea had been sold to Tibet and other places since the time of the Tang dynasty. The historical document *The Record of Pu'er Tea* (by Ruan Fu in the Qing dynasty) mentions that “the Tibetans drank Pu'er tea from the Tang dynasty”. From the Ming dynasty to the mid-Qing dynasty, the production of Yunnan Pu'er tea reached its prime. The Six Inner-River Tea Hills - Youle, Yibang, Gedeng, Manzhuang, Mangzhi and Mansa (Yiwu) - in the north bank of Lancang River, as well as the Six Outer-River Tea Hills - Nannuo Mountain, Mengsong, Bada, Jingmai Mountain, Jinghongmengsong and Fohai (Menghai) - in the south bank of Lancang River were the most famous tea hills then and yielded over 100,000 loads of dry tea annually. In the Yongzheng period in the Qing dynasty, the first-picked tea from the ancient six tea hills was selected as tribute tea. The Jingua tea from Yibang in the Guangxu period of the Qing dynasty is still preserved in the China Tea Museum.



Map 2. The location of Jingmai Mountain Ancient Tea Forest in Pu'er City.  
Source: Peking University.

## 1.3 The scale of the landscape

The distribution of Pu'er tea is concentrated in four main production areas in the southwest Yunnan Province, which are Pu'er City, Xishuangbanna, Lincang and Baoshan. The tea plantation in Pu'er City reaches 2,120 ha, yielding over 110,000 tonnes of tea annually. Meanwhile, the tea plantation in Xishuangbanna covers 33,000 ha, within which the ancient tea plantation is 8,600 ha, yielding over 20,000 tonnes of dried raw tea annually. In addition, there are 43,000 ha of ancient tea plantation in Lincang, which yields over 35,000 tonnes of tea annually, and 39,000 ha in Baoshan, yielding 30,000 tonnes of raw tea in total and processing 17,000 tonnes.

### 1.4 The distribution and features of the tea plantation landscape

Pu'er City was once a vital distribution centre on the Ancient Tea Horse Road. The ancient tea grove is concentrated on Jingmai Mountain in Lancang County, where the ancient tea grove practice of underwood planting is preserved well. The Blang and the Dai people located their settlements among the ancient tea groves for generations.

The tea plantation is mainly distributed in the Six Inner-River Tea Hills - Youle, Yibang, Gedeng, Manzhuang, Mangzhi and Mansa (Yiwu) - as well as the Six Outer-River Tea Hills - Nannuo Mountain, Mengsong, Bada, Jinghongmengsong and Fohai (Menghai) - all of which are located alongside the Lancang River. There are only a few traditional villages among the tea groves.

The tea plantations in Lincang are mostly located in the warm, moist and misty mountainous forests on both sides of the Lancang River. This area was the origin of Mengku large-leaf tea and is famous as “the hometown of Dianhong Tea”. Representative plantations include the plantation in Xiaowan Town of Fengqing County and Bingdao (literal meaning: “ice island”) Ancient Tea Plantation in Mengku Town of Shuangjiang County. The main distribution is concentrated in Yaoguan, Jiufang, Wanxing, Longling, etc.



Map 3: The location of Jingmai Mountain Ancient Tea Forest in Lancang Lahu Ethnic County. Source: Peking University.

### 1.5 The social and cultural system

In the tea plantation area, most settlers believe in Buddhism and Animism. Some areas believe in a special god as their “Tea Father”. For example, the Blang people in Jingmai Mountain of Pu’er City worship their ancestor Pa’aileng, who was the first to discover tea, as their Tea Father. On the contrary, people in Xishuangbanna worship Kongming as their Tea Father. This kind of belief has a profound impact on inhabitants’ spiritual culture, as well as on the protection and inheritance of the tea hills.



*Image 1. The Spiritual Platform for Tea Father Ritual Ceremony. Source: Li Jianfeng.*

### 1.6 The relevant communities and settlements

As of 2018, there are 48,295,000 inhabitants living in Yunnan and a large number of ethnic groups living inside the tea plantation area, including the Dai, Blang, Wa, Lahu, Hani, Yi, Yao,



*Image 2. The Tea Picking Blang Girl. Source: Chen Yaohua.*

Miao, and Lisu, etc. All the nationalities together have created a prosperous and characteristic tea plantation culture which contains production culture, life culture and spiritual culture.

### **1.7 The connection with trade, trading route and economic development**

The Ancient Tea Horse Road was a trading route where horse-riding groups exchanged tea for horses and medicinal materials throughout Chinese history. The route gradually rose in the Tang and Song dynasties and thrived in the Ming and Qing dynasties. There were mainly five traditional tea routes relevant to Pu'er tea that emanated from Pu'er County.

### **1.8 The relationship with surrounding landscapes and the region where it is located**

The tea plantation landscape is closely related to the following surrounding landscapes and elements:

- 1) its surrounding forest and river landscape. Both sides of the Lancang River are the origin and key production area of Pu'er tea. As large-leaf tea prefers mild temperatures and high humidity, the tea plantations are mostly located in the highly-forested, high altitude and misty hillside.
- 2) cultural elements, including traditional settlements, temples, customs and so on.
- 3) the history and development of Yunnan. The particular location of Yunnan, which is surrounded by Southeast Asia, South Asia and the Tibetan Plateau, resulted in the emergence and development of the Ancient Tea Horse Road. Throughout history, the authorities' frontier policy, which facilitated the development of the border area, also promoted economic, cultural and social development in Yunnan. Some special policies, such as tea tributes, promoted the popularity and the market demand of Pu'er tea.

## **2. The important tea plantation – the ancient tea forest in Jingmai Mountain**

### **2.1 The location and scale**

Jingmai Mountain ancient tea forest is located in Lancang County, Pu'er City, Yunnan Province. The area is praised as “the origin of the tea around the world” by the International Tea Committee and has become the largest plantation, manufacturing and trade centre of Pu'er tea in China. The area proposed on China's Tentative List as the “Ancient Tea Plantations of Jingmai Mountain in Pu'er” covers 17,704.50 ha, and includes three well-preserved ancient tea groves, each of an area of 1,231 ha, and nine traditional ethnic villages.



Realm, Chinese subtropical forest. The biocenosis belongs to subtropical and temperate rain forests or woodlands.



Image 3. The Cloud of Jingmai Mountain. Source: Dao Yongping.

### 2.3 History

In 864, Fan Chuo, who was an ambassador of the Tang dynasty, recorded the wide-spread cultivation of Pu'er tea in the 7<sup>th</sup> century AD along the Lancang River, where Jingmai Mountain is located, in his book *Manshu*. The historical document *Lancang County Record*, on the other hand, recorded that when the ancestors of the Blang people migrated to this place, they discovered the wild Pu'er tea tree and the history of tea plantation. The symbol of the tea leaf appeared on a broken stele from a temple, dating back to 1015. Therefore, the emergence of the Jingmai Mountain tea grove had already taken place over a thousand years ago, and, in the early phase, was mostly used for food and medication. Benefiting from the development of the Ancient Tea Horse Road, the tea trade market appeared in Jingmai Mountain in the 12<sup>th</sup> century. Later, in 1406, Jingmai Mountain ancient tea was selected as a tribute, which led to the expansion of the cultivation. In the Qing dynasty, the scale of the tea plantations reached its peak and tea culture thrived accordingly. After the establishment of the People's Republic of China, a small part of the ancient tea grove was transformed into a modern high-yield plantation while other major parts remain the same.

### 2.4 The main features of the landscape

After the ancestors of Jingmai Mountain chose the place as their residence, they opened up tea plantations inside the forest by planting tea bushes under the trees, and then placed their

settlements among the tea groves. Thus, the Jingmai Mountain tea groves were deeply hidden inside the forests and presented as a typical 'forest-tea grove-village' landscapes. The tea groves are distributed in the hillsides between altitudes of 1,250 to 1,550 metres and with a density of 1,000 per ha. The heights of the bushes are 2-5 metres, the base girths are 0.12-0.30 metres and crown diameters are 2-6 metres. The bigger tea bushes have a height of almost 12 metres, a base girth of 1.8 metres and a crown diameter of 12 metres. Most of the tea bushes are younger than 100 years old, while only 9.8% are between 100-150 years and 0.7% 150 years old or older. The oldest tea bush is over 300 years old. In the meantime, the local residents have properly arranged the lands of different altitudes, and their efforts have resulted in Jingmai Mountain presenting a vertical landscape starting with the divine mountain and divine forest at the top and descending to the forest, ancient tea grove and traditional village followed by the modern plantation, dry land, paddy field and the river at the bottom.



*Image 4. The Tea Forest of Jingmai Mountain. Source: Chen Yaohua.*

## **2.5 The cultivation tradition**

The tea bushes inside the ancient tea grove have experienced the succession process. The traditional tea planting method used is mainly seeding with a dibble. The ripe and full fruits are collected in October and seeded in the grove right after in November. From June to July of the following year, when the rain comes, the tea bushes are ready for transplantation. The pits for transplantation must be dug along the hillside with a depth of 20-30 centimetres and intervals of 2 metres, into each of which one tea bush can be transplanted. When the bushes reach a height of 50-60 centimetres, the terminal buds must be removed to encourage the growth of lateral branches. The local residents mixed the tea bushes with other trees

according to their competitive or dependent relationship. Tea bushes are cultivated without fertilizer and pesticide. Nutrition is provided by the natural fallen leaves and herb layer while protection from disease is provided by the biodiversity of the community. 125 families, 489 categories and 943 species of flora, 16 ornamental insects, 21 economic insects, 187 terrestrial vertebrate animals, 22 mammals and 134 birds have been recorded in the ancient tea grove, which together contribute to a natural, steady and efficient eco-system.



*Image 5. The Typical Landscape of Jingmai Mountain Tea Forest - Dapingzhang Ancient Tea Grove. Source: Chen Yaohua.*

## **2.6 The species of the tea trees and the cultivation techniques**

Pu'er tea in Yunnan belongs to the large-leaf tea tree species in Yunnan. As the raw tea and processed tea have different manufacturing processes and flavours, neither of them can be classified into the traditional six categories of tea. Therefore, the National Standards of China *GB/T 22111-2008 Geographic Iconic Product Pu'er Tea* names it "Pu'er Tea".

The Jingmai Mountain ancient tea grove adopts unique cultivation techniques such as interwood and underwood planting:

- 1) Interwood planting: the ancestors of Jingmai Mountain residents reclaimed pieces of land inside the forest and controlled the area of the tea plantations around the village. The fringe forests were maintained to protect the ancient tea plantation from strong winds and pests, as well as to form the boundaries of the village. The trees inside the forests were strictly protected.



*Image 6. The Tree – Shrub - Herb Stereostructure of Jingmai Mountain Tea Forest.  
Source: Tan Jianguo.*

- 2) Underwood planting: the ancestors of Jingmai Mountain residents simulated and utilized the eco-environment of the forest to cultivate the tea bushes by removing some of the natural bushes in the forests while keeping the trees for shading. The ancient grove presents different layers: an upper-middle-lower community stereo-structure with a tree layer – shrub layer (where tea bushes grow) – and a herb layer.

## **2.7 The picking and processing**

Tea leaf picking can be separated into three periods annually: spring, summer and autumn. The method used is hand picking and the elements picked are the top bud and the two leaves below. Pu'er tea can be divided into “raw tea” and “processed tea” with different manufacturing processes and different flavours. The fresh leaves are collected, withered, dehydrated, rolled and sun-dried to become Shaiqingmao tea. The tea is steamed at a high temperature and then placed in a mould to shape. After being dried and compressed into a disc, brick or pile, it becomes “raw tea”. However, if the Shaiqingmao tea is piled and fermented, it becomes “processed loose tea”. After steaming, compressing and shaping, the loose tea becomes “processed compressed tea”.



*Image 7. The Tea Spiritual Tree in the Ancient Tea Grove. Source: Tan Jianguo.*

## **2.8 The social structure and cultural system**

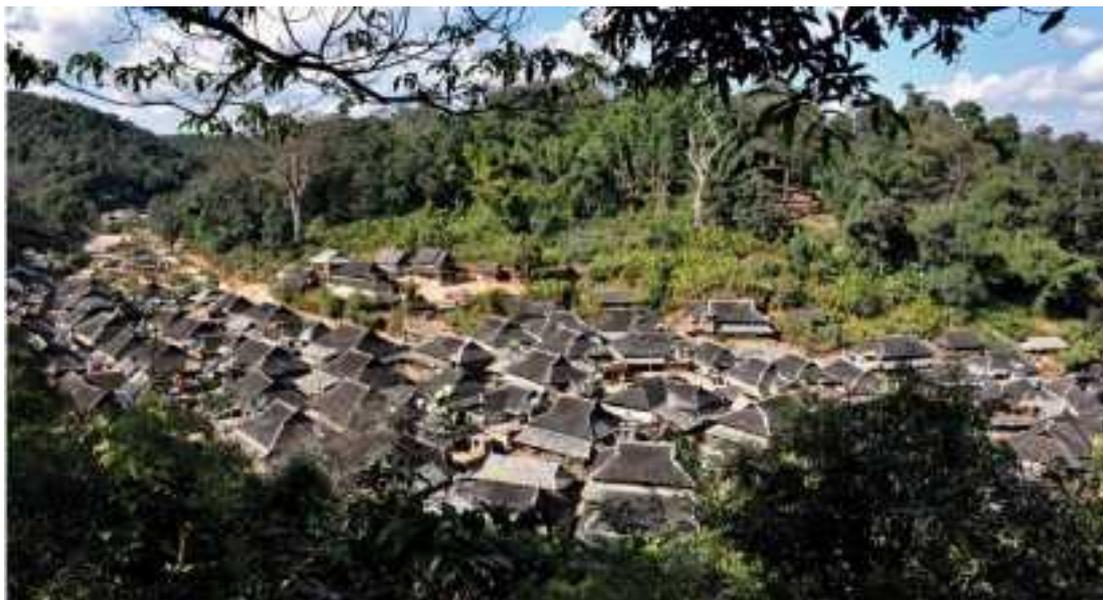
Within the area included on China's Tentative List, there are two ethnic groups: the Blang and the Dai. The ancestors of the Blang people migrated from modern Ruili in Yunnan and from Wa State in Myanmar. Before 1950, the tribes were ruled by leaders, religious leaders and appointed local governors. The villages are the subdivisions of the tribes, each of which has a leader, vice leader and religious leaders. After the establishment of the People's Republic of China, the villagers began to conduct self-governance, but leaders, religious leaders and noble elders still assist the village management. The two groups believe in Animism, Southern Theravada Buddhism and unique Tea Father worship. The residents have created a specific ethnic Jingmai Mountain tea culture, which is the foundation of the ecological and cultural relationship between the Jingmai Mountain residents and nature, and the basis of how they learn about, protect and utilize nature in a harmonious way.



*Image 8. Wengji Blang Ethnic Village and Its Surrounding Tea Grove. Source: Chen Yaohua.*

## **2.9 The relevant communities and settlements**

The area included on China's Tentative List has 5,208 residents. Traditional dwellings take up 1/3 of all the buildings in the village. Four Dai villages are distributed on the north side of the northern Baixiang Mountain, while five Blang villages are located on the west side of southern Mangjing Mountain. Each village has 200-700 villagers. The locations of the villages share one principle that the settlements must be close to the divine mountain and the tea plantation, but they also have their own distinct features such as the “elephant shape” of the Blang villages. All the villages centre on the ‘village heart’ and display a centripetal layout.



*Image 9. Nuogang Dai Ethnic Village and Its Surrounding Tea Groves. Source: Wang Wengui.*

## 2.10 The connection with trade and trading route

The Pu'er area was the historical distribution centre on the Ancient Tea Horse Road. Jingmai Mountain was located at the interval of the south and southwest routes of the Ancient Tea Horse Road, which was rather convenient for transport to Menghai and Xishuangbanna in the south and to Lancang. Connecting Lancang, Menglian and Ximen and their trade markets, the southwest routes of the Ancient Tea Horse Road had the closest relationship with Jingmai Mountain tea plantation and made it famous. As a trade route which exported Pu'er tea to Myanmar, a section of the ancient route is still preserved well.

## 3. The archive and relevant research

### 3.1 The archive

The local government has organized relevant investigations into forestry, ecology, flora, fauna, architecture, landscape, history and archaeology, etc. The governments of Pu'er City and Lancang County have organized photography competitions on the ancient tea grove on Jingmai Mountain. The team that worked on the Tentative List entry of the "Ancient Tea Plantations of Jingmai Mountain in Pu'er" have also provided a huge number of photos of Jingmai Mountain ancient tea grove.

Important files include: *Jingmai Mountain Ancient Tea Grove World Heritage Application*, *Jingmai Mountain Ancient Tea Grove Protection and Management Plan*, *The National Protected Cultural Heritage – the Protection Plan of Jingmai Mountain Ancient Tea Grove and Jingmai Mountain Village Plan*.

Protection Institute: The Bureau of Jingmai Mountain Ancient Tea Grove Management.  
Contact details: [pejmsgclbhgli@163.com](mailto:pejmsgclbhgli@163.com)

### 3.2 The relevant research

The ancient tea grove arose and prospered between the 12<sup>th</sup> and 20<sup>th</sup> century. The ancestors of the Dai and Blang people learnt how to process and store tea leaves. Finally, Pu'er tea was chosen as a tribute and was transported through the trade market and the Ancient Tea Horse Road to other places domestically and around the world.

After 2000, Pu'er tea expanded its market share because of its health care effects. Therefore, the protection of the ancient tea grove has since been valued more.

In the 1970s, modern tea plantations were cultivated in the forest or on dry land near the ancient tea grove, aiming to develop a high-yield variety of the tea tree. However, in recent years, the local government has started to gradually transfer the modern plantation from the

ancient ecological grove as they discovered the harmful effect that the modern plantation has had on the local forest environment and the plant diseases and insect pests it has brought to the ancient tea grove.

Many scholars have conducted research and protection projects concerning the ancient tea grove and have published a series of books and articles about Pu'er Jingmai Mountain ancient tea grove, the Blang culture and intangible culture heritage. For example, the Cultural Bureau of Lancang County has published a report on Jingmai Mangjing cultural resource, and Su Guowen has published more than 10 articles and many books, such as *Mangjing Blang People and Tea*.

#### **4. The current threat against and solution to the tea plantation landscape**

Threats faced by Jingmai Mountain mostly come from the expansion and evolution of the traditional villages. A minority of threats is caused by the few tourists who visit the tea grove and leave their impact on the tea trees. The ancient tea grove area is not only a hub for internal transportation, but has also been affected by increasing regional transportation. In the meantime, tourist numbers have grown continually and uncontrolled entry by tourists has become a potential threat to the ecology. In addition, the ancient tea grove has a steady ecosystem which has a high disease and pest resistance. However, the modern tea plantation nearby may have brought disease and pests to the ancient tree grove. Therefore, an eco-modification to the modern tea plantation is in progress. Natural disasters such as drought, low temperatures and fire also have an impact on the ancient tea grove and can cause the natural death of some precious trees inside the grove. Last but not least, the settlements inside Jingmai Mountain have not changed in number, but their scale has continuously expanded in recent years. The demand by residents for construction of new living houses and renovation of old houses has increased, and the modern construction materials and infrastructure have changed the landscape of the traditional village.

Traditional customs in Jingmai Mountain area have been well maintained. The young generation still pay respect to Buddha, the Tea Father and the village heart, and in 2006, the “tea spiritual tree” was restored. Moreover, the “Tea Father” ritual ceremony has been held again in the last couple of years.



*Image 10. The Spiritual Dance. Source: Tan Chun.*

After the establishment of the People's Republic of China, Jingmai Village and Mangjing Village successively instated self-governance under the socialist system in which religion and government were separated but religion and noble elders still played important roles in village management.

The ways of the cultivation and manufacture of the ancient tea grove have been passed down well. In addition, modern machinery equipment has largely increased the ability of tea manufacturing. In order to guarantee the quality and the brand of the Jingmai Mountain Pu'er tea, the villagers have founded over 20 "Tea Cooperatives" and have made protection rules about the ancient tea grove, strictly separating it from other tea trees. The ancient tea grove has been carefully maintained by the villagers and the traditional architecture is renovated every 30 years.

## **5. Protection and management**

The three tree groves inside Jingmai Mountain, and the nine Blang and Dai ethnic villages among the groves, have been well preserved, as have the related elements such as tea culture and historical culture. In addition, there are plenty of well-preserved cultural relics such as Manghong Octagonal Pagoda, the Site of the Tea Spiritual Platform in Ai'leng Mountain and the Tomb of the Seventh Princess, etc.

The protection plan of the Jingmai Mountain ancient tea grove abides by laws and regulations such as *The Cultural Relics Protection Law of People's Republic of China*, *The Forest Law of People's Republic of China*, *The Urban and Rural Planning Law of People's Republic of China*, etc. In 2013, the government of Lancang County issued *The Jingmai Mountain Ancient Tea Grove Protection and Management Regulations*. Other important files consist of *The National Protected Cultural Heritage – the Protection Plan of Jingmai Mountain Ancient Tea Grove and Jingmai Mountain Village Plan*, *Jingmai Mountain Village Plan*, *Jingmai Mountain Tourism Plan*, and *The Environment Protection Plan of Lancang County*, etc.

Jingmai Mountain ancient tea grove was originally protected by local village rules and practices, which included setting a forest defence circle around the grove in which the cutting down of trees was prohibited; banning the application of any fertilizer and pesticide in the tea grove; conducting weed control once a year according to environmental change; and setting up a “Spiritual Tea Tree” in every tea grove.

The Blang and Dai people made a series of local rules to protect the ancient tea grove until 1949. After the foundation of the People's Republic of China, local villagers improved and detailed the management regulations for the aspects of protecting tea culture and the management and use of the resource of ancient tea. The local government also issued a series of rules and regulations to guide the behaviour of the local residents.

Systemic and regulated supervision is being carried out for the protection, the monitoring of impacts and the management of the heritage area. The supervision is based on *The Guidance of Practicing World Heritage Convention*, *The Management of Supervision on World Heritages in China*, and *The Chinese Cultural Relics Protection Code*, etc. It aims to enforce the protection and management of the heritage by establishing a monitoring platform, regulating the monitoring system, assuring the operational mechanism and standardizing the monitor index.

## 6. Conclusion

### 6.1 The introduction of the tea plantation landscape

The Jingmai ancient tea forest is located in the Lancang Lahu Ethnic County in Pu'er City, Yunnan Province, in the southwest corner of China. In the 7<sup>th</sup> century, the ancestors of the Blang people migrated to the place and found the wild tea tree. They started to cultivate tea trees on a large scale in the forest and established their settlements among the tea groves. After generations, the place developed into a unique tea-forest symbiosis eco-system, with a well-preserved traditional village landscape and a rich tea-making and tea-drinking ethnic culture. It has become a model of an agricultural cultural landscape in the development of

human civilization where humans and the environment have developed together in harmony and sustainably.

## 6.2 Current research

Limited by the lack of local historical materials, the date of the Dai people's arrival in Jingmai Mountain has not been ascertained. However, ethnic tales and cultural relics such as the Tomb of the Seventh Princess can be another kind of evidence to show that this took place at approximately the same time as the migration of the Blang people to the place.

## 6.3 The differences from other tea plantation landscapes

Compared with other famous tea plantations around the world, Jingmai Mountain ancient tea plantation is an ancient, wise, ecological, human, dynamic landscape, which is particularly featured in its long cultivation history, special tea planting ecology and harmonious relationship between humans and the local environment.

## 6.4 The prominent landscape features

Interwood and underwood planting are two profound features of the tea grove landscape. The plantations are settled inside the forest. By controlling certain proportions of the forests and tea groves and selectively keeping trees and bushes inside the grove, the residents are able to balance sunshine and nutrition between trees, bushes and grasses to take advantage of the forests' biodiversity and effectively defend the tea trees from disease and pests. Therefore, the quality of the tea leaves can be improved and the dynamic and high-quality ancient tea grove could be sustained forever.

## 6.5 Weaknesses and current situation

The expansion of the settlements may have impacted the landscape and ecology of the ancient tea grove. The growing villages do not change the landscape of the ancient tea plantation but decrease the authenticity of the village layout and traditional architecture which are important elements of the heritage. So far, all the plans that have been applied to the villages have been developed in order to guide and direct the construction and renovation of the village landscape.

## 6.6 Protection and management

In 2009, Lancang Lahu Ethnic County People's Congress debated and approved *Lancang Lahu Ethnic County People's Congress Standing Committee's Decision about Protecting Jingmai Mangjing Ancient Villages*. In 2017, *The National Protected Cultural Heritage – the*

*Protection Plan of Jingmai Mountain Ancient Tea Grove* was approved and implemented. As of 2019, 15 villages located in the area included on China's Tentative List and in its surrounding area have finished the planning. The scale, layout, landscape and management measures of the village have been clearly stipulated.

Jingmai Mountain ancient tea grove has a good potential for World Heritage and a relatively intact, authentic and elastic ecology and culture. In 2012, the ancient Pu'er tea grove in Yunnan, China, and its tea culture system were praised as global agricultural cultural heritage. In 2013, Jingmai Mountain ancient tea grove was listed as National Protected Cultural Heritage. Nuogan, Wengji and Mangjing Villages were recorded in the second batch of the Chinese Traditional Village List. In 2017, Jingmai Mountain was approved to be part of "Yunnan Lancang National Forest Park". It is clear that Jingmai Mountain ancient tea grove has been well protected by national law and regulations.

## References

- Chen Hongwei, Zhang Jun (ed). *The Culture of Pu'er Tea*. Kunming: Yunnan Education Publishing House, 2006.
- Chen Zonghai, *The Chronicle of Pu'er County*, 1901.
- Fan Chuo. Zhao Lvfu (ed), *The Annotation of the Chronicles of Yunnan*. Beijing: China Social Sciences Press, 1985.
- Gao Dasheng, *The World of Tea in China*. Hoikusha Publishers, 1994.
- Harler, C.R., *The Cultivation and Marketing of Tea*. London: Oxford University Press, 1964.
- Lancang Lahu Ethnic County Government, *The Place Name Record of Lancang Lahu Ethnic County in Yunnan Province*. (Internal Archive), 1985.
- Mair, V and Hoh, E., *The True History of Tea*. Beijing: SDX Joint Publishing Company, 2018.
- [Tang Dynasty] Lu, Yu (author), *The Classic of Tea*. [茶经] Chinese. Wang Jianrong (compiled). Nanjing: Jiangsu Phoenix Science and Technology Publishing House, 2019.
- Ruan Fu, *Biography of Pu'er tea*. 1825.
- Su Guowen. *Mangjing Blang Ethnic Group and Tea*. Beijing: The Ethnic Publishing House, 2009.
- Walsh, J. M., *Tea: its History and Mystery*. Philadelphia: Henry T.Coates & Co.,1892.

# The Tea Plantation of Mengding Mountain in Ya'an of Sichuan Province

Zou Yiqing  
*The Third Institute of CHCC*

## 1. The overview of the tea plantation landscape

### 1.1 The geographic environment and the scale

The tea plantation of Mengding Mountain is located on the north-western side of the Meng Mountain in the Mingshan District of Ya'an City in Sichuan Province, somewhere between 30°01'-30°06'N and 103°00'-103°06'E. The Meng Mountain is situated in a basin-peripheral area where the western edge of the Sichuan Basin and the transitional zone from the Chengdu Plain to the Tibetan Plateau meet, which is affected by the continental monsoon climate and the warm and humid airflow from the south-east, resulting in an annual average rainfall over 1,800 mm and a relative humidity of 82%. That is exactly how the proverb "rain pours from the sky and falls upon the center of the Meng Mountain in western Sichuan" came into being. The region possesses an annual average temperature of 15.4°C, with the highest temperatures reaching 35.2°C. The annual average frost-free period of this region lasts for 298 days whilst the annual average sunshine adds up to 1,018 hours. Sandstones are widely distributed over the low hills in the territory, together with sandy loam or gritty clay that contain many organic matters, such as yellow soil and red soil. The topsoil is deep and thick with a soft constitution and abundant nutrients, making the draining process much easier.

The Meng Mountain is high in the north and low in the south, with an altitude of 620-1,456 m. It stretches from the north-east to the south-west with a length of approximately 10 km, a width of about 4 km and a total occupation area of around 50.8 km<sup>2</sup>. The mountain has five

peaks of which Shangqing Peak is the highest, which is why it is named the top of Mengding Mountain (also known as Mengding).

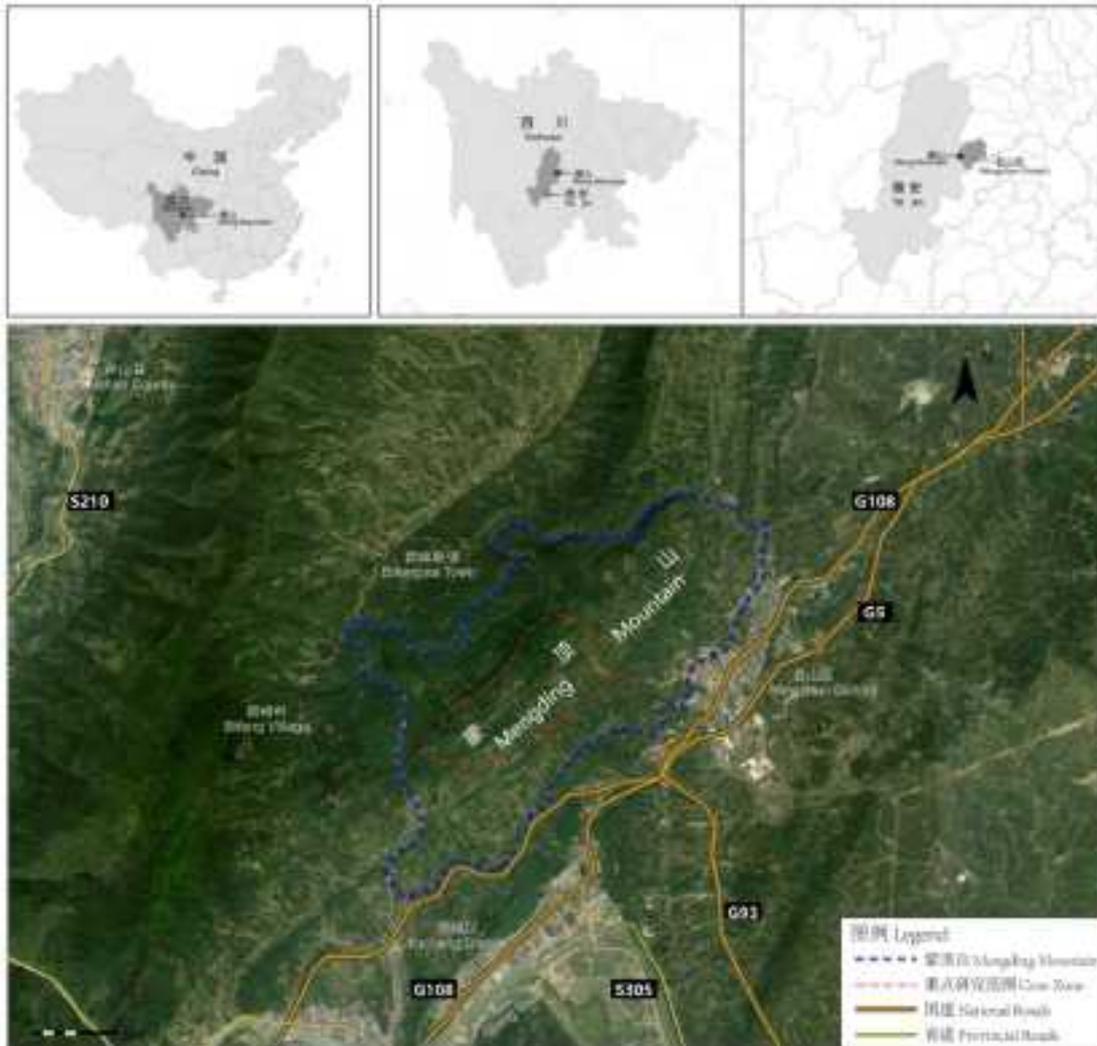


Image 1. The Region Map of the Tea Plantation of Mengding Mountain. Source: Zhang Xuechun.

The core district of the tea plantation of Mengding Mountain occupies 6.72 km<sup>2</sup> (100,000 ha), of which the historical tea plantations, located in the areas situated at an altitude of 800-1,400 m, occupy 2,000 hectares (30,000 mu). There are five Buddhism temple sites on Mengding Mountain, namely Yongxing Temple, Qianfo Temple, Zhiju Temple, Tiangai Temple and Jingju Nunnery, occupying approximately 31,100 km<sup>2</sup> altogether. There are 12 cultural relics and historical sites of different categories, including five rock-sculpturing statues sites, two stone archways sites, two ancient houses sites, an ancient spring site, a Royal Tea Garden site and a heavenly ladder with an ancient path.

## 1.2 The historical development and the planting traditions of the tea plantation landscape

The Bashu area (also known as the Sichuan-Chongqi area) is one of the places in China where the manual planting of tea trees first started. The opening of the tea plantation of Mengding Mountain can be dated back to as early as the Han dynasty.<sup>1</sup>

As early as the Western Han period (202 BC-8 AD), manual tea planting had already started at the five peaks of Mengding. Tang Lu Yu revealed the following information in his *Classic of Tea* for the first time: “Wrong methods lead to sparse trees. Melon planting techniques can be used for a harvest after three years”.<sup>2</sup> Li Laizhang from the Qing Dynasty mentioned in his *Social Customs of Liyang* the following message: “One technique of tea planting is to pick the tea stems with the size of a chicken egg, cut them to a length of three feet, sharpen the tip or attach the iron nails before hammering them into the ground ...” This ancient way of tea planting has been passed down to the present day at Mengding Mountain.



Image 2. *The Chronicles of Mingshan – the Map of Mengding Mountain Tea.*

Source: Publicity Department of Ya'an Municipal Committee of Sichuan Province.

<sup>1</sup> Wang, Xiangzhi [Song dynasty], the *Notes of the Land*: “In Western Han, some monk came from the surface of the mountain, and planted tea over the Meng Mountain. Suddenly one day, he vanished into the hidden pool and became a rock statue later on. Therefore, the tea on the top of the Meng Mountain was the accomplishment of a master, whose rock statue is still addressed as the Master of Sweet Dews even to the present day.”

<sup>2</sup> Meaning that if the transplantation of tea seedling is not properly conducted, the tea trees do not flourish. If the technique of melon planting is adopted for the planting of tea seedlings, then the leaves can be harvested after three years.

Starting from the Han dynasty all the way to the present day, the tea plantations on Mengding Mountain have mostly been taken care of by monks from the temples, whilst the historical tea plantations and temples are mostly distributed on the hills on the southern side where the altitude is between 1,000 m and 1,400 m. On the mountain, there are around five to six sites where temples of different sizes remain to the present day, together with some other historical relics such as cliff-carvings, stone inscriptions and stone archways, etc. At the very beginning, tea plantations were developed near temples, whilst the Royal Tea Garden of Ganlu Temple is the tea plantation with the longest history, one that has existed since ancient times. In many tea plantations of different temples, many old tea trees that are at least 100 years old are kept. The planting of tea at Mengding Mountain is semi-arboreal with shrubby leaflets, and traditional bunch planting is the main method used, whilst the density of planting is properly arranged according to the general routine of following the contour line. Numerous tall and big arboreous plants are maintained in the tea plantations, showcasing the same environment of tea planting as that which Lu Yu mentioned in his *Classic of Tea*, namely: “Wild growing tea exceeds the garden planting sort”. A large area of woodland is kept in the periphery of the tea plantations, creating a landscape pattern of zonal distributions of tea plantations and forests in terraces. The Chinese traditional technique of interplanting tea trees and woods is adopted at the historical tea plantations of Mengding Mountain. Legumes, deciduous trees, evergreen arboreous plants and small trees are the main sorts of trees used for the interplanting, whilst the tea trees provide shade in the summer and maintain warmth in winter.

As the modern tea industry is becoming more and more prevalent, a new terraced tea plantation has been opened in the woodland between the historical tea plantations at Mengding Mountain. In addition, other new terraced tea plantations have been opened in neighbouring areas at a lower altitude and a shorter distance from the foot of the mountain where some villages have been established. In those places, bush tea with lower and shorter stems and larger density of planting grows. In some of the tea plantations, the technique of “three cultivations and four fertilizations” has been implemented and grass is planted at the wall of the terraces to protect the soil, prevent soil erosion and provide a habitat for living creatures. After the tea leaves are harvested, the grass is mowed, covered and buried under the rows in the tea plantations. Interplanting that is conducted between the rows of unsealed tea plantations and young tea plantations makes it possible for fresh compost to be produced within one year’s time, preventing the evaporation of surface soil nutrients and soil erosion and allowing the planted compost to be used as feed and fertilizer at the same time.



*Image 3. The Newly-Opened Terraced Tea Plantation. Source: Publicity Department of Ya'an Municipal Committee of Sichuan Province.*

Judging from the distribution of the temples, historical relics, historical tea plantations and new tea plantations, the general routine of the formation and development of the tea plantation landscape of Mengding Mountain can be seen clearly.

### **1.3 The categories of tea trees and the techniques of planting**

The technique adopted for the direct seeding at the Tea Plantation of Mengding Mountain is sexual reproduction for expansion and conservation. Mengding Mountain is one of “the best treasuries of tea trees planting” in Sichuan Province and even in the entire country, where there are 220 breeds of tea trees that are manually selected, cultivated and planted. Among them, there are Mingshan Pekoe 131, Mingshan Early 311, Mingshan Super Early-Bud 213, Meng Mountain No.9, Meng Mountain No.11, Meng Mountain No.16, Meng Mountain No.23, etc., which are the key breeds of tea trees at the national level and provincial level for proper tea planting at Meng Mountain. Most of the seeds in other tea plantations in Sichuan are introduced from Mengding Mountain, which is considered as the origin place of “Sichuan Tea”. After the 1990s, the technique of single node cutting for rapid cultivation of excellent tea seedlings was gradually developed and prevailed at Maohe Village in Mingshan District, Ya’an, and is the main technique used in modern terraced tea plantations.

The traditional Chinese technique of intercropping tea trees with forest trees is mainly used in the tea plantation of Mengding Mountain. Forest trees are planted in the tea plantations, or in its surroundings, allowing a variety of species to be maintained and the natural ecological environment of the tea plantations to be improved. The tall evergreen trees are planted outside the tea plantations every 10 metres, whilst the middle-sized evergreen trees grow every 5 metres. Inside the tea plantations, trees are planted based on a triangle or quincunx shape within a diameter of 15-20 metres whilst the shading rate stays lower than 30%, causing no complications to the growth of tea trees. Trees with deep roots, broad crowns and sparse leaves, and which are deciduous in winter and possess few pests, often turn out to be the best choices. Examples include China firs, masson pines, osmanthus trees and Chinese pagoda trees, etc.

The technique of intercropping tea trees with agricultural products is usually conducted in tea plantations aged two years old. The agricultural products include beans, mung beans, corn and konjac, etc. The technique of intercropping helps to increase topsoil coverage, effectively maintain the water and soil, and improve and ripen the soil so that the land utilization and output efficiency of young tea plantations can be enhanced.

#### 1.4 Harvesting and processing of tea leaves<sup>3</sup>

The main breeds planted at the tea plantation of Mengding Mountain are for the production of green tea. Therefore, the best tea harvesting time is during the season of spring, especially around Tomb Sweeping day, though harvesting in summer and autumn is possible as well. “Tender picking”, namely single bud or one bud with one leaf, is a technique used upon advanced and famous tea breeds, whilst “proper picking”, namely one bud with two or three leaves, is a technique used upon general green tea.

Historical and famous tea kinds at Mengding Mountain include Mengding Stone-Flower Tea (from the Tang dynasty), Mengding Sweet Dew Tea (from the Song dynasty), “Green Leaves with Long Spring” Tea and “Ever-Spring Silver Leaves” Tea, amongst others. Stone-Flower Tea is considered as the pioneer of tea produced at Mengding Mountain, and requires extremely strict producing techniques, including removing tenderness with steam, mashing

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<sup>3</sup> Ya’an City, where Mengding Mountain is located, is the main producing area of border-sale tea. The harvesting of border-sale tea requires “a ripe harvesting”, meaning four and five leaves on one bud and three and four leaves on flush. Chinese dark tea originated from border-sales back in the Ming dynasty, and when green tea is compressed because of long-distance transportation, it naturally transforms into a new category of tea. The main border-sale tea sold to Tibetan areas from Ya’an is dark tea, which is one of the main categories of Chinese tea culture. Since Mengding Mountain is a historically famous tea producing area with a relatively low production rate, the tea leaves produced from the Tea Plantation of Mengding Mountain are not prepared for border-sale. Therefore, no reports of border-tea production will be presented in this text.

the toasted leaves with stone mortars and shaping the tea into a pancake shape with compression. In the period of the Ming and Qing dynasties, the steaming step was replaced by frying, the mashing step was replaced by kneading, and the shaping step was replaced by scattering. Through the techniques of manual frying and kneading, carried out three times, plus rubbing, roasting and drying, the appearance as well as the inner quality of tea from Mengding Mountain is tremendously changed, so that the tea is equipped with the features of “being sweet and fresh, yellow yet green-colored, giving out lingering scent from the cup that does not disperse after a long while”. In 2013, the craftsmanship of traditional tea making at Mengding Mountain was listed as an intangible cultural heritage of China, the harvesting and manufacturing of the traditional tea possessing strict and clear requirements.



Image 4. The General Map of the Tea Plantation of Mengding Mountain.  
Source: Zhang Xuechun.

### Social structure and cultural system

The tea plantation of Mengding Mountain belongs to the category of temple tea plantations, so that the opening of the tea plantations, the breeding, cultivating and planting of the tea trees, and the harvesting and producing of tea leaves are all much related to monks and religion-related people. Wu Lizhen, who was said to be the pioneer of tea at Mengding Mountain, could have possibly been a Taoist. From the Tang dynasty onwards, Buddhism started to become the prevailing and dominating religion at Mengding Mountain. Therefore, at Yongxing Temple in the Tang dynasty, Buddhist monks and Taoist masters were devoted to the planting of tea trees and the practicing of tea craftsmanship, creating a “Zen Tea Culture

of the Meng Mountain”. Taoism gradually turned to Qingcheng Mountain which is located not so far away from its original place. There used to be 36 temples at Mengding Mountain; currently, the ancient temples that still exist include Yongxing Temple, Qianfo Temple, Zhiju Temple, Tiangai Temple and Jingju Nunnery.



*Image 5. The Ancient Tea Tree at Zhiju Temple.  
Source: Zou Yiqing.*

From the Tang dynasty to the end of the Qing dynasty, all Mengding Mountain Tea was presented to the imperial court. Different requirements were set in the harvesting gardens and over time in accordance with the different usages of the tea. In 1186, namely the 13<sup>th</sup> year of the Chunxi Emperor in the Southern Song dynasty, Wu Lizhen, the pioneer of tea cultivation at Mengding Mountain, was made “The Master of Sweet Dew”. Subsequently, the tea trees, entitled the “Mengding Seven”, were enclosed with stone fences at Ganlu Temple and given the name of the Royal Tea Garden. The Royal Tea Garden was in the charge of the monks at Ganlu Temple, who were engaged in tea picking, tea kneading and tea manufacturing, etc.



*Image 6. The Royal Tea Garden of Mengding Mountain. Source: Chen Yongheng.*



*Image 7. The Ancient Tea Tree of Ganlu Temple. Source: Chen Yongheng.*

Later, Qianmo Temple took over the responsibility of tea planting; Jingju Temple was assigned the mission of tea harvesting; Zhiju Temple took care of tea manufacturing; and Tiangai Temple was in charge of tea evaluating. The harvesting and the manufacturing of tea leaves that were supposed to be served as sacrifices or presented to the imperial family were taken care of by the monks at the temples as a way of showing their respect. The close

combination of the Zen tea culture of Mengding Mountain and the system of tribute tea has become a significant feature of the tea culture in that region.



*Image 8. The Grand Hall of Ganlu Temple at Mengding Mountain. Source: Zou Yiqing.*

The Mingshan District in Ya'an, where Mengding Mountain is located, used to be the main tea manufacturing region for the tea-horse trade in both the Song and Ming dynasties. The national policies of tea-horse trade and tea-border administration had also directly propelled the social development of the introduction of "Mingshan Tea" and the expansion of the tea manufacturing district in Sichuan. The route from Sichuan to Tibet, with Ya'an as the starting point, was the main path of the Ancient Tea-Horse Road. A series of official administrative institutes were established in Ya'an, including official warehouses and the Tea-Horse Bureau, whilst porters were the main transporters of tea on the section between Ya'an and Kang District. Therefore, the tea culture of Ya'an in Sichuan also includes the culture of the Ancient Tea-Horse Road, which represents the cultural communication and integration between the central plain and the borderland as well as between the Han Chinese and the Tibetans.

As a famous tea producing region with a long history in Sichuan Province, Mengding Mountain has also generated many folk tea cultures with local Sichuanese characteristics. For example, the tea craftsmanship performance of "The 18 Styles of Dragons" and the tea drinking method entitled "The 12 Tastes of Heavenly Wind" have been hailed as the "two super-talents of tea craftsmanship" of Meng Mountain. As many as 2,000 poems, lyrics and

songs have been created to eulogize Mengding Mountain Tea, topping the list of such tea-praising works in China. The tea couplet of “Water from Yangtze River, and the Tea above the Meng Mountain of flavor” was the earliest couplet that was circulated for the longest time in Chinese tea history, showing that a tea culture of Mengding Mountain with strong literary and artistic features had been formed.

## 1.6 Related communities and settlements

In the Sui-Tang period, Mengding Mountain Tea spread to the western region of Sichuan with Mingshan as its centre. Among them, the tea regions of Mingshan were mostly distributed on Mengding Mountain and Zonggang Mountain, with villages and towns located alongside the foot of those mountains, whilst tea plantations mainly occupied the slopes. Thanks to the system of tea business as well as the tea-horse trade, the Mingshan tea industry continued to be developed in the Song dynasty. In the Yuan dynasty, the ethnic policies implemented in the country had a tremendous influence on the production of Mingshan tea leaves, whilst in the Ming and Qing dynasties, the policy of “border administration with tea” continuously propelled the development of the Mingshan tea industry. The political situation in the early period of the Republic of China was so turbulent that the production of tea leaves continuously decreased until the Sichuan government was unified, at which point the circumstances of tea production finally recovered a little. In 1935, 10 out of 13 towns in Mingshan District were devoted to tea production, while 4,889 households were devoted to tea planting, composing 15.2% of the total number of peasant households. In 1949, the area of tea plantation reached 451.2 hectares, and the reforming and opening policy that was introduced in the 1980s made it possible for the tea plantations in Mingshan District to be gradually developed to the present scale of over 22,333 hectares.

In 2008, Meng Mountain Tea became a product of Geographical Indication. The protection area of the original territory ranges from 29°58'N-30°16'N to 103°02'E-103°23'E, covering a total occupation of 614.27 km<sup>2</sup>, including the entire region of the Mingshan District in Ya'an, Houyan Village of Bifeng Cliff Town in Yucheng District, Longxi Village in Longxi County, and Mengquan Village. The products of the protected territory are generally called “Meng Mountain Tea” (Mengshan Tea), and include the Yellow-Bud Tea of Mengding Mountain, Stone-Flower Tea, Sweet-Dew Tea, the Maofeng of Meng Mountain, the Spring-Dew of Meng Mountain, the Roasted Green Tea of Meng Mountain, and Steamed-Tender Green Tea, as well as a series of flower teas produced out of Mengshan Tea, etc.

The regions mentioned above refer to 31 villages, including Meng Mountain Village, Mingya Village, Jinhua Village of Mengding Mountain in Mingshan District, and Guankou Village of Mengyang Town and Xugou Village in Chengdong County, together with 18 villages, including

Houyan Village, Hongpai Village, Mingyang Village of Bifeng Cliff County in Yucheng District, as well as Mengquan Village and Yongxing Village of Beijiao County. These villages and towns are all agricultural settlements of the Han people, who are devoted to the production and planting of tea.

### 1.7 The connection with trade and trade routes

Mengding Mountain Tea was a tribute tea from the Tang dynasty all the way to the Qing dynasty. Ya'an, where Meng Mountain is located, is an important tea producing area in Sichuan, being situated at an intersectional area of Han Chinese and Tibetans. The central government had put forward a series of policies, including “tea-horse trade”, “system of tea business” and “system of sales”, for generations, constantly promoting the policy of “border administration with tea”. In 1074, namely the 7<sup>th</sup> year of Emperor Xining, Li Qi was appointed by the Emperor

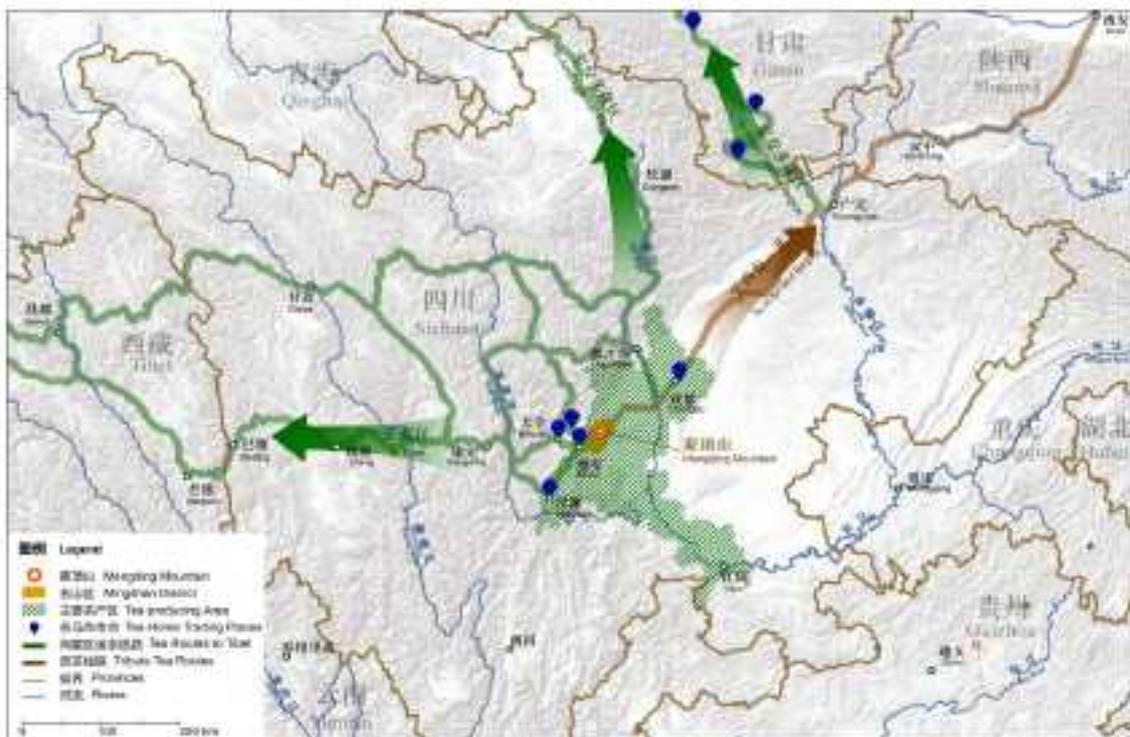


Image 9. Map of Tea Transportation Trade Route in Ya'an of Sichuan.

to enter Sichuan so as to arrange “tea-horse political business”, which resulted in the establishment of the Tea-Horse Bureau in the Mingshan District of Ya'an, and eight horse purchase sites (Mingshan, Yazhou, Baizhang, Yingjing, Lushan, Lizhou, Lingguan and Diaomen), as well as the horse selection sites of Qingfeng and Xihe, were built one after the other. In the Ming dynasty, the Tea-Horse Bureau existed in several states, including Qin, Tao, He, Ya, Zidiaomeng (currently known as Tianquan), Li (currently known as Hanyuan) and Ya (currently known as Yucheng) to Dokham and Ü-Tsang, with a total route of tea

transportation of around 5 km. In the Qing dynasty, that national policy was continued. In Tianquan County in Ya'an, official warehouses of Sichuan Tea were established to provide supplies to the Tibetan area. Even in the present day, Ya'an is still an important manufacturing base for China's "border-sale tea".

The tea trade transportation routes starting from the tea area of Ya'an mainly include the following. For tribute tea and tea being traded in the north-west and north, the tea is transported from Ya'an to Chengdu all the way northwards to Shaanxi and Beijing. The tea transported to the Tibetan area either goes from Ya'an to Wen County in Gansu before heading north-west to Qinghai, or to Songpan before reaching Qinghai. These two routes were also the main directions taken by the tea-horse trade in the Song and Ming dynasties. The main line that connects Sichuan and Tibet starts from Ya'an and arrives at Kangding before reaching Litang, Batang and eventually Chamdo and Lhasa. The route that starts from Ya'an and heads northwards to Garzê before reaching Chamdo and Lhasa is usually the transportation line for private trade.

## 2. Archival records and researches

### 2.1 Archival records

The local governments have conducted long-term and professional administrative work on the research and protection of the Tea Plantation of Mengding Mountain, and have created a related archival database. The database includes historical documents, administrative files, research outcomes, cultural relic sites, agricultural cultural heritage, tourism administration, pictures and maps, etc. The archaeological, architectural and tea knowledge-related investigations of the cultural relics and ancient tea trees of the Tea Plantation of Mengding Mountain have all been properly conducted, and the files are completely maintained. The Cultural and Tourism Bureau, the Agricultural and Rural Affairs Bureau and related institutions are in charge of the collection and the arrangement of the Tea Plantation of Mengding Mountain's database, and a concrete list of contents has also been created. Apart from some published books and dissertations, the majority of the documents cannot be acquired directly from the internet.

### 2.2 Related research

#### THE HISTORICAL DEVELOPMENT STAGE OF TEA PLANTATIONS

The history of tea planting at Mengding Mountain can be dated back to as early as the Western Han dynasty, but little knowledge is available for a clear understanding of the

planting circumstances of the tea plantations back then. Ever since Mengding Mountain Tea became a tribute tea in the middle of the Tang dynasty, tea planting in that area has been well-developed. Therefore, it is considered that the flourishing period of the tea plantation started in the 9<sup>th</sup> century and continues to the present date.



*Image 10. The Ganlu Spring at Mengding Mountain. Source: Chen Yongheng.*

## THE EVOLUTIONAL PROCESS OF THE LANDSCAPE

As a religious tea plantation, the Tea Plantation of Mengding Mountain has kept an authentic and complete set of tea plantations, temples and related historical relics in the central heritage area. Under the influence of the politics, economy and society of modern times, the tea farmers and tea companies that have moved in have opened up terraced tea plantations with modern features, and have developed some local settlements. 22 villages have been formed in Mengshan Mountain County and Mengyang County and in the region of the Tea Plantation of Mengding Mountain. Tourism services and business facilities have also been added to the contemporary Mengding Mountain, which, in 2005, was assessed as an AAAA-level tourism site. Currently, the Tea Plantation of Mengding Mountain is also being developed so as to become a cultural and tourism zone.

### 2.3 Main achievements of research

Most of the research outcomes regarding Mengding Mountain address aspects including tea culture, tea branding, the tea industry, tea history and cultural tourism. So far, systemic

cultural landscape research regarding the Tea Plantation of Mengding Mountain has not yet been conducted, whilst analyses and research on the Tea Plantation of Mengding Mountain from the angle of cultural landscape heritage have not yet been well developed.

### **3. The threat that the tea plantation landscape faces**

As a famous tourism zone, Mengding Mountain has faced tremendous stress from tourism development. Due to the insufficient research carried out on the cultural landscape of the Tea Plantation of Mengding Mountain, construction of facilities for the tourism zone has somehow influenced the authenticity and the integrity of the heritage, especially as the ecological environment on which the Tea Plantation depends has undergone tremendous change. As the surrounding woods that have been maintained throughout history are filled up with construction, roads and facilities, many issues emerge, such as the pollution, noise and vibrations from increased traffic, litter produced by the tourists, and issues resulting from sewage, close-distance sightseeing activities in tea plantations, and the tea farmers' unauthorized planting of tea, changing the traditional land utilization from having "forests/tea plantations/temples" as key elements, as well as putting nature under intensive pressure due to manual transformation and causing the landscape features of the Tea Plantation of Mengding Mountain to undergo changes.



*Image 11. The Modern Sightseeing Tea Plantation in Mingshan District.*

Although the Tea Plantation of Mengding Mountain is still in the charge of temples and tea farmers, the population of monks dealing with tea planting and manufacturing has reduced whilst the number of tea peasants has increased and occupies a large proportion at the same time as modern terraced tea plantations that are operated by modern tea companies are being opened in the area. Furthermore, the Tea Plantation of Mengding Mountain, as a tourism zone, has to accommodate increasing numbers of tourism service staff, facilities and tourists, which have all changed the historical position that Mengding Mountain has always maintained as a religious sacred site and a production site of tribute tea. More importantly, all of these phenomena are caused by societal changes that can hardly be reversible.

In the present day, the traditions of the Tea Plantation of Mengding Mountain are confronted with many challenges. Since the system of tribute tea was abolished, the system of tea planting and manufacturing, which used to be the main mission of the temples, is ending as well. In addition, as the tribute tea system no longer exists, the reputation of Mengding Mountain Tea has also been affected. In the period between the establishment of the Republic of China and the Cultural Revolution, the instability experienced by the groups of monks and the tea farmers almost caused the decline and even the collapse of traditional tea manufacturing craftsmanship. Since the tea manufactured by the modern machinery craftsmanship adopted nowadays is still no match for that manufactured by traditional tea making craftsmanship, the experience of tea drinking on the Mengding Mountain fails to be comparable with those glorious moments of the old days. In addition, Mengding Mountain Tea has a low market share in the highly competitive Chinese tea market, and some products presented to the public are even fabricated or manufactured with low-quality ingredients. This has had a severe influence upon the brand of Mengding Mountain Tea and those tendencies could possibly lead to the decline of the tea culture of Mengding Mountain as well.

#### **4. The protection of landscape and the current situation of management**

A protection system of multiple aspects has been established for the Tea Plantation of Mengding Mountain, encompassing culture, agriculture, tourism, urban development and business. In 2003, the Tea Association of Mingshan County registered Mengding Mountain Tea as a trademark, and, in 2008, the standard titled *Production of Geographic Indication – Mengshan Tea* was issued by the country. In 2012, “Mengding Mountain Tea” acquired the title of China Famous Trade Mark, becoming the first trademark relating to tea and Geographic Indication in Sichuan Province. The important cultural relics at the Tea Plantation of Mengding Mountain have also respectively acquired the status of being either nationally,

provincially or municipally protected cultural heritage. In 2016, the *Protection Measures of the Ancient Tea Trees at Mengding Mountain* was published and the Mengding Mountain Ancient Tea Tree Protection Association was established, which is in charge of different administrative working procedures regarding fishing expeditions, brand registrations of the



*Image 12. The Stone Archways and Screens of Mengding Mountain. Source: Chen Yongheng.*

resources of the ancient tea trees of Mengding Mountain tea district, and the arrangement of protection signs and open utilization, etc. In 2017, the Tea Plantation of Mengding Mountain was listed as an important agricultural heritage in China, and *The Systemic Protection and Development Planning of Tea Culture of Mengding Mountain in Sichuan* was compiled and presented at the same time.

The protection of the traditions of the Tea Plantation of Mengding Mountain includes several aspects, such as the protection and maintenance of cultural relic sites of different levels; the restoration of traditional tea manufacturing craftsmanship; the selection, planting and cultivation of varieties of tea trees; and the sorting and discovering of tea cultures. Mengding Mountain Tea, as a famous tea brand, and the research carried out on the tea cultures of Mengding Mountain have directly propelled the development of the local tea industry. Therefore, the Tea Plantation of Mengding Mountain is fully equipped with the fundamental conditions for sustainable development.

So far, the Tea Plantation of Mengding Mountain has not yet been regarded as “heritage of tea culture landscape” for comprehensive protection and utilization. Therefore, different

districts are formed in a relatively segmental way. For example, the cultural relic sites, the tourism zone, and the tea plantations and villages possess different ways of utilization and development regulations. As a result, the natural characteristics of the Tea Plantation of Mengding Mountain are not thoroughly maintained and the historical connection kept through tangible relics has been changed by the newly-opened roads and tourism services and facilities. In addition, the direct correspondent relationship between the sorting and the discovering of tea culture, as well as the protection of tangible manifestations of the tea culture landscape, is still quite unclear.

## 5. Conclusion

### 5.1 Summary

The Tea Plantation of Mengding Mountain is the most famous relic site of tea culture that has the longest proven history of tea planting in China, an activity that has lasted even to the present day. The south-western region of China is the geographic origin of tea trees, whilst the area's natural conditions, such as the special climate and geographical features of Ya'an, are very suitable for the growing and the planting of tea trees. Meanwhile, the flourishing Sichuan Basin, as well as the civilization of the Sichuan-Chongqing region, has also provided excellent economic and cultural foundations for the development of tea culture. After the 9<sup>th</sup> century, the national policy and system that made Mengding Mountain Tea a tribute tea, and Ya'an a border-sale tea manufacturing district, strengthened and enhanced the development of tea industry in the region, which not only guaranteed the extension and succession of the Tea Plantation of Mengding Mountain but also established the historical position of Mengding Mountain as the "source of tea" that introduced tea breeds to other regions of Sichuan. Furthermore, religious people were the first to plant tea at Mengding Mountain, which not only showcases the influence that both Buddhism and Taoism have had upon the tea culture of China, but also distinguishes its traditions of tea culture from that of tea plantations of other categories. The key elements of the Tea Plantation landscape include the religious temples that are in charge of tea planting, manufacturing and tea tributes as well as the tea plantations which are also full of historical human cultural relics at Mengding Mountain, such as ancient tea trees, ancient springs, the heavenly ladder with the ancient path, etc. The tea plantation also has very typical features, such as Chinese temples, which are well maintained and intact.

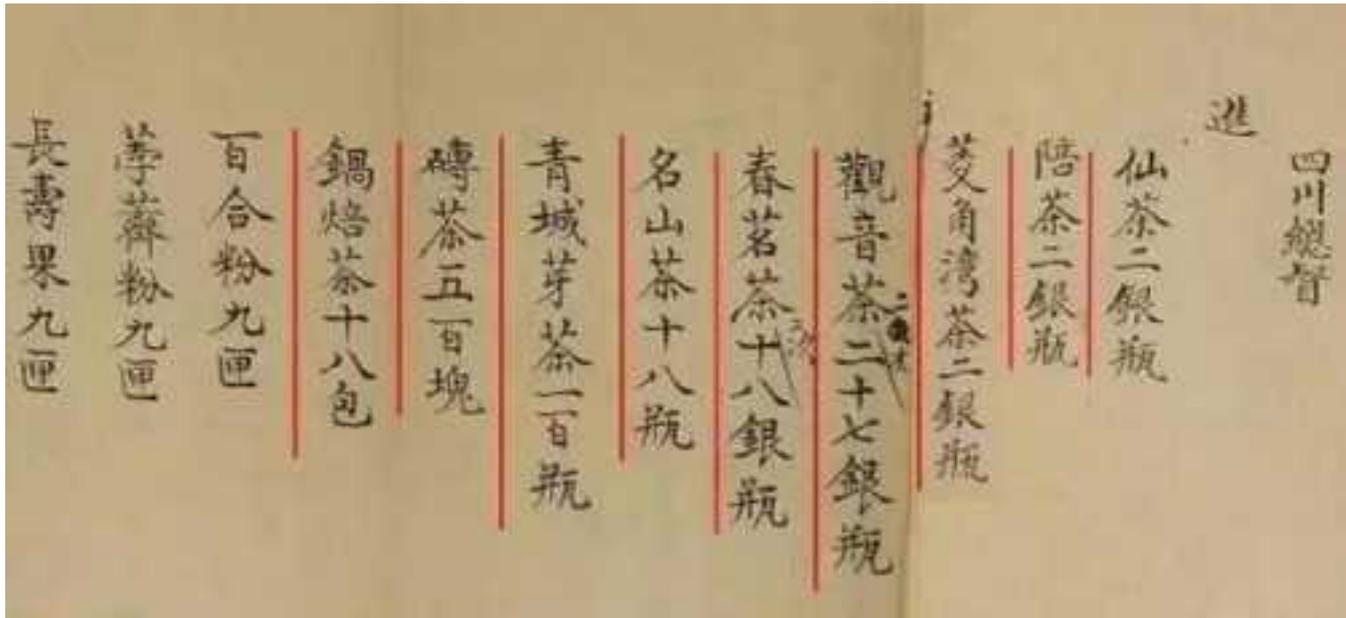


Image 13. The List of Tribute Tea in Sichuan during the Qing Dynasty. Source: Publicity Department of Ya'an Municipal Committee of Sichuan Province.

## 5.2 Current state of research

The currently existing documents and research mainly concern the history of tea plantations, the system of tribute tea, the techniques of tea planting and the craftsmanship of tea manufacturing. Research regarding the tangible manifestations of the tea culture landscape, as well as the characteristics and evolutionary regulations and causes of the human ecological environment on which it depends, is still quite insufficient. Since the historical documents are relatively deficient, it is not possible to acquire information regarding the planting range, scale, pattern and methods of tea plantations in different times.

## 5.3 Differences from other tea plantation landscape zones of a lower level

Ya'an is an important tea producing region in Sichuan in the south-west of China. In the districts and counties subordinated to Ya'an City, such as Yucheng District, Yingjing County and Tianquan County, historical tea plantations still remain that can be dated back to the Ming or Qing dynasties, or even to the Song dynasty. Although information about the opening and planting of these tea plantations can be acquired from documents, information on the planting range, location, scale, methods and landscape conservation has not yet been researched. In the process of the modernization of the tea industry in contemporary times, some renovations have been conducted upon the historical tea plantations. The Tea Plantation of Mengding Mountain is the only tea plantation that still keeps most of the cultural relics of different categories that reflect the history of tea planting, manufacturing and tribute. Furthermore, the

craftmanship of the manufacturing of Mengding Mountain Tea is said to have the longest history, create the best flavour and provide the most categories of tea leaves.

#### 5.4 The outstanding landscape features

The Tea Plantation of Mengding Mountain has a long history of tea planting and manufacturing. The excellent natural geographic environment perfectly fits the environmental conditions for the planting of tea trees. When the religious groups opened and maintained the area, a special Zen tea culture was created, while the policy of tribute tea and border-sale tea also

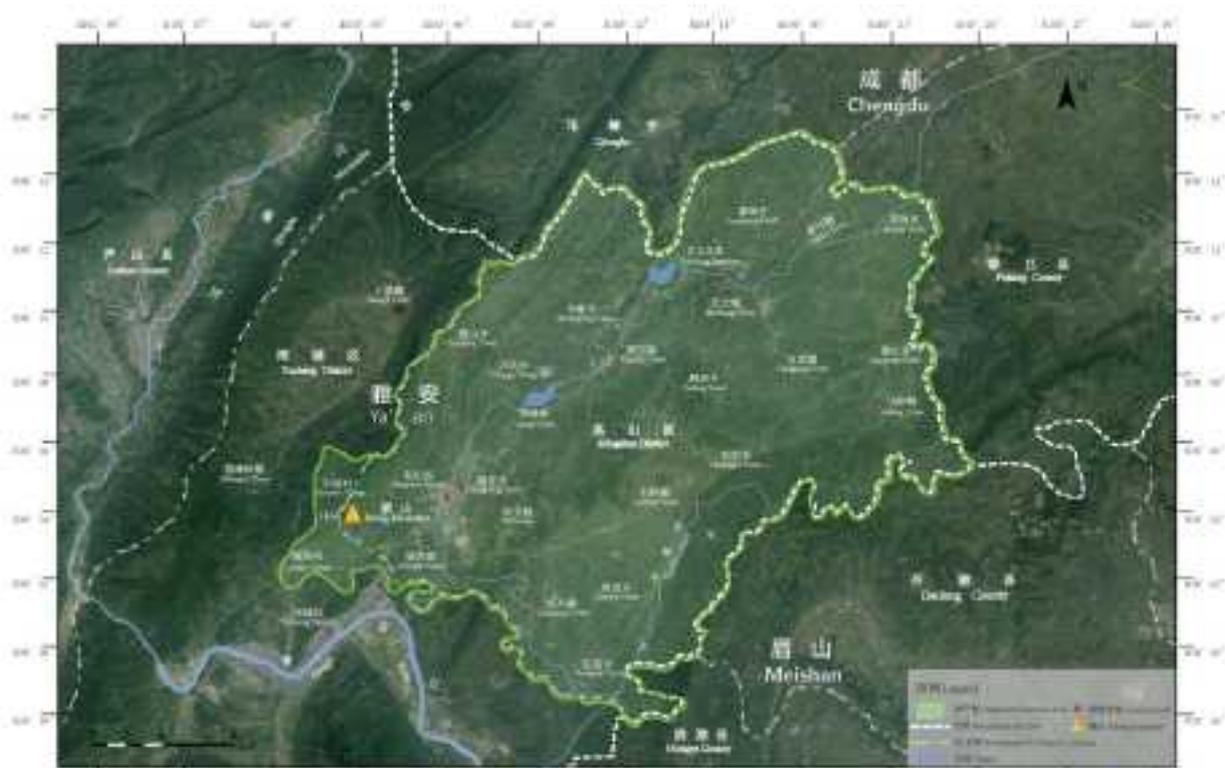


Image 14. The Range of the Original Area of “the Meng Mountain Tea”. Source: Zhang Xuechun.

guaranteed the continuous development of the tea industry. In addition, the seeds of the tea tree varieties in Ya’an and the neighbouring areas are mostly introduced from Mengding Mountain. The development of the society, economy and culture reflected in the Tea Plantation of Mengding Mountain, together with the tea culture landscape relics located in the area, show its importance as a heritage site of exceptional value.

#### 5.5 The issue of protection administration and measures

So far, systemic investigations and research on the tea plantation landscapes in lower level regions have not yet been conducted. Therefore, the research foundation of the cultural landscape heritage is relatively weak. Meanwhile, some developments, such as the production of modern tea plantations and the cultural tourism of tea plantations, are very likely

to cast an irreversible influence upon the remaining historical tea plantations and landscape characteristics. As a AAAA-level tourism zone, the development orientation and the stress of the tourism development of the Tea Plantation of Mengding Mountain can all impact on the maintenance, authenticity and integrity of the cultural landscape.



Image 15: The Region Map of the Core District of “Mengding Mountain Tea Culture System of Mingshan in Sichuan”. Source: Application Letter of Agricultural Heritage.

The Tea Plantation of Mengding Mountain possesses a protection identity of multiple aspects. The historical relics, which encompass cultural relic protection sites of all levels, are in the charge of the local administrative department of cultural relics and protected by the *Cultural Relics Protection Law of the People's Republic of China*. As a provincial-level landscape tourism site, Mengding Mountain is in the charge of the department of constructions and protected by the *Regulations on Scenic and Historic Areas*. The Tea Plantation of Mengding Mountain is the core district of the “Mengding Mountain Tea Culture System of Mingshan in Sichuan” of Chinese Agricultural Cultural Heritage, and is thus protected by the related laws and regulations of Agricultural and Rural Affairs Bureau. The tourism zone of Mengding Mountain is operated by a tourism company, so that a relatively complete administrative system, institutes and staff are all available. The supervision and control of construction in Mengding Mountain is conducted through the strengthened coordination and collaboration work that is performed between different departments.

## 5.6 Suggestions and prospects

The research and operation of the administration of the cultural landscape heritage should be strengthened in the future, and development goals should be properly made and the intensity monitored under the guidance of the conclusions drawn from evaluation reports of the heritage environment. The coordination and cooperation work between different departments should be strengthened so as to meet the standards of the authenticity and integrity of heritage protection.

The Tea Plantation of Mengding Mountain is likely the heritage site with the strongest authenticity and integrity in comparison with other existing temple tea plantations in China, due to the protection of multiple aspects. It is well accepted and highly spoken of in the tea market, which has guaranteed its succession and continuity. The heritage assets have abundant key and rich representative elements and typical features. Further research should investigate the potential Outstanding Universal Value, which might be justified under criteria (iii), (iv) and (vi).

## References

- Chen, Chuan, *A General History of Tea [茶叶通史]* Chinese. Beijing: China Agriculture Press, 1984.
- Chen Shuqian, Dou Cunfang, Guo Lei (compiled), *The Oral History of Tea Culture of Mengding Mountain*, China Agriculture Press, 2019.
- Compilation Committee of Chronicles of Mingshan Tea Industry, *Chronicles of Mingshan Tea Industry*, Local Chronicles Press, 2017.
- GB/T 18665-2008, *Product of Geographic Indication – Mengshan Tea*, Standardization Administration of China, 2008.
- Mu Jihong (ed.), *Tea of the Meng Mountain*, Beijing: Beijing Publishing House, 2004.
- The Application Letter of Mengding Mountain Tea Culture System of Mingshan in Sichuan*, 2017.
- Yang Shaohuai, *Sichuan Tea and Tea-Horse Ancient Path*, Bashu Press, 2017.
- Yang Zhong (ed.), *The Tea Culture of Mengding Mountain*. Chinese Literature and History Press, 2005.
- Zhu Jifa, *Another Commentary upon the Authenticity of Wu Lizhen, the Pioneer of Tea*, Agricultural Archaeology, 2nd Issue of 2018.

# Cultural Landscape of Tea Plantations in Wuyi Mountains

*Wang Chaoyi*  
*Working Group of China Architecture Design &*  
*Research Group*

## 1. Overview

Located in mountainous areas near the south-eastern coast of China, the tea plantations in the Wuyi Mountains are widely believed to be the home of Chinese oolong tea and Chinese black tea.

Shaped by the combined forces of geological structuring, water erosion, weathering erosion and gravitational collapse, the Wuyi Mountains boast spectacular sceneries and unique mountain terrains, giving the area a special status among China's famous mountains. The Wuyi Scenic Area features typical Danxia landforms, with the red cliffs flanking the Nine-bend Creek and the lush forestry together making up an impressive sight. The area is also known for its distinctive cultural landscape because of its unique geographical environment, diverse forest ecosystems, varieties of high-quality tea trees, tea villages which are themselves steeped in historical and cultural heritage, and a dynamic tea industry dating back to ancient times

### 1.1 Geographical information

Wuyishan City is located in the north-west of Fujian Province, China, at the southern foot of the northern section of the Wuyi Mountains. The city spans from 117°37'22" to 118°19'44" in the east longitude and from 27°27'31" to 28°04'49" in the north latitude. It measures about 70 kilometres from east to west and 72.5 kilometres from north to south, covering a total area of 2,798 square kilometres.

The Wuyi Mountains feature a typical mountainous and hilly terrain. The eastern, western and northern areas are steep and hilly, with lots of mountains, peaks, gorges and streams. The central and southern areas comprise flat and low lands, with river valleys, canyons, streams and basins. Seen from above, the whole terrain looks like a horseshoe opening

towards the south. A total of 38 mountain peaks are found with an elevation of over 1,000 metres above sea level. Rivers and streams crisscross the entire region, with eight of the major ones flowing over an area of 2,124.33 square kilometres.



*Image 1. Location of the Wuyi Mountains tea producing area in China. Source: Working group of the China Architecture Design & Research Group.*

A total of 39 types of bedrock are known to exist in the Wuyi Mountains, including acid rocks, neutral rocks, sandy rocks and argillaceous rocks. Soil types found in the area include red soil, yellow soil, mountain meadow soil and purple soil, which have distinctive vertical distribution features. Red soil is mainly found in areas with an altitude of 160-800 metres above sea level, yellow-red soil at 800-1,900 metres, and mountain meadow soil at 1,900-2,158 metres.

Wuyishan City is characterized by a humid subtropical monsoon climate, with four distinct seasons and plentiful rainfall. The average annual temperature stands at 18°C, the average annual relative humidity at 78%, and the average annual rainfall at 1,916.4 mm. 255 days a year are generally frost-free. The local vegetation carries typical features of the mid-subtropical evergreen broad-leaved forest, and the forest coverage rate reaches up to 95.3%. The Wuyi Mountains have the world's best preserved and most comprehensive, typical and largest mid-subtropical native forest ecosystem in the same latitude zone. The area is home to diverse species and resources, with 3,728 plant species already identified.

## 1.2 History

The earliest written records of tea production in the Wuyi Mountains date back to 806-820, in the Tang dynasty. Tea making emerged as an industry in the Song dynasty in 960-1279, a time when tea whisking (Dian Cha) and matcha (Tea Ceremony) also began to appear as a form of tea art. In the year of 1302, during the Yuan dynasty, a royal tea roasting office was set up at the Nine-bend Creek in the Wuyi Mountains, and Wuyi tea was officially named as a tribute tea for the royal court until 1557 in the Ming dynasty when the designation was abolished. In the middle of the Ming dynasty (1368-1644), the form of Wuyi tea changed from tea cakes to loose tea, and then to stir-dried tea. Local Buddhist and Taoist monks also began to cultivate tea trees in their temples. Black tea did not appear until the late Ming dynasty, with Tongmu village and Xingcun village becoming centres of production. Tea production flourished in the Qing dynasty (1636-1912). Tea trade by sea to the west and by land to the north became especially prosperous, with Xiamei village, which is located near the river port, serving as the central point of all trade activities. Tea plantations soon started to expand in scale afterwards. By the year 1717 in the Qing dynasty, tea farmers had invented new methods to make oolong tea. After the end of the Qing dynasty, tea plantations and tea trade continued to develop until the 1930s, followed by a long period of sluggish growth until the 1980s. Things have started to change since then. The scale of tea plantation in the Wuyi Mountains has more or less stabilized since 2012.

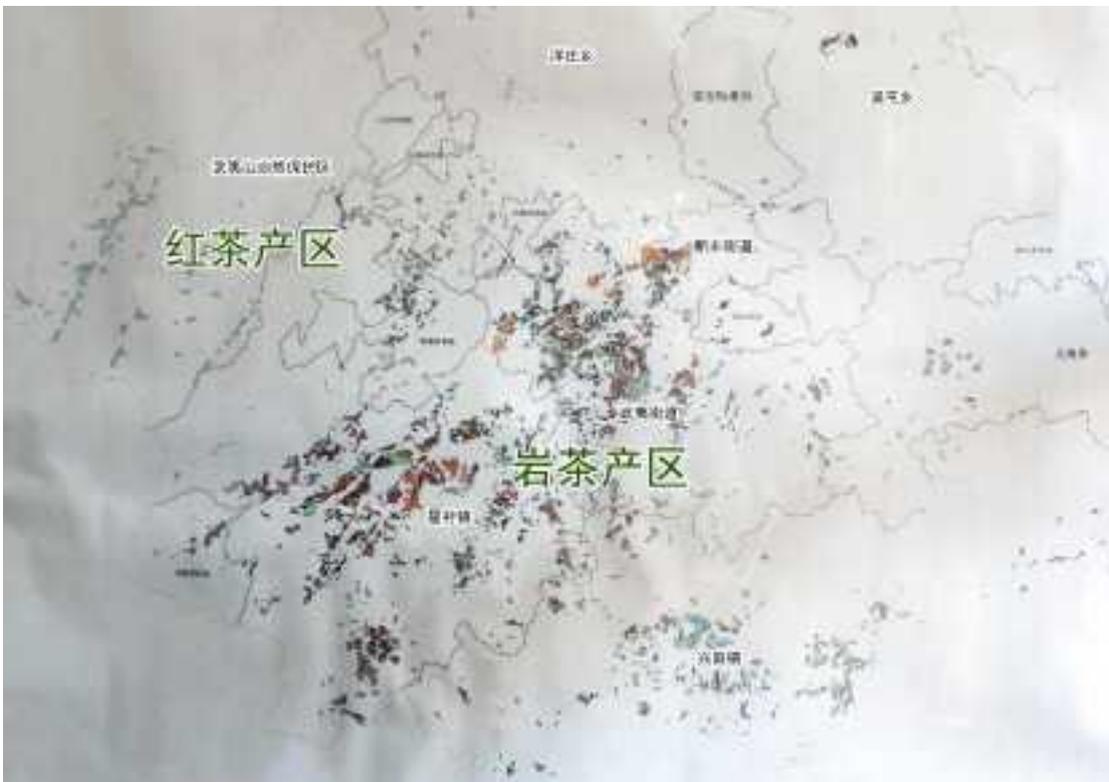


Image 2. Distribution of producing areas by the tea variety in Wuyishan City (2008) ©  
Source: Wuyishan Tea Industry Bureau.

### 1.3 Landscape size

Tea plantations in the Wuyi Mountains are mainly located on the hilly slopes in Xingcun village, Wuyi Street village, Xingtian village and within the Wuyishan Nature Reserve.

In 1978, the area of tea plantations under cultivation in Wuyishan City stood at 1,640 hectares. By 2007, the number had surged to 7,698 hectares. Based on different varieties of oolong tea, Red Robe (Da Hong Pao) took up 28% of the total cultivation area; Cinnamon (Rou Gui) 21%; Narcissus (Shui Xian) 42%; and Odd Species (Qi Zhong) 9%. By 2015, the area under cultivation had grown to 9,867 hectares.

### 1.4 Distribution features

Differentiated by their different processing methods, teas grown in the Wuyi Mountains include oolong tea, which grows in 92.4% of the tea plantations; black tea, which grows in 5.9% of all plantations; and green tea, which grows in 1.7% of plantations. Areas of production are divided between the Wuyi rock tea (a type of oolong tea) producing area and the Lapsang Souchong (a type of black tea) producing area. Since the Wuyi Mountain Range features mountainous and hilly terrain, tea trees are generally planted on the hilly slopes around local villages.

The main producing areas of Wuyi rock tea are the towns and villages surrounding the Wuyishan Scenic Area. The Hilltop Ecological Tea Plantation, which is the largest producing area, is located in the north-west of Wuyishan City, on the southern slope of the Wuyi Mountain Range, and in the extension areas of Wuyishan Nature Reserve; other producing areas are located on the low hills in the south-east of Wuyishan City.

The Lapsang Souchong producing areas are mainly found within the Wuyishan National Nature Reserve, which is rich in forest resources. Jiangdun village, Miaowan village and Mosu village, which are natural village settlements located near Tongmu village, altogether boast an area of about 660 acres of land under tea cultivation. Tea trees there usually grow at altitude of 700-1,200 metres above sea level, either at the foot of hills or in the canyons.

Tea trees that are native to the Wuyi Mountains are called Wuyi vegetable tea (Caicha), a small- and medium-leaf variety produced after years of natural hybridization and artificial selection. Over 280 varieties are now known to have existed and more than 70 varieties are now under protection and are available for cultivation. Starting from the 1980s, the practice of clonal propagation has been popularized, with Red Robe, Cinnamon, Narcissus and Odd Species dominating the market. Tea leaves are generally harvested once a year.



*Image 3. Locations of tea plantations in Wuyishan Scenic Area. Source: Working group of the China Architecture Design & Research Group.*

## 1.5 Social and cultural systems

The Wuyi Mountains have a long tradition of organizing tea competitions, dating back to the Song dynasty (960-1279). Wuyi Tea had been designated as a tribute tea for the imperial court for almost 200 years, starting from the establishment of a royal tea roasting office in 1302 in the Yuan dynasty all the way to 1557 in the Ming dynasty when the entire tea tribute system was abolished. In the royal tea plantation, at the time of the tribute tea system, a special official was appointed to oversee the whole production and 180 kilograms of tea were required to be submitted each year. During this period, an official sacrificial ritual held at the royal tea plantation was held to call to the mountains for blessings in the form of a better tea yield.



*Image 4. People drinking tea at a tea competition held at Tianxin Village. Source: Working group of the China Architecture Design & Research Group.*

In terms of the forms of organisation of tea production, given that Wuyi rock tea requires sophisticated processing methods and takes up a lengthy processing time, traditional small- and medium-scale tea farms dominate the production scene. Tea farmers either harvest fresh tea leaves themselves for sale, or rent their own farms to others, who then hire more skilled workers to complete the whole production process. As of 2007, a total of 305 tea farms, 769 family-owned tea workshops and only three large companies were known to have registered in the Wuyi Mountains.

In 1942, the Tea Research Institute of the Trade Commission under the Ministry of Finance, which was later renamed in 1989 as the Tea Science Research Institute in Wuyishan City, was established in the Wuyi Mountains. It was China's first national tea research institute, with Mr Tianfu Zhang and Mr Juenong Wu, among others, serving successively as its first directors. The institute has undertaken many important projects since then to improve tea varieties, make and test tea-making machines, set up cooperation networks, and carry out tea ingredient analysis. A group of tea researchers have been mentored over the years, laying the foundation for the contemporary development of the tea industry in the Wuyi Mountains.

From 1949 to 1984, the tea market in the Wuyi Mountains was subjected to a unified purchase policy by the state. It has been fully liberalized since 1985.



*Image 5. View of a tea plantation at Wusandi, a natural village in Wuyi Mountains. Source: Working group of the China Architecture Design & Research Group.*

## **1.6 Local communities and settlements**

After 1391, in the Ming dynasty, Buddhist and Taoist temples in the Wuyi Mountains started to dabble in tea cultivation, production and tea tasting. The mutual visits between monks of different temples promoted technical exchanges of tea-making over long distances of tea producing areas and gave birth to new tea-making techniques. The contributions made by Buddhist and Taoist monks, tea farmers and tea merchants in the Wuyi Mountains have added to the technological and cultural value of Wuyi tea.

In 2016, according to the statistics, Wuyishan City was home to 240,000 inhabitants, among which 160,000 worked in the agricultural field and, specifically, 80,000 were directly engaged in the tea industry. Of the 115 administrative villages in the area, 96 were involved in tea cultivation. In 2007, according to the statistics, the cultivated land area of Wuyishan City was 20,613 hectares and the forest land area stood at 212,133 hectares.

## **1.7 Tea trade, trade routes and economic development opportunities**

In the early 17th century, with the opening of the China-Mongolia-Russia tea road, Shanxi merchants started to transport Wuyi tea up to Mongolia and Russia. The Wuyi Mountains

soon became the starting point of the tea route, and Xiamei village served as a major marketplace. Starting in 1607, the Dutch East India Company began purchasing Wuyi tea in large quantities, which was then resold to various parts of Europe by way of the island of Java. By 1640, Wuyi tea had made its way to the United Kingdom, contributing to the formation of the sea tea trade route. The outbreak of the Taiping Rebellion around the year 1853, however, blocked the Shanxi merchants' overland route to Fujian, putting the tea trade to a halt. The merchants responded by moving the supply of black tea to Yangludong in Hubei province, and the Wuyi Tea overland trade subsequently went into decline. After 1842, when the Qing government was forced to open commercial ports to foreigners, Wuyi tea was transported along the Minjiang River to the sea, and then sold to European and South Asian countries. Chishi village replaced Xiamei to become a booming tea market from 1821 to 1861, until it went into decline in 1958. From the 1900s to the 1930s, Wuyi rock tea reached its peak of prosperity and was sold widely within China and across the world. People from different areas were drawn to the tea trade and formed regional gangs. The Southern Fujian Gang, Chaoshan (Teoswa) Gang and Guangzhou Gang were very influential at the time, with the Southern Fujian Gang being the biggest of all. Even to this day, a lot of inhabitants in the Wuyi mountains still identify themselves as descendants of those early immigrants originally coming from Jiangxi, South Fujian and Chaoshan along the tea trade route.



*Image 6. Tea farmers in Wuyishan Scenic Area.  
Source: Working group of the China Architecture  
Design & Research Group.*

## 1.8 Connection with surrounding landscapes and the region/country where it is located

The landscapes of tea plantations in the Wuyi mountains are closely linked with the surrounding natural cultural environment.

The Wuyi Mountains area is a mixed UNESCO World Heritage property, inscribed for its natural environment and for its culture. It is also designated as a National Nature Reserve and National Scenic Area, famous for its typical Danxia landform features. With many excellent natural wonders, the area also enjoys a special status among China's famous mountains. The rare natural landscape of the mountains and rivers and rich and diverse biological systems provide a premium fertile ground for tea trees to live and thrive.

## 2. Typical tea plantation landscapes

Wuyishan Scenic Area is the main producing area and a chief source of supply of Wuyi rock tea. It boasts the most typical tea plantation landscape.

### 2.1 Location and scale

Located in the southern suburbs of Wuyishan City, Wuyishan Scenic Area is right at the centre of the main Wuyi rock tea producing area. Composing a total area of 70 km<sup>2</sup>, tea trees and tea plantations are scattered over an area of around 134.9 km<sup>2</sup>



*Image 7. View of a hilltop tea plantation in Wuyishan Scenic Area. Source: Working group of the China Architecture Design & Research Group.*

## 2.2 Main features of the landscape

Wuyishan Scenic Area has the longest history of tea planting in the Wuyi mountains and has the most abundant tea tree varieties. The high peaks in the north-west part of the Wuyi Mountains block cold currents coming from the north, making the rock tea producing area warm without obvious seasonal changes. The overall horseshoe-shaped terrain opens to the south, with streams and creeks flowing around peaks and hills, forming a unique microclimate. Shrouded by clouds and mist all year round, the air in the Wuyi Mountains is extremely humid. Tea plantations are usually located on low hills below 500 metres above sea level, and at the bottom of rocky valleys. Tea farmers make the best use of rock dents, rock crevices and stone gaps to grow tea trees by laying stone terraces around them so the tea bushes look like "potted tea gardens." The fact that the trees are distributed sparsely means that they can enjoy sufficient growth space and absorb the best nutrients from the natural environment, and are free from the onset of diseases and pests. The plentiful rainfall year-round has made the valley soil rich in organic matter. With the peaks serving as a screen blocking out direct sunlight, the areas surrounding these peaks are exposed to short sunlight and sufficient scattered light, while being free from frost, wind damage and insect damage, and enjoy a special microclimate with a suitable temperature and humidity. All of these provide ideal conditions for tea trees to grow and provide good ecological conditions for high-quality teas.



*Image 8. View of a tea plantation at Wusandi, a natural village in Wuyi Mountains.  
Source: Working group of the China Architecture Design & Research Group.*

### 2.3 Planting traditions

Tea trees are propagated from seeds, by layering or by cutting. Early planting practice was dominated by natural propagation methods of seeding, which were gradually replaced by clonal propagation in the 1950s. The best time to plant tea seedlings is from mid-January to late March. After they are transplanted to the field, great care must be taken to monitor the soil quality and ensure that the field is occasionally ploughed, new soil, as well as base fertilizer and new fertilizers if necessary, is added, and the bushes are properly sheared.

### 2.4 Tea tree varieties and cultivation methods

Tea tree varieties growing in Wuyishan Scenic Area include Cinnamon, Red Robe, Gold Turtle, Iron Monk and White Comb. Other producing areas feature different varieties. For example, Huiyuankeng village mainly produces Narcissus and White Comb, while Niulankeng village is famous for Cinnamon.

Given that tea plantations located on hilly slopes are prone to soil and water loss, stones are often used to build terraces around tea bushes.

Starting in 1953, some tea plantations took up collar pruning to propagate tea trees, something totally new at the time. Laocong Tea Plantation still has trees that are not collar pruned and therefore tea produced there has a very different taste.

### 2.5 Tea harvesting and processing

Wuyi rock tea is generally harvested once a year, between the Grain Rain and the Start of Summer according to the Chinese lunar calendar (roughly the end of April to mid-May according to the Gregorian calendar). For Wuyi rock tea, only a few top leaves and flushes are picked, either by hand or by machine.

Of all the tea varieties in China, Wuyi rock tea is known for its processing methods and high degree of sophistication. Tea leaves are processed either by hand or by machine. Hand-processing includes up to 20 steps (harvesting, tossing, sun-drying, lay leafing, stir drying, rolling, secondary stir drying, secondary rolling, primary roasting, winnowing, sun fixing, sorting, secondary roasting, steam drying, cloth rolling, re-drying, packaging, piling, screening and blending). As each step can affect the quality of the final product, close cooperation between members of the entire tea-processing team is a must.

Machine processing is simpler by comparison.

## 2.6 Social structure and cultural systems

In Tianxin village, most households own a tea farm and have family-owned factories, where they hire workers to help with tea production. In the village, supporting services are readily available with easy access to tea-making workshops, tea shops, packaging shops and logistics services.

The Wuyi Mountains are also known for the cultural practice of the Mountain Call, which originated in the Tang dynasty and was performed to pray for blessings on the tea harvest. When the royal tea plantation was built at the Nine-bend Creek in the Wuyi Mountains in the Yuan dynasty, a platform was set up behind the plantation for this specific purpose. For almost 200 years, spanning the Yuan and Ming dynasties, the Mountain Call became an important official sacrificial ritual. Every year in spring, on Jingzhe (the day in the lunar calendar when dormant insects are awakened by the warming weather), local officials would lead tea farm workers to the platform. After cattle, pigs, sheep and wine were offered as sacrifices, incense sticks were lit up and a special script was read out loud, followed by rounds of drum beating and firecracker burning. Led by the host of the ritual, the ceremony would culminate in the participants shouting out the words "please let the tea sprout!" In recent years, a couple of tea companies have tried to hold similar ceremonies to honour this historical tradition.

Given the scarce production volume of Wuyi rock tea, over the years, tea makers have built a cultural tradition to learn from and compare notes with each other. Since 2000, each administrative village has held competitions in order to select the best quality tea each year.



*Image 9. Tea farmers in Wuyishan Scenic Area. Source: Working group of the China Architecture Design & Research Group.*

## 2.7 Local communities and settlements

Tea farmers in the Wuyishan Scenic Area mainly live in Tianxin village, a place that once boomed with the rise of tea production and trade. There are currently 14 villager groups made up of 1,488 villagers. Out of a total of 510 households, 450 operate some form of tea business.

Most of the local residents can trace their family roots to the early migrants from Yanshan Mountain in Shangrao county from the neighbouring Jiangxi Province in the late Ming and early Qing dynasties. Most speak southern Min dialects. They have inherited a rich experience and wisdom from their ancestors in making tea, and managing and looking after tea plantations.

In 2007, the village had an area of 4.78 km<sup>2</sup> of tea plantations, among which 0.67 km<sup>2</sup> were used to produce Red Robe, 1.5 for Cinnamon, 2.58 for Narcissus, and 0.04 for Odd Species. Tianxin village is particularly known for its rock tea, with a total of 43 tea processing factories and 107 workshops registered. The annual production of dry rock tea has reached 692.1 tonnes, with an output value worth 47.82 million RMB.

## 2.8 Links with tea trade and trade routes

Throughout history, the high quality of rock tea has drawn a lot of tea merchants from Chaoshan and Zhangquan (Zhangzhou and Quanzhou), who come to buy tea farms, set up tea factories, and hire professionals to oversee daily operations. Tea leaves harvested in the Wuyishan Scenic Area are transported by porters using bamboo baskets. After they are processed at tea factories and packaged at the marketplace, the leaves are either sold to cities in the Chaoshan area, where rock tea is a favourite drink, or shipped by sea by way of Guangzhou to reach other markets.

# 3. Documentations and records

## 3.1 Archived records

Since 2003, multiple surveys have been carried out on the cultural landscape of tea plantations in the Wuyi mountains; both the *Wuyishan Tea Plantations Census Report*, which was completed in 2008, and the *Wuyishan Tea Plantations Census Report*, which was carried out by the Fujian Provincial Forestry Survey and Design Institute in November 2019, recorded in detail the distribution of tea plantations in each village and the varieties of tea trees growing in the area. Both reports are now kept at the Wuyishan Tea Industry

Bureau. Wuyishan City has also collected related image records, including the published photo collection entitled *The Flavor of Rock Tea - A Special Edition by Photographer Wu Guangming*. Documents of this nature are now going through a systematic thorough review, with those published before the year 2003 now kept at the Wuyishan City Archives Bureau and those after 2003 at the Wuyishan City Tea Bureau.

The archaeological report on the Gothenburg shipwreck, which found that it carried Wuyishan tea leaves on board, is now in the keeping of the Gothenburg Foundation. Among others, archaeological reports related to the Yulinting Kiln Site of the Song dynasty and on the ruins of Chengcun village of the Han dynasty are kept at the Wuyishan City Cultural Relics and Cultural Heritage Management Office.

### 3.2 Related research

#### STAGES OF DEVELOPMENT

The Wuyishan tea plantations emerged in the Tang dynasty (618-907), flourished in the Song dynasty (960-1279), continued their prosperity over the Yuan and Ming dynasties (1271-1644), achieved breakthrough development in the Qing dynasty (1644-1912) and continue to thrive even to this day.

#### EVOLUTION OF THE LANDSCAPE

While keeping with traditional land use methods and respecting traditional wisdom, the landscape of tea plantations in the Wuyi Mountains continues to evolve.

After 1953, many tea plantations began to adopt collar pruning methods. Newly built plantations also took up layering to propagate tea trees. Such practice has put a slight dent in the production of vegetable tea (Caicha) varieties in the Wuyi Mountains.

#### MAIN RESEARCH FINDINGS

Books such as *The Classic of Tea in Wuyi Mountains* and *Wuyi Tea Records* (forthcoming) have adopted a cultural landscape research angle. Research on the Wuyi Mountains has generated more solid and substantive findings compared with research efforts made on other tea producing areas.

## 4. Threats facing tea plantations and status quo of tea plantation landscape

As with other traditional agricultural landscapes, the landscape of tea plantations in the Wuyi Mountains is also facing threats brought by socio-economic development, changes in production and lifestyle, and modern management interventions. That being the case, the viability of the tea plantation landscape has been generally maintained well.

Although faced with the pressures of new development, population growth, construction and development needs, in compliance with traditional governance methods and wisdom, the area has taken advantage of different management regulations to rein in the amount of land used for construction and transportation purposes, so as to guarantee the stability of the tea plantations' ecosystem.

In the Wuyi Mountains, tea competitions were held as early as the Song dynasty (960-1279) to select the best tasting tea. Since 1999, local villages have begun to revive this age-old cultural practice by holding tea competitions on a regular basis. Such events have received strong governmental policy support, which will go a long way to help people hone their rock tea-making skills and to foster more tea technicians.

Many traditional family-held workshops have scaled up their production to bring about increased productivity. Young people who originally left home for job opportunities elsewhere have eventually come back to work in the tea business. Local people are now paying more attention to the branding of tea products while, at the same time, more people are setting up their personal distribution channels.

Since the middle of the 20th century, people in the Wuyi Mountains have been trying out the use of machines to help with tea making. Early attempts included the use of bamboo and wooden dryers and wooden rollers. In the mid-to-late 1980s, tea processing became even more simplified and mechanized, with harvesting machines, green-tea-making machines, leaf laying machines, rollers, dryers and sorting machines adopted as major tools, which greatly improved overall productivity.

Due to a shortage of labour, a few remote mountain areas have to use extensive management methods, which are actually ultimately beneficial for maintaining the plantations' ecological diversity. In contrast, a small number of plantations have been excessively cultivated. Since 2012, with better satellite image monitoring techniques, newly opened plantations have been reforested to better preserve the local ecology. Areas that show signs of soil erosion and landslide hazards are being protected and closely monitored.

Some housing areas and tea factories have been built up in tea plantations in an effort to improve local people's living standards and production efficiency, yet the rate of development must be properly controlled to maintain the harmony of the overall landscape.

## 5. State of protection and management of tea plantation landscape

The tea plantation landscape in the Wuyi Mountains is protected on multiple fronts by legislation and proper planning and through traditional methods. Great efforts have been made to preserve the original local natural and cultural characteristics, with a view to maintaining a balanced tea plantation ecosystem.

All administrative legislation is made in line with the *Wuyi Rock Tea National Standard (GB/T18745-2006)*.



*Image 10. View of a tea plantation in Wuyishan Scenic Area. Source: Working group of the China Architecture Design & Research Group.*

Overall planning efforts include the formulation of the *Third Master Plan of Wuyishan National Scenic Area (Main Scenic Area)*, which was developed in 2010, the *Wuyishan City Master Plan from 2016 to 2030 (2016)*, the *Implementation Guidance to Speed up the Upgrading of Tea Industry (2016)* and the *Specific Plan for Tea Industry Development in the Thirteenth Five-Year Plan*, which was passed in Wuyishan City in 2016.

The management and protection of the tea plantations landscape is jointly supervised by the Wuyishan City Forestry Bureau, Land and Resources Bureau, Natural Resources Bureau and Tea Industry Bureau. Stringent control measures have been put in place to curb any type of illegal cultivation activity. Each township has set up its own tea plantation station, staffed by either full-time or part-time employees to carry out routine management. Since 2012, the Wuyishan city government has adopted an outright ban on the opening of new tea plantations. Plantations that are found in breach of this ban have to be reforested or reconverted to the original state.

In addition, traditional management schemes still play an active role. Each village has formulated its own regulations to manage tea plantations and a public code of conduct.

Matters related to tea plantations are handled in a way that ensures villagers can work in close consultation with village committee members. As is characteristic of a traditional society, tea tree planting and processing techniques are still passed down from generation to generation in the Wuyi Mountains, and production and marketing networks are built and maintained through interpersonal relationships, all of which have given strong support to the sustainable development of tea plantations.

## **6. Conclusion**

### **6.1 Summary**

The landscape of tea plantations in the Wuyi Mountains is of great cultural value. Tea plantations are located in places with unique Danxia geological landforms, a diverse ecosystem and a long history of tea trade by land and by sea. They are in the centre of an area that has influenced the world's tea drinking culture and led the way in tea processing methods, and which has not stopped producing high-quality tea since ancient times.

### **6.2 Review of the research**

Previous scholars, researchers and research institutions have left precious records and made important research findings on tea plantations in the Wuyi Mountains. With the help of these records and documents, more research can be expected in order to yield more fine-grained analysis of tea plantation cultural landscapes.

### **6.3 Differences from other tea plantations landscapes**

The unique geographical features in the Wuyi Mountains have brought together the best tea-making talents in China. The rich traditions and marketing networks in the Wuyi Mountains will continue to consolidate the area's leading position in south-east China.

### **6.4 Distinctive landscape features**

The landscape in the Wuyishan Scenic Area has created a special microclimate. The tea plantations help to maintain a diverse ecosystem in which local flora and fauna coexist in harmony, underscoring its value as a UNESCO World Heritage property.



*Image 11. View of a tea plantation in Wuyishan Scenic Area. Source: Working group of the China Architecture Design & Research Group.*

## **6.5 Protection management challenges and responses**

Tea plantations located within the Wuyishan Scenic Area often face pressure from the rising number of tourists. Tea plantations that are located on slopes require close attention in order to ensure water and soil protection.

Multiple monitoring and protection mechanisms must be put in place to detect and control adverse factors in time, and effective interventions must be taken to nip problems in the bud without threatening the preservation, authenticity and integrity of the landscape.

Current conservation and management measures have effectively put the scale of tea plantations and infrastructure in check. Future efforts should continue to strengthen the protection of the ecological diversity of tea plantations that are located outside the Wuyishan Scenic Area.

## **6.6 Recommendations and prospects**

Efforts must be made to push forward ecological protection and the building of ecological tea plantations and to improve the techniques of tea farmers.

While remaining in keeping with traditions, technological innovations are also essential. Public tea industry technology centres must be fully supported in order to provide long-term support to the industry. The market should play a bigger role in determining tea prices.

Tea plantations in Wuyishan National Scenic Area represent one of the best attributes of the area's landscape and efforts should be made to include them as such within the UNESCO World Heritage property and its proposed extension, and improve legislation for their protection, considering their potential value, authenticity, integrity and their ecological and cultural resilience.

## References

- Chen Chuan. *A General History of Tea* [茶叶通史] Chinese. Beijing: China Agriculture Press, 1984.
- Chen, Zongmao and Yang Yayun (eds.). *The Classics of Chinese Tea* [中国茶经] Chinese. Shanghai: Shanghai Culture Press, 2011.
- Huang, Xiangen. *Tea Tales in Wuyi Mountains*. Edited by Pan, Jingchao. Fujiang, 2009.
- Lin, Fuquan. *Production, Processing and Marketing of Tea in Wuyi Mountains*.
- Luo, Shengcai. *A Classification of Wuyi Rock Tea*. Beijing: Science Press, 2007.
- Wu, Yin. *Tea Origin and Geography in Wuyi Mountains*. Edited by Zhong, Jiaping Guangzhou, 2019.
- Wu, Juenong. *Review of Tea Classics*. Edited by Fan, Suncao. Beijing: China Agriculture Press, 2005.
- Wuyishan City Municipal Records & Archives Office, *Records of Wuyishan City*, 1994.
- Xiao, Tianxi. *The Classic of Tea in Wuyi Mountains*. Beijing: Science Press. 2008.
- Yao, Yueming. *Selected Papers on Wuyi Rock Tea*.
- Ye, Qitong. *Rock Tea: The Best in Wuyi Mountains*. Beijing: China Agriculture Press, 2008.
- Zou, Xinqiu. *Lapsang Souchong Black Tea in Wuyi Mountains*. Beijing: China Agriculture Press, 2006.

# Cultural Landscape of West Lake Longjing Tea Plantation

Wang Chaoyi  
Working Group of China Architecture Design &  
Research Group

## 1. Overview

The region of West Lake Longjing Tea is situated in the delta of the Yangtze River, near to Hangzhou, which has long been a metropolis. Along with the economic and political importance of neighbouring Hangzhou, the region has special geological features owing to nearby West Lake as well as enjoying prestigious fame as a tea cultivation land. In the region, the sustainable tea industry rests on the interactions that have taken place between the locals and nature over a long period. From plantation to processing, the tea industry has been evolving there throughout the past thousand years, with the involvement of diverse elements including, but not limited to, tea trees, bush plots, villages, temples, paths and roads, irrigation systems and farmlands.

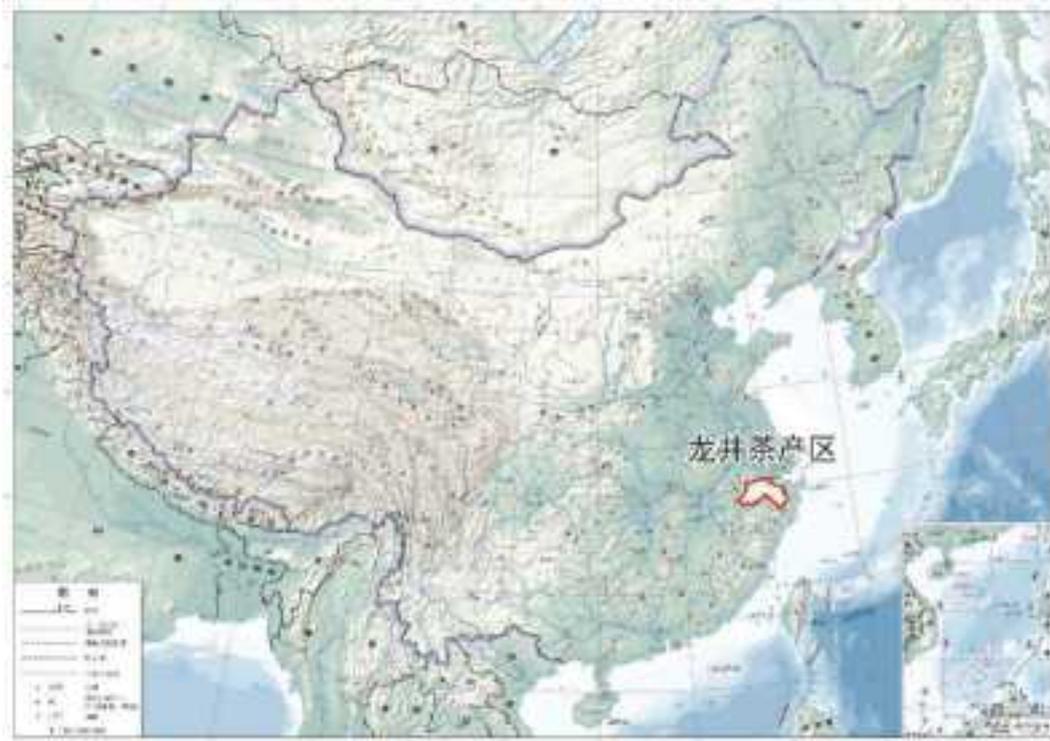


Image 1. The location of Longjing Tea region. China Architecture Design & Research Group.

## 1.1 The geological structure of the landscape

As mentioned above, the region of West Lake Longjing Tea is located in the delta of the Yangtze River, specifically, down to the southern bank of Qiantang River, a branch of the Yangtze River, and adjacent to West Lake. The region spans between 30°04'N-30°20'N and 119°59'E-120°09'E.

The region of West Lake Longjing Tea features a subtropical monsoon climate of the Northern Hemisphere, with mild, humid and misty weather due to the monsoon. Abundant springs and streams, that rise in the west range adjacent to West Lake, cleave through rocks and run down towards the plains, circulating around tea plantations before flowing into the Qiantang River. Much of the region's native vegetation consists of evergreen broad-leaf taxa, or a mixture of evergreen broad-leaf taxa and deciduous broad-leaf taxa, mingled with *Pinus massoniana* forest and bamboo forest. The soil of the tea plantations comprises white sandy earth, with brown and bright-red clay content and dark brown clay content.

## 1.2 The history of the landscape

The cultural course of West Lake Longjing Tea followed the dissemination of Buddhism in China over a long period, as well as Chinese historical events resulting from economic and political development in the period from 266-316 to 960-1279 (the post-Jin dynasty to the Song dynasty according to Chinese chronology). These historical events also combined with continuing political-geographical migrations towards south-eastern China throughout history.

Originating at local Buddhist sites surrounding Hangzhou, Lingyin Temple and Tianzhu Temple during 618-907 (the Tang dynasty in Chinese chronology), Longjing Tea was selected as a cherished tribute to the emperors in 960-1127 (in the early Song dynasty), and soon afterwards tea plantations spread from their original location at Buddhist sites further down towards the south-western ridge - Lion Mountain, as it is locally called.

Between 1271 and 1368 (known as the Yuan dynasty in Chinese chronology), tea produced in the Longjing area became popular. Loose tea which was sold at local markets started to thrive by the mid-Ming dynasty (1368-1644). Longjing Tea won fame and its position at the top of high-quality teas when it was highly appreciated by the Emperor Qianlong of the Qing dynasty, who was in power between 1736 and 1795 and praised Longjing Tea in his poems after inspecting the tea plantations and having seen the whole procedure of the processing of the tea.

In the late 19<sup>th</sup> century and the early 20<sup>th</sup> century, the local tea merchants in Hangzhou started to own tea plantations and run the businesses systematically from growing to selling. Several local brands like Lion, Dragon, Cloud, Tiger and Plum were built up one after another. The industry grew over time and developed into a remarkable chain of tea production. By the 1960s-1980s, the tea plantations had largely expanded.



Image 2. Distribution of Longjing Tea region. Source: China Architecture Design & Research Group.

### 1.3 The size of the landscape

This study focuses on the region of West Lake Longjing Tea, which covers approximately 168 square kilometres of the plantation area.

The first tier of the Tea Cultivation Cultural Landscape is composed of traditionally dominant tea plantations, occupying 459.2 hectares of land, and featuring a typical local landscape, with all the elements that demonstrate the characteristics of the West Lake Longjing Tea region; thus, the data in this investigation were sourced from the first tier of the cultural landscape.

Apart from West Lake, Longjing Tea is also produced in other two areas - Qiantang and Yuezhou - which share a similar climate and soil characteristics to West Lake, as well as the tea processing techniques. Longjing Tea plantations and production spread to these two areas, expanding Longjing Tea production and enriching the areas' local varieties. On account of this, investigations into these two areas were incorporated into this study.

### 1.4 The distribution and characteristics of the landscape

The landscape design of the Tea Cultivation Cultural Landscape demonstrates that the locals have made great efforts to maintain tea plantations throughout generations, giving consideration to keeping diverse species in the environment and sensitively developing the land. The landscape comprises elements including bushes, rivers, tea gardens, villages, paths and roads. The investigation evaluated the landscape from three different angles, i.e. the overall structure, the distribution of tea gardens and garden styles, and tea plantations.

- 1) Overall structure: The villages are dispersed in the flattish hills of the Tea Cultivation Cultural Landscape, and tea processing factories are interspersed with residential houses throughout each village. Paths and tracks extend between villages, linking the heritage of each village and connecting them to outside cities. In addition, there are many footbridges in each tea garden, which form a fundamental structure of each tea garden.
- 2) Distribution of tea gardens and garden styles: Tea gardens are spread out among villages and along brooks and cascades. Most of the gardens sit on gentle slopes and face the sun, making the most use of the local terrain. The gardens line up one after another or are interlaced with bushes and woods. Interestingly, these gardens are patchily located in the region due to land ownership issues, the time required for land reclamation and the tea crop growing season. Some gardens resting on steep slopes are buttressed by rocks. When upgrading decrepit tea gardens, old tea trees are not simply pulled out and discarded, but some are kept as a hub, forming tea tree clusters. The garden then features orderly tea tree plots dotted with tea tree clusters.
- 3) Tea plantations: West Lake Longjing Tea varieties are composed of traditional sexually-propagated Longjing tea and vegetatively-propagated Longjing tea No.43. All the harvests rely on traditional hand-picking, and all farming events like planting, weeding and harvesting follow the seasons.



Image 3. Distribution of Tea Gardens. Source: Committee of Resort Management of Hangzhou.

## 1.5 The society and its culture

West Lake Longjing Tea, as the best of the high-quality Chinese teas and an outstanding green tea, has been recognized as a cultural symbol representing bountiful tastiness and the spiritual life. Specifically, in its early stages, Longjing Tea was closely attached to Buddhism, and flourished owing to the economic and political development of the city of Hangzhou. The tea was immensely praised in poems, lyrics and literature in every Chinese dynasty era. The tea's production and its trade with other parts of China largely rely on Hangzhou's business environment and tea house culture. In addition, various cultural elements like temples, inscriptions, tea houses and museums together play a part in the tea cultural conservation landscape.

As a specialty of the area, the production of West Lake Longjing Tea has encouraged local farmers' craft businesses and fostered the area's commercial environment for further development.

In late March or early April every year, it is time to celebrate the newly-harvested West Lake Longjing Tea coming into season, which is locally called Tea Day Commencement. To celebrate Tea Day Commencement, several events are carried out by the locals, such as games involving frying tea, tests about farming proverbs, and the ceremony of tasting Longjing Tea.

## 1.6 The related communities and groups

The tea cultural conservation landscape has been promoted by those who heavily engage with cultural and commercial tea events, such as tea farmers, Buddhist monks, scholars and merchants.

There are many temples in the region of West Lake Longjing Tea. The community of Buddhist monks has carried forward the techniques of processing Longjing tea from the early stages to the present-day, and has also added cultural elements.

Outside the temples, the main community in the region is composed of many small and medium sized villages where the locals subsist on the tea business, and populations vary between 300 and 900. In the first tier of the Tea Cultivation Cultural Landscape, there are nine villages in which 2,700 households live (there were 215 households before 1949). Among the residents, 5,000 people are farmers. Five villages in particular represent the typical tea culture; noticeably, one village is sited in a plateau of the region, and the other four are situated in the plain and adjacent to tea plantations, and all of the houses in each village line up with the main roads.

Besides the villager community, the city residents in Hangzhou are also part of the West Lake Longjing Tea culture business. It is said that half of Hangzhou residents are tea lovers, and tea houses as hotspots for entertainment were widespread between 960 and 1279 (the Song dynasty in Chinese chronology).

### 1.7 The relationships between the region and trade, route of trade as well as opportunities of economic development

The sustainable development of the region of West Lake Longjing Tea relies on the economic position of Hangzhou in China, as well as the city's financial contribution.

Between 1368 and 1644 (the Ming dynasty in Chinese chronology), Longjing Tea was a prime product given as tribute to the emperors in China, and was kept to a limited amount of production. It is worthwhile noting that Hangzhou became a transportation crossroads of the lower reaches of the Yangtze after 610 when the Grand Canal was opened for transportation, and the city's commercial atmosphere flourished. The city was built up as a capital city in two Chinese dynasties - the WuYue dynasty in the 10<sup>th</sup> century and the post-Song dynasty in the 12<sup>th</sup> century - which made Hangzhou a political centre. Both economic and political features brought a large number of conspicuous consumers to Hangzhou.

Between 1636 and 1912 (the Qing dynasty, which is well-known as the last dynasty in China), the business of Longjing Tea matured and was well developed, allowing an international trade in Longjing Tea products to



Source 4. Tea Gardens in Longjing Village.  
Source: China Architecture Design & Research Group.

emerge. Businessmen from neighbouring Anhui province travelled to the Longjing Tea region to purchase tea, which initiated interstate trade. In the early 20<sup>th</sup> century, which was approaching the end of the Qing dynasty, capitalists from Hangzhou started to acquire tea plantations in the Longjing region, to possess and operate the business supply chain. Tea plantations were largely expanded, which accelerated the trade in tea. Between 1911 and 1931, the annual production of Longjing Tea increased by 15 times compared to that prior to 1911, and the tea was traded with Hong Kong, Macau and Singapore.

### 1.8 The connection with its neighbourhood and with the region where it is located

The region of West Lake Longjing Tea is tightly knit with its surroundings, in terms of both nature and culture relations, and in particular the neighbourhood of West Lake.

The region of Longjing Tea is adjacent to West Lake, which is a prestigious national resort

and a World Heritage property. It enjoys a unique and distinguishing natural environment and historical figure in cultural stories. There are many springs with high quality water, such as Hupao Spring and Longjing Spring to name but two, and the water loosens the tea leaves to form an ambrosial drink. The woods and bushes release natural phytochemicals as insect repellents, favouring the growth of tea trees. In the past, logs from *Pinus massoniana* trees were used as fuel to heat up the woks in which tea leaves were fried. Temples like Lingyin, Baopudao and Jingci have been associated with the history and culture related to tea. Scenic overlooks from tea plantations sitting in the plateau provide views of much of West Lake and the city of Hangzhou. As for the climate, the seasons in the region are shaped by the Pacific Ocean monsoon due to its location in the Qiantang River estuary.



Source 5. Overview from Longjing Tea Gardens. Photo: China Architecture Design & Research Group.

## 2. The landscape of four notable tea gardens

The tea region of West Lake Longjing Tea is composed of several subregions which differ from each other in terms of terrain, soil texture, tea varieties and tea processing. Five local brands have been created in the past, namely, Lion, Dragon, Tiger, Cloud and Plum. In this study, four tea gardens were selected to be investigated, as those gardens represent the region's characteristics, and the measures of evaluation are based on the fundamental structure, location and style, and the plantation.

2.1 The location and the size

	Tea garden	Location	Size
1	Lion Garden	Longjing village	10 hectares
2	Cloud Garden	Lingyin village	6.7 hectares
3	Crane Garden	Manjuelong village	16.7 hectares
4	Early Spring Garden	Wongjiashan village	13.3 hectares

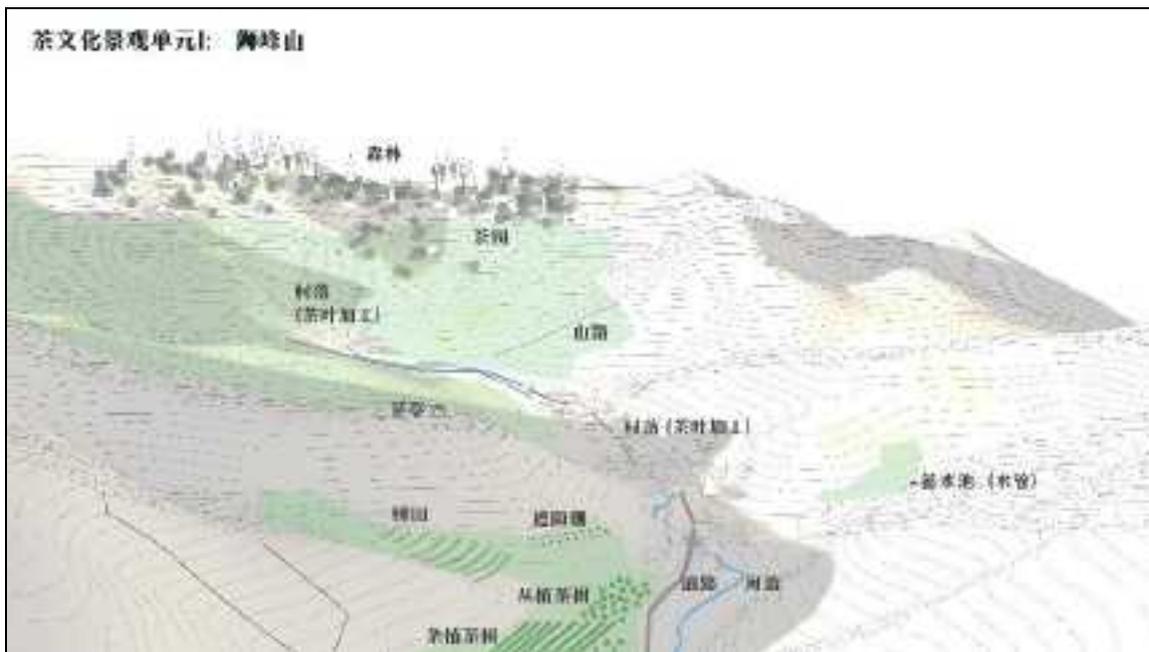


Image 6. The diagram of the landscape of Lion Ridge. Source: China Architecture Design & Research Group.

2.2 The characteristics of each garden

The characteristics of each tea garden feature three aspects, including the fundamental structure, location and style, and the plantation. Specifically, the fundamental structure is considered to include geological attributes, the slope and the orientation; location and style consists of the surroundings, such as the relationships between the garden and the terrain and between the garden and the community, as well as unique landscapes resulting from land ownership issues, the time needed for land reclamation and the tea crop growing season; and the tea plantation involves varieties, planting methods and techniques, and plantation history.

three aspects	fundamental structure			location and style		tea plantation		
	index	geological attributes	slope	orientation	surroundings	overall impression	varieties & planting techniques	Plantation history
Lion Garden	Mountainous on the north-west side, plain on the south-east side, water from the high land down to the plain, it looks like a bell shape. Misty rather than windy.	Mostly on a slope of more than 30° with good drainage.	South-east facing.	Closely-set on the steep slopes on the west side of Longjing village, at a large scale.	terrace patched	Longjing variety growing in a cluster in a large space.	Since the early Song dynasty (960–1127).	reservoir, pavilion
Cloud Garden	Mountainous on the south-west side, plain on the north-east side, opens towards West Lake and looks a bell shape.	Mostly on a slope between 15-20°, with some on a slope of more than 30°.	East and north-east facing.	Patchily-set on the sharp steep slope behind Cloud temple, at a small scale.	terrace & slope, patched	Longjing variety growing in a cluster in a large space.	Since the Tang dynasty when it was called Cloud Tea (618-907)	reservoir, pavilion
Crane Garden	Adjacent to West Lake, with undulating hills mingled with brooks and cascades.	Mostly on a slope between 5-15°, with some on a slope of more than 20°.	South-east facing.	Far away from the village, closely-packed on the sunny and gentle slopes of the hills.	terrace & slope	Longjing variety growing in a cluster in a small space.	Since the beginning of the Ming dynasty (1368-1644)	reservoir, sunshade
Early Spring Garden	Mountainous on the south-west side with gentle slopes and thin soil layers.	Mostly on a slope between 10-20°, with some on a slope of more than 30°.	South-east and south facing.	Nearby the village, closely-set on sunny slopes from half way up the hill to the top of the hill.	gentle undulating terrace	Longjing No. 43 growing in regularly planted plots, mostly the early season shooting variety, often undergoing drought.	Since the late Ming dynasty (1506-1521)	reservoir, sunshade



*Image 7. Tea Gardens in Lion Ridge Village. Source: China Architecture Design & Research Group.*

### **2.3 Traditional plantations**

The traditional plantations of West Lake Longjing Tea follow the life cycle of the tea trees, and protect the environment.

Traditionally, the seed harvest takes place after the first frost in the first year, and the seeds are stored in cellars. Farmers start ploughing the sun-facing lands deeply down to 30 cm in the spring of the second year, and flatten the soil after ploughing, growing the healthy seeds in the soil with a space of 1.2 to 1.5 m between lines. The rest of the farming operations include using burned straw as a fertilizer, and weeding in the late spring and early summer of every year. In the fourth spring, the tea trees mature and are ready for harvest. Like many other tree crops, after maturing, tea trees need regular pruning for a better yield.

Tea plantations in the region have a natural ecological diversity, so many indigenous plants remain in the region. In addition, vegetables, melons and fruit trees are grown around the tea plantations. All of these farming operations ensure the retention of soil and water in the region and the nurturing of the tea trees in the plantations. In the past twenty years, other facilities like reservoirs and sunshades have been installed in many tea gardens.

### **2.4 The varieties and cultivation techniques**

The tea varieties comprise the sexually-propagated Longjing variety and vegetatively-propagated tea. The Longjing variety is a traditional sexually-propagated tea, which underwent natural selection and a breeding programme over a long time before becoming a

well-founded local variety. The Longjing variety has medium and small sized leaves, and the shapes vary from long and narrow to round, oval and oblanceolate. Regarding the vegetatively-propagated tea, it was selected through a breeding programme and named Longjing No.43. This variety is an early season variety, with shooting taking place 10 to 15 days earlier than the habitual Longjing variety, and with a reliable yield and good aroma.

Cultivation techniques: after the spring harvest, the tea tree canopy needs fine pruning and usually four types are applied, i.e. heavy pruning, re-pruning, branch-pruning and top-pruning. Other farming operations mainly focus on ploughing and weeding. Some tea plantations adopt turfing to maintain water in the field, and some use canola seed pomace to fertilize the land in late autumn.



*Image 8. Tea Gardens in Plum Village. Source: China Architecture Design & Research Group.*

## **2.5 The harvest and process**

Nowadays, the West Lake Longjing Tea harvest has been modified from traditional techniques.

In the past, the tea harvest was carried out three or four times every year. In the present day, the harvest only takes place in spring. Only new shooting leaves are picked, and the leaves must be tender and moist, with one leaf-bud, one leaf-bud accompanied with one leaf or one leaf-bud accompanied with two leaves usually being picked. The procedure of the West Lake

Longjing Tea processing includes picking, piling, withering, pan-firing, sorting and sieving for storing. After processing, the new tea leaves become dry tea leaves, and appear bright and clean, uniform, straight and flat. Woks for pan-firing the tea leaves have evolved with time: in the early stages, the woks were different from those used in the later period, and only one wok was used, up to the use of seven woks in the 1920s. Since the 1960s, electric woks have been used to fry tea leaves, which has increased production; one wok can produce one kilogram of fried tea leaves.

## 2.6 The communities and the local culture

The family business model has been the main model in the region from the past to the present day in terms of tea plantations and tea processing. Every harvest season, often two seasonal workers are hired to pick tea for every 0.07 hectares. Tea trading companies purchase and sell tea products. Tea associations propose the products' grading and pricing. The China Tea Academy and other research institutes provide technology to support them. Other public affairs are regulated by local rules and agreements. Privately-owned tea plantations appeared around the 1900s. Few people owned land before 1952, and the owners hired workers to carry out the tea production. After 1952, every farmer was allocated 0.05 hectares of tea plantation. Competitions between villages in the region enhanced Longjing Tea products. Noticeably, tea houses and tea shops line up the main streets and roads in each village, and the Cloud Temple is rich in tea culture, while Longjing village contains many inscriptions of poems and lyrics praising tea and telling tea stories.

## 2.7 The communities and residential sites

Four typical tea gardens belong to four different villages: Longjing, Lingyin, Manjuelong and Wongjia, respectively. All the details relating to location, scale and history are listed in the table below.

Garden	Village	Village scale	Buildings related to tea culture	About the community
Lion	Longjing	Located on the west side of West Lake, with a population of 800.	Two dragon wells, 18 tea trees, fortunate court	The Wu, the Jiang, the Lin and the Yang are the dominant families. There are 53 hectares of gardens.
Cloud	Lingyin	Located at the foothill of Langya and 5 km away from Longjing village.	Buddhist Temple	The temple was built between 907-960.
Crane	Manjuelong	Located at the foothill of Wongjia, with a population of 752.	Tiger spring	The village was named after a temple which was built in 939. Osmanthus trees have been planted since the Ming dynasty, from around the 1400s.

Early Spring	Wongjia	Located on the south side of Nangao ridge at a height of 176 m above sea level and with a population of 900.	Extra dragon well	The Wong is the dominant family that emigrated from neighbouring Fujian. There are 66.7 hectares of tea gardens and osmanthus trees.
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Image 9. Tea Gardens in Cloud Village. Source: China Architecture Design & Research Group.

**2.8 The relations with trade and the route of trade**

As a specialty of the region, tea products have been strongly associated with farmers’ craft businesses and Hangzhou’s trade throughout a long history.

The development of West Lake Longjing Tea has rested on consumption by the locals and investment of Hangzhou’s merchants in the industry. There are many tracks and roads in the villages, which facilitate the connection with Hangzhou. After the Qing dynasty (around the late 1900s), capitalists from Hangzhou purchased lands in Longjing village and established tea plantations and delivered tea products to sell both inside and outside Hangzhou.

### 3. The records from archives and related research

#### 3.1 The archival records

Since 2005, several surveys have been conducted in the West Lake Longjing Tea region concerning plantations and tree varieties, and all records have been kept as videos. In addition, archaeological investigations of cultural relics and heritage were carried out in the region, in particular concerning Longjing temple, the eight scenes inscribed by the Emperor Qianlong, and the historical monuments related to historic figures such as the famous calligrapher Dong Qichang. The local committee in charge of the resort's management provided a detailed map and satellite data. All the documents and data have been systematically filed.

All the files are saved in Hangzhou Municipal Archive Museum.



*Image 10. Part view in Tea Gardens of Lion Ridge Village. Source: China Architecture Design & Research Group.*

## 3.2 The related studies

### THE DEVELOPMENT THROUGH HISTORY

The emergence of West Lake Longjing Tea started between 618 and 1279. Many records describe Longjing tea as a temple tea. It flourished during the Ming and Qing dynasties, since the 1300s, and numerous documents originate from this period. After the 1900s, the region rapidly developed, and chronological records increased over this period and are available for inspection. In the 21st century, it was considered that the region should be protected for the sake of ensuring its sustainable development and protecting its environment, resulting in a series of insightful schemes for the region's long-term future.

### THE COURSE OF THE REGION'S EVOLUTION

The region continues to evolve, and its development has been conducted in a way that respects traditional tea plantation techniques.

- 1) Production expansion: In 1911, tea gardens were scattered in the region. The gardens were enlarged and expanded between 1920 and 1930, and between 1960 and 1980, both in terms of location and plantation size (i.e. the gardens expanded from the hills to the plains and the trees were planted more densely).
- 2) Production standardization: Traditionally, tea tree plantations were run without pruning management, and trees grew naturally, reaching heights of nearly two metres, or stood at less than one metre in height. Since the 1980s, pruning techniques have been applied, and some plantations have introduced irrigation systems and shading techniques.
- 3) Production evolution: The production of crops and vegetables has reduced, and tea crops are providing greater contributions to the local economy. Leisure tourism and hospitality have been developed along with the tea industry.

### THE ACHIEVEMENT OF THE RESEARCH

Published books about Longjing Tea mainly focus on agriculture, tea products and tea ware like tea pots, such as *Tea Evaluation*, *Chinese Tea Cannon* and *West Lake Longjing Tea*. It seems that there are few studies into Longjing Tea culture and plantations, and research is rather lacking on the aspects of the tea cultural conservation landscape of West Lake Longjing Tea.



*Image 11.  
Tea  
Gardens in  
Wongjia  
Village.  
Source:  
China  
Architecture  
Design &  
Research  
Group.*

#### **4. The threats facing the landscape and its current situation**

The tea cultural conservation landscape of West Lake Longjing Tea is confronted by several risks caused by economic development, lifestyle changes and modern plantation management. However, the region has been generally kept in a good condition and has good prospects for the future.

The local communities have applied traditional techniques while sensitively incorporating modern management and facilities into the plantations, resulting in their substantial development to meet the needs of the growing population as well as the requirements of economic development.

The local communities provide training courses to farmers to meet the challenge of using new technology in the tea process, such as the replacement of manually pan-firing tea by tea pan-firing machines.

Family businesses in the tea industry have been changing over time. More local young people have begun to return to the tea industry. Tea vendors have re-emerged and have enriched brand-based marketing strategies for the sale of tea products.

Modern technologies are balanced with traditional techniques. For example, organic fertilizers enhance tea yield and quality, digital machines increase productivity, and modern facilities such as frost prevention fans, digital irrigation, nutrition monitors and pest alarms together advance plantation management and reduce costs.

Generally, the West Lake Longjing Tea industry still follows a family business model, while seasonal workers are available to hire in the harvest season, which is coordinated by the communities.

Some tea plantations have lower yielding tea trees, and it takes time to return to an ecological balance.

In dry and hot summers, reservoirs are essential to prevent water deficiency in the trees. Environmentally-friendly pest management is applied to repel pests. To reduce chemical residue, such as from pesticides and herbicides, organic fertilizer should be allocated to the family businesses. To preserve the local varieties, government subsidies are provided to those who grow traditional local varieties.

In recent years, the population of villagers in the region has not fluctuated. Since 2000, many villages have refurbished their houses to improve living conditions, while keeping the traditional architectural style.



*Image 12. Overview of Yangmei Ridge Village (Bayberry Ridge Village).  
Source: China Architecture Design & Research Group.*

## 5. The protection and current management in the region

The protection of the West Lake Longjing Tea region is based on laws, regulations and traditional customs. The region preserves the indigenous culture and native species in the environment, maintaining the whole ecological system. Specific laws include *Regulations of Protection for Hangzhou West Lake Longjing Tea Region*, issued in June 2001, and *Schemes of Longjing Tea Region Management on Geographical Identification Protection*, implemented in October 2001. All the regulations and schemes have ensured the effective management of the region.

As for the protection of the region, there is another law called *Regulations of Hangzhou West Lake Longjing Tea Region's Designation* that protects the heritage in the region.

In addition, traditional techniques still play a role in the management of the region. Local committees and village leaders are responsible for village affairs, communication with farmers, and coordination of businesses in the villages.

All of these methods, that is, the combination of modern management and technologies with traditional cultures and techniques, together ensure the sustainable development of the region.



Image 13. Tea Gardens in Bayberry Ridge Village. Source: China Architecture Design & Research Group.

## 6. Conclusion

### 6.1 Summary

West Lake offers the conditions for producing high quality tea, while the city of Hangzhou provides financial assistance to the tea industry, and the locals, throughout generations, have made their best efforts to maintain the environment. Altogether, these have given long-term advantages to the region and ensured its outstanding position in the world.

### 6.2 The current situation

Due to the prestige of the region, numerous records are available for research, which would be beneficial for further studies.



*Image 14. Tea Gardens in Nine Ripple Village.  
Source: China Architecture Design & Research Group.*

### 6.3 The difference with other landscapes

The West Lake Longjing Tea region is distinct due to its unique location and its celebrated culture. Longjing tea has a special flat shape resulting from its particular tea processing techniques. The industry leads the development of the region's neighbouring tea industries.

### 6.4 The distinctive characteristics of the region

The geological features, the water/hydrological system and the monsoon climate are the distinctive characteristics of the region.

## **6.5 The issues in management and the solutions**

One of the issues is the shortage of skilled workers who have knowledge of traditional tea frying techniques. Another issue relates to residential buildings and the conflict between the need for refurbishing and the need to maintain traditional architectural styles.

Constructive suggestions and multifaceted protection systems are applied, ensuring the region's sustainability.

## **6.6 The suggestions and the visions**

The description and education of the region should be systematically established.

The four typical tea gardens should be conserved in ecologically authentic and genuine conditions, and protected by national laws.

# Cultural Landscape of Tea Gardens in Anhua, Hunan Province

*Wang Chaoyi*  
*Working Group of China Architecture*  
*Design & Research Institute*

## 1. Overview

Anhua is located to the south of Dongting Lake in the middle reaches of the Yangtze River and of the Zijiang River, in the Hunan Province of China. It is the birthplace of Meishan culture. Within the mountainous territory, there are gullies and ravines, and its vertical climate is obvious.

Tea gardens in Anhua have been transporting dark tea to border nomadic areas for hundreds of years, and have so far retained a complete industrial chain of tea gardens, villages, tea roads and tea factories. Tea gardens in Anhua embody the traditions of the villages along the Zijiang River in terms of human settlements and mountain ecological environmental protection, as well as the ecological wisdom of tea gardens, such as wild tea domestication, tea planting and dark tea production technology, water resources management and inter-cropping agricultural farming systems.

### 1.1 Geographic information

Anhua County is located at 110°43'07"-111°58'51" east longitude and 27°58'54"- 28°38'37" north latitude. It is 123.67 kilometres long from east to west, and 73.46 kilometres from north to south, with a total area of 4,950 square kilometres. It has a subtropical monsoon climate with distinct seasons, abundant rainfall and a short freezing period. The growth period of the tea trees takes place over 7 months. With the annual average temperature of 16.2°C, the county has 279 frost-free days, 1,376 hours of sunshine and 1,680 mm of annual precipitation per year. The total length of the rivers in the territory is 2,242 kilometres, and the water area accounts for 98% of the total area.



Image 1. Location Map of Tea Production Area in Anhua. Source: Working group of the China Institute of Architectural Design.

The mountains in Anhua are contiguous, with scattered hills, hillsides and flat lands. The mountains are strongly cut by many V-shaped valleys and the relative height is high. Mountain area accounts for 82% of the total area, with obvious mountain climate characteristics. The forest cover of the whole county is over 76%, and the vegetation belongs to the middle subtropical evergreen broad-leaved forest zone. The vegetation types include mixed forests of Chinese fir, including *Pinus massoniana* and *Cunninghamia lanceolata*, and *Camellia oleifera* and crops. The natural ecological environment is rich and diverse.

Anhua moraine is a remnant from the global ice age 600 million years ago, and accounts for 85% of the global moraine total. Moraine, slate shale and igneous rock have weathered to form acidic and weakly acidic rotten rock soil, which is rich in trace elements and suitable for tea tree growth.

## 1.2 Historical evolution

The earliest historical record of Anhua tea comes from the Tang dynasty (618-907), and is limited to local production and marketing. When Anhua County was established in 1072 in the Song dynasty, tea trees "grew on the banks of cliffs and rivers, and grew on their own without people's interference". In the Yuan dynasty (1271-1368), tea trees were converted from wild to artificial cultivation, and most residents took planting tea as their profession. After 1595, in the

Ming dynasty, Anhua dark tea took the place of Sichuan tea and occupied the market in the northwest border areas. Subsequently, it sold well in the northwest, until the 1990s. At that period, tea towns along the Zijiang River began to prosper. In the Qing dynasty (1636-1912), with the development of the Sino-Mongolian-Russian tea road, Anhua tea was sold to Mongolia and Russia. The tea market in Anhua was very prosperous, and a number of tea gardens appeared. During the Tongzhi period of the Qing dynasty (1862-1874), Anhua Qianliang tea was created. Tea gardens in Anhua continued to produce tea during the Republic of China. From 1950 to 1990, Anhua tea production reduced, but tea gardens gradually resumed their prior scale of production after 2000.

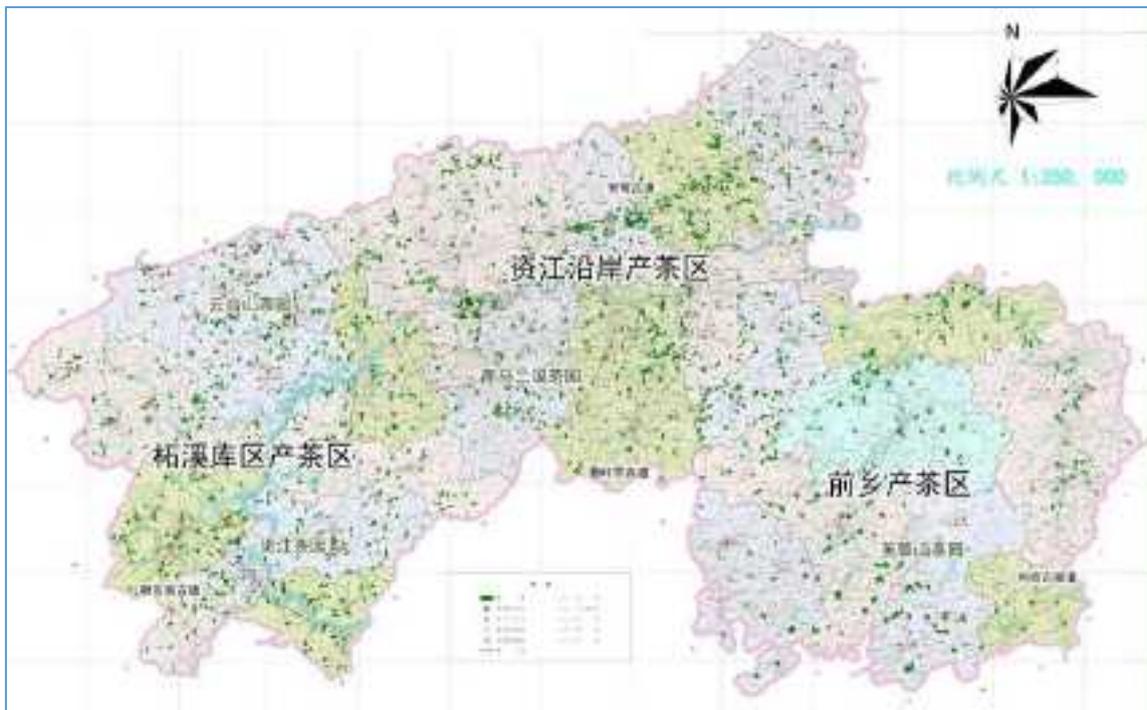


Image 2. Distribution Map of Tea Gardens of Anhua.  
Source: Anhua County Cultural Relics Institute.

### 1.3 Landscape scale

The distribution of tea gardens in Anhua covers the Zijiang River Basin and Yishui River Basin, including 15 villages and towns. The area of tea gardens fluctuates under the influence of market demand. In the 20th century, there were three large-scale expansions of tea gardens in 1959, 1967 and 1973. According to the statistics of Anhua County, the area of tea gardens in Anhua was 156,000 mu (10,400 ha) in 1982. In the 1990s, some tea gardens were abandoned. In 2000, the area of tea gardens in Anhua fell to 3,333 ha, but subsequently grew to around 6,666 ha in 2007, 14,000 ha in 2013, 18,666 ha in 2015 and to 23,333 ha by the end of 2018.

#### 1.4 Landscape distribution and characteristics

Most of the tea gardens in Anhua are distributed in the hillside area, with an altitude of 250-800 metres. The tea gardens conform to the trend of natural terrain, and the tea trees are planted along contour lines. Tea farmers have long formed cultivation and management techniques to maintain the ecological quality of the tea gardens, and have highly praised the ecological tea garden models of "small tea gardens" and "tea planted among woods, and woods within tea gardens". Around the tea gardens, hilltops, hillsides and eroded ditches, the original vegetation environment and ecology should be preserved as much as possible, and protective forests should be widely planted to maintain ecological diversity. The Anhua Yuntai big-leaf tea is a representative of the Anhua tea species complex that has been mixed for breeding. It was popularized in Hunan's tea area between the 1950s and 1970s. About 70%-80% of Anhua has been planted with Yuntai big-leaf tea. In 1957, *Zhuyeqi* variety was bred from large leaf teas in Yuntai Mountain in Anhua by the Hunan Tea Institute. More than 3,333 ha of *Zhuyeqi* has been planted in Anhua County. When picking tea leaves, the tea stalks along with leaves are picked using a tool called a Chazhaizi. Afterwards, dark-raw tea is made and then transported to the tea farms for refining and processing.



*Image 3.*  
*Tea Gardens of Anhua.*  
*Source: Zhou Deshu.*

#### 1.5 Social and cultural systems

There are many mountains and few fields in Anhua. Tea has been the staple since ancient times. Tea-producing villages in the mountainous areas of Anhua, such as Da'an village and Meishan village, have maintained the traditional social structure and tea garden management model and have continuously produced tea since ancient times. During the tea picking season, tea merchants purchase the raw tea picked and made by tea farmers in the village. Raw tea is transported to the bazaar on the bank of the Zijiang River via the ancient road, processed and

packaged, and then transported to the tea distributing city by water from the wharf. Traditional tea market towns such as Huangshaping, Tangjiaguan and Baozhiyuan have developed complex labour markets, business cooperation chains and social structures. Cultural relics such as tea markets, tea kiosks, native banks, guild halls and wharves have been retained. Anhua is also home to 37 stelae, engraved with warning regulations that regulated the tea market during the Ming and Qing dynasties. Qianliang Tea work songs were produced to accompany the processing of Qianliang Tea.

Anhua dark tea is a kind of tea suitable for industrial processing. Tea production has developed from traditional manual manufacturing by tea farmers to manual matching with machines, and then to all the process being conducted by machines. Anhua Tea Factory and Baishaxi Tea Factory are both modern tea factories developed from traditional tea shops. Anhua Tea Factory maintains a large number of tea scientific research samples, original documents and archives, and early factories and equipment. Since 1950, the number of tea plantations operated by enterprises has gradually increased.

In the past ten years, Anhua has held a festival to celebrate the opening of Anhua dark tea gardens every spring, and an Anhua dark tea cultural festival every three years. The local custom of drinking ground tea is maintained. When tasting Anhua dark tea, usually rough and atmospheric tea sets are chosen.



*Image 4. Early Architecture of Anhua Tea Plantation. Source: Working group of the China Institute of Architectural Design.*

## 1.6 Relevant communities and settlements

From ancient times to the present day, tea farmers, tea merchants, scholars, officials and other groups have jointly built and maintained the cultural landscape of the tea gardens of Anhua.

In 2017, Anhua County had a resident population of 913,800, including 282,800 in urban areas and 631,000 in rural areas. Residents include 26 ethnic groups such as the Han, Tujia, Miao and Mongolian groups, with Han people accounting for more than 95%.

The Anhua dark tea industry has always been the pillar industry of Anhua, accounting for 21% of the county's total economy in 2018, with about 350,000 people engaged in the tea industry. According to labour force monitoring data, the proportion of the outflow population has shown an upward trend in recent years. In 2017, 217,700 people went outside the county to work, and nearly half of the workers outside the province were employed in the Pearl River Delta region.



*Image 5. Da'an Villagers' Residence. Source: Working group of the China Institute of Architectural Design.*



*Image 6. High Mountain Tea Gardens in Yuntai Mountain. Source: Working group of the China Institute of Architectural Design.*

## 1.7 Links with trade, trade routes and economic development opportunities

In 1089, in the Northern Song dynasty, the government set up a trading market in Anhua to purchase Anhua tea in order to exchange it for horses in the northwest. From then on, commercial distribution centres began to appear on both sides of the Zijiang River. Before 1595, in the Ming dynasty, Anhua tea was sold privately by tea merchants because of its large quantity and low price compared with official tea from Sichuan and Hanzhong. After Anhua dark tea was listed as an official tea in 1595, it gradually sold well in Shanxi, Shaanxi and Gansu and became the largest commodity on the Ancient Tea-Horse Route. Tea merchants from Shaanxi, Shanxi, Gansu, Jiangxi, Hubei, Guangdong, Hunan and other places set up tea shops to purchase, process, transport and sell tea along the Zijiang River every year, gradually forming many ancient tea markets such as Mapeishi, Huangshaping, Tangjiaguan, Jiangnan, Xiaoyan and

Baozhiyuan. From 1644 to 1950, Anhua dark-raw tea was transported to Jingyang, Shaanxi, where it was processed into Fuzhuan Tea.

In the 17th century, the China-Mongolia-Russia tea route was opened up. After the merchants bought raw tea and refined it, the dark tea was transported to the northwest market, and the black tea was sold to Hankou and then transported north to Mongolia and Russia. After 1852, in the Qing dynasty, trade routes were blocked due to the Taiping Rebellion, which affected the northwest tea trade. After 1874, the war subsided and trade resumed slowly.

### **1.8 Connections with surrounding landscapes and its region/country**

The landscape of the tea gardens of Anhua is closely connected with its surrounding natural and cultural environment.

Anhua County is an integral part of the forested areas in the famous mountains and great lakes region in central Hunan. It is bordered by Xuefeng Mountain in the west and Dongting Lake in the east. There are 72 peaks over 1,000 metres above sea level in the territory. The water flows over 120 kilometres. The forest coverage of the county is 76.17%. Xuefeng Lake National Wetland Park, Zhexi National Forest Park, Hongyan Nature Reserve, Liubuxi National Nature Reserve and many other ecologically sound nature landscape protection areas are located in Anhua County.

The tea garden villages are located in the remote and high mountains. Tea merchants and tea farmers of past dynasties built and maintained the ancient road from the tea gardens to the towns. Along the road, there were corridor bridges to protect against wind and rain, and tea kiosks allowing pedestrians travelling along the road to take a rest, and even providing free tea. During the Ming and Qing dynasties, there were over 240 corridor bridges and over 200 tea kiosks.

## **2. Famous and important landscape of tea gardens**

Climate conditions such as sunshine, rainfall and temperature in Anhua are similar in all tea gardens. The differences among tea gardens are reflected in the distribution of streams, the vegetation status and the soil structure in the region. Da'an village is a typical representative of the tea gardens of Anhua. The environmental characteristics are typical of its geographical location with three parallel rivers, mountains and frequent low clouds and fog. It once produced Qujiangbaopian Tea (with tea-leaves pressed into the shape of coin-sized slices), a tribute tea in the Ming dynasty. It testifies to the traditional production and lifestyle of the tea industry from ancient times onwards.



Image 7. Distribution Map of Tea Gardens in Da'an Village. Source: Working group of the China Institute of Architectural Design.

## 2.1 Location and scale

Da'an village in Qujiang Town, Anhua County, is located in a mountainous area and includes two groups: Huangcha District and Da'an District. Residential buildings and tea gardens are scattered due to the terrain. The total area under tea cultivation is over 133 ha.

## 2.2 Main features of the landscape

Da'an village retains a complete system of villages, tea gardens, ancient roads, bridges and other elements, showing the typical growth environment and planting and processing procedures of Anhua dark tea, as well as the dwelling culture and tea production culture of Anhua village.

Gantianjie Tea Garden is located in Huangcha District and was cultivated extensively during the Ming and Qing dynasties (1368-1912). Tea gardens are located on both sides of the ancient road along the Huangchaxi stone arch bridge to the tea mountain. In the 1980s, the tea industry was sluggish and the tea garden was deserted. The local villagers planted fruits and trees in the ancient tea gardens at the foot and on the mountainside of Gantianjie, forming a landscape of tea trees interplanted with other trees. The Fengshuping Tea Garden on the mountain top covered about 8 ha, and the Matibianhuangshan Tea Garden and the mixed tea garden in which

tea trees were interplanted with fruit trees covered about 15.5 ha. Daping Tea Garden is located on the hillside from the top of the back mountain of Laowu Courtyard to the eastern part of Da'an District, with distribution conforming to the natural terrain. There is a piece of a *Stele Engraved with Warning Regulations of the Tea Mountain* dating from 1785, during the Qing dynasty, in the tea garden.

### 2.3 Planting tradition

Anhua tea trees are shrub-sized plants. In the past, large wild tea trees were cut down and burned; after three years, the plant ash was piled on the root until it sprouted again to form what was called a transitional tea tree. The tea fruits produced by the transitional tea trees were collected, and the plants were directly seeded, subsequently forming cultivated tea trees. The direct seeding method is to drill large holes, sow a handful of tea fruits in each hole and spread them inside the holes, then cover the holes with soil, mark them with bamboo plates, and leave two to three strong seedlings in each hole after the tea seedlings are unearthed. The tea garden is a clump-planted tea garden, basically arranged in rows with a row spacing of 1.7-3 metres and clump spacing of 0.3-1.7 metres.



Image 8. Tea Gardens of Tangxi. Source: Zhou Deshu.

Another method is seedling raising and transplanting: tea fruits are furrow sowed in front of and behind the house, and when the height of tea seedlings is 0.3 metres, approximately two years later, the better seedlings are transplanted. Four or five years after transplanting, the leaves of the seedlings can be picked, and spring tea is picked only once in the first two years. After seven or eight years, the branches are luxuriant and tea can be picked in large quantities. Shrub-type tea trees gradually age and die after some decades.

## 2.4 Species and cultivation techniques of tea trees

The tea trees in Anhua result from a mix of the Anhua tea species complex.

In the cultivation of tea gardens, there is generally no special fertilizer management, but deep cultivation of the tea garden, commonly known as digging subsoil, can inhibit weeds, increase organic matter and change the aeration state and structure of soil. Farmers in the Houxiang area, where Da'an village is located, only renew the very old tea gardens using deep pruning. The quality of the tea trees that are not pruned will improve after several years. Food and other crops, mainly corn, sweet potatoes and oranges, are widely interplanted in tea gardens.



*Image 9. High Mountain Tea Gardens in Yuntai Mountain. Source: Working group of the China Institute of Architectural Design.*

## 2.5 Picking and tea processing

Tea is usually picked once or twice a year: the first tea is after 5 May, and the summer tea is picked after 7 July. Picking is carried out when the leaves of the new shoots spread and the tea branches are "green on top and red on the bottom". The tea stalks along with leaves are picked using a tool named a Chazhaizi.

Anhua tea is mainly made of dark tea. The manufacturing technology of dark tea originated in Anhua in the late 15th century. It was improved by referring to the manufacturing method of Sichuan dark tea, and a unique process was formed. The tea is fragrant with pine and smoke, which meets the dietary needs of nomadic people in northwest China. The series of dark tea products made from dark-raw tea includes loose Xiangjian tea packed in baskets, and Qianliang tea, Fuzhuan tea and dark brick tea, which are convenient to transport. After screening, picking, stacking and other processing techniques are implemented, Qianliang tea is processed by steaming, basket packing, pressing and sun drying, among other techniques. The tea is

packaged with locally sourced bamboo chips and Polygonum leaf, which is suitable for long-distance transportation by camels and horses.

## 2.6 Social structure and cultural system

Before the Tang dynasty (618-907), some people planted tea trees in Da'an Village to make tea. The produced Baopian Tea was transported to Shenwan and Xiawan on the Zijiang River by ancient road and then down the Zijiang River outside the mountain. The tea was sold to Jiangling, Xiangyang in Hubei Province and even Chang 'an, and was called Qujiangbaopian Tea. Maowenxi's *Tea Spectrum* in 935 is the earliest written record of Qujiangbaopian Tea.

From the Song dynasty (960-1279) onwards, the people of Da'an Village in Qujiang have made a living by planting and making tea. In ancient times, villagers transported dark-raw tea or black tea to Shenwan (back and forth on the same day) on the Zijiang River via the stone-board ancient road to exchange it for rice mainly coming from the outside world. Nowadays, Da'an village still maintains a simple village social structure, and the skill of making dark tea is passed down from generation to generation.



*Image 10. Warehouse of Qianliang Tea in Anhua Tea Plantation. Source: Working group of the China Institute of Architectural Design.*

## 2.7 Relevant communities and settlements

Da'an village is a stable residence of the Xia and Shu ethnic groups. According to the genealogy of the Shu people and on-site investigations, the village was built around 1550 in the Ming dynasty, about 470 years ago. Local residents keep the custom of drinking ground tea and dark-raw tea, and generally do not drink Qianliang Tea. The 15th day of the 7th lunar month is an important festival for families to worship their ancestors.

Most of the residential buildings were built between the 1920s and the 1980s, distributed over the intermountain basin with an altitude of 180-190 metres, or in three to five patches, or scattered around the basin and on both sides of the creek. There are 73 wooden buildings in Da'an District, Zhongguping and Laowu Courtyard. A family burial area is located on the top of the tea mountain, while other cultural relics include Qiling Bridge, Qiling Tea Kiosk Site and the ancient well in the village.

## 2.8 Links with trade and trade routes

Tea leaves from Da'an Village tea garden are transported to the ancient tea market on the bank of Zijiang River via Xin'an-xu Ancient Road. Stone slab roads, stone bridges, stone stelae, wharves, and so on, still exist along the road.

Xin'an-xu Ancient Road is the main road linking Xinhua, Anhua and Xupu counties. People from Xinhua, Anhua and other places go ashore to Xiawan by the Zijiang River and reach Xupu County along the Xin'an-xu Ancient Road (from Zhongguping in Xiawan-Huangchaxi District, they cross Laowu Courtyard, via the Daping Ancient Tea Garden in Da'an District, and go southwest through Lianaopo Ancient Tea Garden, Lianli Village, Dachang Village and Yanjia Village to the Xupu area). The existing ancient road has a total length of 5,000 metres. There are two sections of well-preserved stone-board road, amounting to about 1,800 metres. The stone-board road is about 1-1.2 metres wide. The height difference between the two stone steps is not more than 30 centimetres. Tea farmers carry their loads up the steps, and mules, horses and camels carrying goods come and go.

## 3. Records and research

### 3.1 Records

Since 2000, the tea gardens of Anhua have conducted many investigations on the tea culture landscape. The investigation results include the *List of Anhua Dark Tea Cultural Heritage in Anhua County* and *The Declaration of Hunan Anhua Dark Tea Cultural System, an Important Agricultural Cultural Heritage in China*. Anhua has conducted extensive archaeological investigations into traditional villages, ancient roads and tea markets. The ancient tea trade town, Mapeishi, has an archaeological plan. Satellite image data are updated year by year, and all kinds of image records and documents are systematically collated.

The above data files are kept in the Anhua County Cultural Relics Institute.

### 3.2. Relevant research

#### HISTORICAL DEVELOPMENT STAGE

The tea gardens of Anhua started in the Tang and Song dynasties (618-1279), flourished in the Ming and Qing dynasties (1368-1912), and continue to this day. They developed rapidly from the end of the 20th century to the beginning of the 21st century.

### LANDSCAPE EVOLUTION PROCESS

Based on the premise of inheriting the traditional way of land use and respecting traditional wisdom, the landscape of the tea gardens of Anhua continues to evolve. After 1950, all new tea gardens were planted in lines, sparse tea gardens were planted with more tea trees, and the original hillside tea gardens were gradually transformed into terraced fields.

### MAIN RESEARCH RESULTS

*The Declaration of Hunan Anhua Dark Tea Cultural System, an Important Agricultural Cultural Heritage in China*, compiled in 2019, comprehensively includes the research carried out on the cultural landscape of the tea gardens of Anhua, with detailed research results on history, planting methods and trade. There are sufficient data on the social structure and cultural system, but research from the perspective of the cultural landscape is not systematic.



*Image 11. High Mountain Tea Garden in Yuntai Mountain. Source: Working group of the China Institute of Architectural Design.*

## 4. Threats and development status of the landscape of tea gardens

The landscape of the tea gardens of Anhua faces threats that other traditional agricultural landscapes face, such as social and economic development, changes in production and lifestyle, and intervention of modern management. However, the overall landscape of the tea gardens has been well maintained and continued.

Facing the pressures of new development and the demands of population growth and construction development, Anhua has used multi-level management measures to control the scale of land available for construction, keeping the tea garden ecosystem relatively stable.

Dongshi Township, Anhua County, has maintained the ancient papermaking technique and traditional bamboo strip manufacturing handed down from generation to generation for packaging Anhua dark tea. However, due to high labour costs, workshops for ancient papermaking techniques have been greatly reduced.

On the basis of the traditional family production model, the large-scale production model of tea factories has developed slowly. Tea farmers and tea factories sell tea over the internet. Large modern tea factories adopt standardized management methods and employ craftsmen to produce Qianliang Tea using traditional production methods, thus ensuring the quality of the tea and the inheritance of production techniques.

In recent years, Anhua has promoted the green-planting of ecological tea gardens, using rapeseed cakes, cow dung and other organic fertilizers to promote the recycling of resources and form a complete ecological circulation chain.

Tea gardens in Anhua County are scattered, mostly in remote mountainous areas. Due to the limited labour force, some tea gardens have adopted extensive management, which is objectively beneficial for the ecological restoration of tea gardens. A small number of areas have over-developed the tea gardens. In some of the newly-developed tea gardens, the tea trees grow poorly, and a certain period of time will be needed to restore ecological diversity.

In recent years, the scale of tea gardens has expanded and tea enterprises have been put into production at a faster speed. The development of production technology in enterprises is uneven. There are some phenomena of disorderly competition and unreasonable price systems. There are many infrastructure construction projects in Anhua. Tourism development projects not only bring income to the local area, but also change the living environment of the villages to a certain extent.

## **5. Current protection and management of the landscape of tea gardens**

The protection of the tea garden landscape of Anhua is guaranteed by multiple systems of laws, plans and traditional methods. The tea area preserves the original natural and cultural features of the area and maintains a balanced tea garden ecosystem.

At the level of laws and regulations, Yiyang City has formulated the *Yiyang City Anhua Dark Tea Cultural Heritage Protection Regulations combining the Cultural Relics Protection Law of the People's Republic of China, the Intangible Cultural Heritage Law of the People's Republic*



Image 12.  
Tangxi Tea  
Garden.  
Source:  
Working group  
of the China  
Institute of  
Architectural  
Design.

of China and other laws and regulations with practice, and has implemented effective overall landscape control and management since January 2018.

The protection at the planning level includes: *The System Protection and Development Plan of Anhua Dark Tea Culture (2019-2028)*, *The Opinions on Comprehensively Promoting the Quality Improvement and Upgrading of the Tea Industry (2013)*, *Yiyang City Tea Industry "13th five-year" Development Plan (2016-2020)*, *Anhua County Tea Industry "13th five-year" Development Plan (2016-2020)*, *The Opinions on Expanding and Strengthening the Tea Industry from Anhua County People's Government of the Communist Party of China*, and detailed implementation rules.

Units that cooperate with the implementation of the overall landscape management regulations include: the Anhua County Tea Tourism Industry Development Service Centre, the Agricultural and Rural Bureau, the Bureau of Culture, Tourism, Radio, Film and Sports, the Tea Industry, and the Cultural Relics Bureau, etc. At the grass-roots level of the tea village, village committees coordinate village affairs to maintain the traditional consensus on ecological governance.

In addition, the traditional management system still plays an active role. Since ancient times, tea has been the main industry of Anhua County. During the Ming and Qing dynasties, in order to ban private selling, fake tea and fake silver, and to guarantee the quality of the tea and fair trade, the government and the people jointly formulated strict rules and regulations and village rules and regulations, which are updated every few years. Stelae engraved with warnings of punishment, to inform the public, and stelae engraved with punishment regulations for criminals are set up in tea markets and public places. The county has found a total of 37 stelae engraved with warnings of punishment and stelae engraved with punishment regulations about tea, such as the *Stele Engraved with Warnings of Punishment about Tea in Xiaoyan Baozhiyuan in the 8th Year of Yongzheng*, the *Stele Engraved with Warnings of Punishment about Tea Seedlings in Gaomaer Xi in the 17th Year of Daoguang*, and the *Stele Engraved with Warnings of Punishment in Dongshi*. In 1837, the *Stele Engraved with Warnings of Punishment about Tea Seedlings in Gaomaer Xi* recorded that "tea seedlings are not allowed to be mixed, nor are they allowed to be dug and stolen outside. Planters can dig only in their own garden. In case of violation, the penalty is the same for everyone." This is the earliest written record of tea garden management in Anhua.

The tea village continues to maintain traditional close social ties. The planting and maintenance methods of tea gardens have been handed down from generation to generation. A relatively stable production and marketing network has been established between tea farmers and enterprises. All of these have strengthened the resilience of the traditional system and have played a positive role in jointly maintaining the ecology of tea gardens and cooperative production. Some tea gardens abandoned in the 1970s resumed production around 2000.

## 6. Conclusion

### 6.1 Overview

Anhua tea gardens are located in an area of rare moraine rock concentration. Clouds formed by the geographical environment of high mountains and rivers provide sufficient diffused light for tea trees to grow. Anhua region has a long history of tea industry, and has long relied on the Ancient Tea-Horse Route (*Cha Ma Gu Dao*) and the Tea Route of Ten Thousand Miles (*Wan Li Cha Dao*) to provide tea to border areas. The tea gardens of Anhua have been transporting dark tea to nomadic border areas for hundreds of years, and have so far retained a complete industrial chain of tea gardens, villages, tea roads and tea factories. Anhua tea gardens embody the traditions of the villages along the Zijiang River in terms of human settlements and mountain ecological environmental protection, as well as the ecological wisdom of tea gardens such as wild tea domestication, tea planting and dark tea production technology, water resource management and intercropping agricultural farming systems, forming an outstanding cultural landscape of tea gardens.

## 6.2 Research status

Abundant literature on the tea gardens of Anhua is available, which provides a basis for a comprehensive landscape analysis.

## 6.3 Difference from landscapes of other tea gardens

Compared with the producing areas around Anhua County, Anhua tea gardens have rare geological characteristics of moraine rock, and the soil type is very suitable for the growth of tea trees.

## 6.4 Outstanding landscape features

The landscapes of the tea gardens in Da'an Village represent an environment suitable for the growth of tea trees, and the stable ecological and social system of traditional tea gardens. The elements are complete and well preserved. As a whole, the harmonious relationship between the village, tea garden and natural environment is embodied in the tea garden cultural landscape and the vitality of the tea industry from ancient times to the present day, and has good potential to apply for World Heritage.



*Image 13. Tea Gardens in Da'an Village. Source: Working group of the China Institute of Architectural Design.*

## 6.5 The problems of protection and management and countermeasures

In the face of demands from infrastructure renovation, renovation of old houses, population growth and the development of culture and tourism, urban planning has strictly controlled the landscape. Multiple monitoring and protection mechanisms can promptly detect and control adverse impacts and make effective interventions at the embryonic stage, without threatening the preservation, authenticity and integrity of the landscape.

The population of the traditional villages has a decreasing trend. Ancient roads, bridges, tea kiosks and other sites around tea gardens are located in remote places and are damaged to varying degrees by natural disasters such as mountain torrents, landslides, insects and ants.

Existing protection and management measures have effectively controlled the scale of tea gardens and infrastructure and can continue to strengthen the research and protection of the ecological diversity.

## 6.6 Suggestions and prospects

It is suggested that ecological tea gardens should be encouraged, while the promotion of technological innovation on the basis of maintaining tradition is continued. The Anhua tea market environment should be further standardised and sustainable development promoted.

As a whole, the tea gardens of Da'an village are representative. Tea gardens of Anhua have good potential to apply for World Heritage, as they respect integrity, authenticity, ecology and cultural flexibility, and are effectively protected by national laws and regulations.

## References

- Agriculture Bureau of Anhua County, *The Record of Anhua Tea*, 1990.
- Anhua County People's Government. *The Declaration of Hunan Anhua Dark Tea Cultural System, an Important Agricultural Cultural Heritage in China*, 2019.
- Archives Bureau of Anhua County, Hunan Province. *Collection of Tea Industry Archives in Anhua County 1508-1948*, 2017.
- Chen, Chuan, *A General History of Tea* [茶叶通史] Chinese. Beijing: China Agriculture Press, 1984.
- Chen, Zongmao and Yang Yajun(eds.), *The Classics of Chinese Tea* [中国茶经] Chinese. Shanghai: Shanghai Culture Press, 2011.
- Peng Xianze, *Anhua Dark Brick Tea*. Changsha: Anhua Tea Company, 1950.
- Report of Hunan Tea Management Office*, 1939.
- Ukers, W.H., *All About Tea*, The Tea and Coffee Trade Journal Company, New York, 1935.
- Wu Juenong, *A Review of the Book of Tea*, Beijing: Fan Suncao, 2005.
- Wu Xiangan, *Anhua Dark Tea*. Changsha: Hunan Science and Technology Press, 2008.
- Wu Yin, *The Geographical Knowledge of the Origin of Tea*, Anhua. Guangzhou, Liushangjin, 2019.
- Xu Fanggan, *A Brief Introduction to the History of Tea Monopoly in the Past Dynasties*, 1941.

# Japan: Uji-cha Tea Cultural Landscape

*Shigeatsu Shimizu,  
Kyoto Institute of Technology  
Kazuhiro Uesugi, Kyoto Prefectural University  
Keita Yamaguchi, Kyoto University*

## 1. General characteristics

### 1.1 General geographical/ecological/geological data

Japanese tea is characterised by the use of steaming in its processing method, a technique which boasts the oldest history among the production methods of “non-fermented” (non-oxidised) tea, i.e. green tea. There are three representative varieties of Japanese tea: Matcha, Sencha and Gyokuro.

*Matcha* is powdered tea that is cultivated in shaded tea plantations (*Ohishita-chaen*). *Sencha* is tea for brewing that is cultivated in open-air tea plantations (*Roji-chaen*) and processed using the Uji method (green *Sencha* processing method). *Gyokuro* (lit. “gem drops”) is high quality tea for brewing that is cultivated in shaded tea plantations (*Ohishita-chaen*) and processed using the Uji method. Each of these varieties has its own unique production and processing method. They are often produced in neighbouring areas and their landscapes are mutually related. In terms of the quantity of production, *Sencha* occupies the largest percentage and those of *Matcha* and *Gyokuro* are limited; however, all of these tea types play an important role in the tea culture of Japan.

Tea is produced widely in Japan, specifically on the main island of Honshu, the island of Shikoku and the island of Kyushu of the Japanese archipelago, which extends over a long distance north-south (Image 2). The major commercial production areas are the Kinki



*Image 1. Matcha, Sencha and Gyokuro.  
Source: authors.*

region, centring around Kyoto prefecture; the Kanto region, including Saitama prefecture; the Chubu region, including Shizuoka and Aichi prefectures; and the Kyushu region, including Kagoshima, Miyazaki and Fukuoka prefectures.

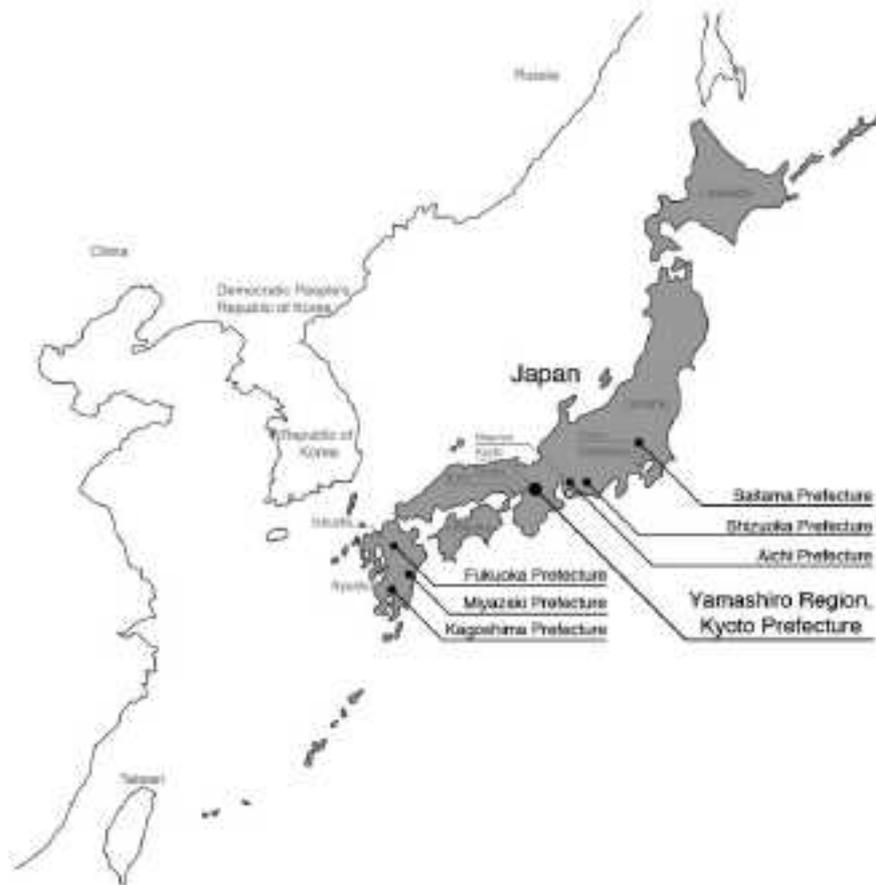


Image 2. Japanese Archipelago and Tea Producing Areas. Source: authors.

Many of these tea-producing areas are located in temperate and humid places where the annual average temperature is in the range of 14 to 16° C and the annual precipitation exceeds 1,300 mm. Generally speaking, places with a great difference between daytime and night-time temperatures are considered to be suitable for tea production, and therefore many tea plantations are located on plateaus or in mountainous areas.

The Japanese tea tree is categorised under the Chinese group. It was introduced from China and led to diverse varieties native to Japan as a result of natural crossbreeding. From these native varieties, “Yabukita”, which occupies 75% of the tea production area today, was selected in Shizuoka in the early 20<sup>th</sup> century; in Uji, Kyoto, varieties specifically appropriate for *Matcha* and *Gyokuro* were selected in the early 20<sup>th</sup> century, such as “Asahi”, “Samidori” and “Goko”. Since then, many varieties have been created from these parent varieties.

With regard to soil condition, physical characteristics particularly related to good water drainage are considered important. Therefore, tea plantations are sited preferentially on sandy soils in the lowlands and on sloped terrains in mountainous areas. In order to complement these soil environments, organic materials, such as manure, are added to enhance the water-retaining capacity. In terms of chemical characteristics, tea trees favour strongly acidic soil and necessitate the use of nitrogenous fertilisers. Therefore, soil management measures are taken to make a sustainable provision of nitrogen by adjusting acidity to some extent and adding organic fertilisers such as rapeseed oil cake and fish cake.

## **1.2 Historical context: timespan during which the tea landscapes have been in active production and their persistence over time**

Tea production was initially introduced to Japan from China by the early 9<sup>th</sup> century. However, tea production as we see it today originates from the latter half of the 12<sup>th</sup> century, when the new tea-making style of Song dynasty China was introduced to Japan. After the introduction of the Song style, particular tea cultivation and production methods were invented in the Uji area and Yamashiro region, the southern part of Kyoto prefecture. Therefore, the history of tea production in Japan is considered to have started in the middle ages.

Tea cultivation in the Uji area can be traced back to the middle of the 14<sup>th</sup> century based on written records. By the middle of the 15<sup>th</sup> century, tea from Uji came to receive the protection of the imperial families and the Ashikaga Shogunate families based in Kyoto, and became the top tea brand in Japan by the name of “Uji-cha” (lit. “Uji tea”). In the 16<sup>th</sup> century appeared *Chanoyu*, or the way of enjoying tea with a meal that comes with it and appreciating tea implements according to a certain protocol; in the latter half of the 16<sup>th</sup> century, the tea master Sen no Rikyu established *Wabicha*, a type of *Chanoyu*.

Around the same period, *Ohishita-chaen* tea plantations, in which tea bushes were shaded by reed and straw screens for producing tea leaves for *Matcha*, appeared in the Uji area, instigating the emergence of the powdered tea unique to Japan, characterised by a vivid deep green colour and rich flavour (Image 3). At that time, powdered tea that was produced by the shaded tea cultivation method could only be enjoyed by limited groups of people such as aristocrats, samurais, Buddhist monks and powerful merchants. The Edo Shogunate permitted only Uji-go, the town of Uji centring on Nakauji, to cultivate tea leaves for powdered tea, and it was not until the Meiji Restoration in 1868 that its cultivation spread to other places outside Uji-go.



*Image 3. Traditional Ohishita-chaen (Shaded Tea Plantations). Source: authors.*

In the middle of the 17<sup>th</sup> century, the practice of steeping rolled tea leaves in hot water and drinking the extract was introduced by Ingen, the Buddhist monk who opened the Mampuku-ji Temple in Uji. As a result, the custom of drinking *Sencha* spread among ordinary people. Tea leaves for *Sencha* were produced in the open air without covers and were processed by firing in an iron pot. In the 18<sup>th</sup> century, tea farmers surrounding Yuyadani, an area neighbouring Uji-go, invented the Uji method (also known as the green *Sencha* processing method) of rolling steamed tea sprouts over a fireplace to dry them, giving birth to *Sencha*, unique to Japan and characterised by a green colour, excellent taste and rich flavour (Image 4). This production method had spread throughout Japan by the latter half of the 19<sup>th</sup> century and formed the basis of *Sencha* production today.



*Image 4. Traditional Rolling Process in the Uji method. Source: authors.*

In the first half of the 19<sup>th</sup> century, the shaded cultivation and the Uji method were combined in Uji, resulting in rolled tea leaves of supreme quality, i.e. *Gyokuro*. Since no such restriction as was placed on the tea leaves for powdered tea was imposed on the shaded tea plantations for *Gyokuro*, they spread from Uji-go to the neighbouring areas of Kyoto and, after the Meiji Restoration in 1868, further to Aichi prefecture, Fukuoka prefecture, and so forth.

After Japan opened itself to the world in the middle of the 19<sup>th</sup> century, tea became a major export product, resulting in the great expansion of tea production areas in different places in Japan. As export increased, landscapes other than tea plantations themselves evolved significantly in association with tea production, such as the formation of tea merchants' towns at advantageous places for water transportation.

Tea production had been manual work up to this period, depending on manual plucking and rolling of tea leaves. In the latter half of the 19<sup>th</sup> century, Japan's industrial structure changed its direction towards heavy industry, which made it difficult to secure the necessary labour for tea production. At the same time, both the plucking and processing of tea leaves were mechanised in order to increase production. As a result, open-air tea plantations changed from the stock-by-stock cultivation style to the style of planting tea bushes in rows. Tea factories also changed, adapting to mechanisation. Furthermore, simultaneously with the rationalisation of production through mechanisation, small tea plantations were grouped together to achieve economies of scale, cooperative tea processing factories were built, and frost-proof fans were installed.

### **1.3 Scale, distribution and characteristic of tea landscapes, including overview of type of plants and methods of cultivation and harvesting, spatial characteristics**

The types of green tea that represent Japanese tea are *Matcha*, *Sencha* and *Gyokuro*. All of these are "non-fermented", i.e. green tea, and are characterised by the use of steaming in the tea production process. In particular, *Matcha* is produced by a unique tea processing method, which, building upon a method that had been used in China up to the Song dynasty (960-1276), went through unique developments in Japan. In China, the tea production method changed after that and the use of steam in tea processing has only continued limitedly. Therefore, tea that is produced through the steaming process in Japan can be said to be highly unique in the global context. Different varieties of Japanese tea have unique characteristics in terms of cultivation method, harvesting method, tea plantation form and tea processing method, respectively.

*Matcha* and *Gyokuro* are cultivated in shaded tea plantations, which is a form of tea plantation unique to Japan. Tea sprouts, the flavour of which is enhanced and bitterness reduced by covering tea bushes with reed screens, straw screens or cheesecloth to block direct sunlight, are manually plucked. Originally, shaded tea plantations were established only in Uji-go, and later spread to other areas after the 19<sup>th</sup> century. Today, other than in Kyoto prefecture, they can be seen in Aichi prefecture and Fukuoka prefecture, for instance. *Matcha* is made by pulverising steamed tea leaves that are dried without rolling, called *Tencha*, into a fine powder. Hot water is poured onto the powder in a bowl and whisked for drinking. *Gyokuro* is made by roll-drying steamed tea leaves. It is steeped in hot water and the extract is drunk, as is the case with *Sencha*.

*Sencha* is cultivated in open-air tea plantations without screens. This type of tea field is widely seen globally. Many tea plantations in the tea-producing regions of Japan are open-air plantations. In open-air tea plantations, not only *Sencha* is cultivated but also *Kabusecha* (directly covered tea in open-air plantations), which is produced by directly covering the tea bushes with sun screening sheets. The open-air tea plantations of the Yamashiro region in the southern part of Kyoto, which produce high quality tea, were mostly located in the valley or at the mountain foot, areas characterised by limited sunlight and good ventilation. However, as tea plantations expanded after the Meiji Restoration in 1868, they came to be developed also on the slopes of mountains in their original landforms or in large-scale spaces developed on gently-sloped terrains. Tea leaves for *Sencha* are steamed and roll-dried in the same manner that tea leaves for *Gyokuro* are processed.

Different varieties of the tea tree that are the most suitable for *Tencha* (*Matcha* before pulverisation), *Sencha* and *Gyokuro*, respectively, are selected and used. For *Sencha*, 75% of the total area where it is produced uses “Yabukita”, which was selected from the native varieties of Shizuoka prefecture. Other varieties that are cultivated in Shizuoka prefecture, etc., are either selections from the native varieties of the region or hybrids of these varieties and “Yabukita”. On the other hand, for *Tencha* and *Gyokuro*, varieties that were selected from the native varieties of Uji, such as “Asahi”, “Samidori” and “Goko”, and their “child” varieties, are used.

Tea trees were traditionally bred from seedlings, but after the Second World War, propagation by grafting became a common practice. Tea leaves can be harvested from newly planted seedlings after about 4 years, and they become adult trees after 6 to 7 years.

Plucking of tea leaves is carried out once a year, around May, for *Tencha* and *Gyokuro*;

and several times between April and July, up to a maximum of four times including the autumn months, for *Sencha*. Once, tea leaves were completely hand-picked; today, many tea farmers use tea-plucking machines, except for some shaded tea plantations that cultivate *Tencha* and *Gyokuro*.

The scale of tea plantations varies from place to place. In the tea production areas of Uji, relatively small-scale tea plantations are distributed over a wide area. Shaded tea plantations are particularly small and their average commercial area is about 0.8 ha (Uji city), while open-air tea plantations are relatively large and their average commercial area is about 2 ha (Wazuka town). Places that produce large amounts of tea, such as Shizuoka prefecture and Kagoshima prefecture, develop large-scale open-air tea plantations and promote the rationalisation of production through mechanisation of tea leaf plucking.

#### 1.4 Social and cultural systems

Already by the early 16<sup>th</sup> century, tea drinking had become part of the general culture of ordinary people in Japan, as is shown in the Japanese phrase “*Nichijo Sahanji*” (日常茶飯事) (lit. “event like everyday tea and meal”, meaning “business as usual”). *Chanoyu* (the tea ceremony) was born as a result and was systematised in the 16<sup>th</sup> century, providing social gathering opportunities to the samurai class and also to rich merchants. Around the 18<sup>th</sup> century, tea spread among the literati, who used *Sencha*, and its use was systemised to become *Senchado* (lit. “way of brewing tea”), which flourished and spread among tradesmen and artisans. After the Meiji Restoration in 1868, it became possible for ordinary people, too, to enjoy *Matcha*, which is produced at shaded tea plantations. *Chanoyu* and *Senchado* have taken root in Japanese society as an art and culture related to general aspects of daily life. Tea occupies a solid position in Japanese culture today.

For ordinary people, it was once usual to drink tea by firing tea leaves in an iron pot in the Chinese style, as was introduced from China in the 17<sup>th</sup> century. When the Uji method of processing *Sencha* was invented in the 18<sup>th</sup> century, green tea drinking spread throughout Japan and became common among ordinary people. Since then, tea drinking has taken root as part of daily life and culture.

#### 1.5 Associated communities and settlements

Communities and settlements associated with tea production can be divided into the settlements of producers, including tea farmers, and the tea merchant towns that finish, process,

sell and distribute tea products. Producer communities are formed near tea plantations and, in many cases, houses of devoted tea farmers stand side by side with those of farmers who also cultivate other agricultural products or engage in forestry. Tea merchant towns are, in many cases, formed at places convenient for tea distribution, particularly where shipment both by land and by water is possible. They usually take shape as remote towns along main routes.

The traditional cultures of *Chanoyu* and *Senchado*, which are both based on tea, have given rise to many schools and are widely spread. They can be considered to be part of the communities that are profoundly associated with the tea production of Japan.

### 1.6 Links to trade, trade routes and economic opportunities

Tea is processed by tea farmers into *Aracha* (lit. “unfinished tea”) of *Tencha*, *Sencha* and *Gyokuro*, and then collected and finished by tea merchants who sell and distribute the finished products. Before the Meiji Restoration in 1868, *Matcha* produced by the shaded cultivation method was exclusively dealt in by privileged tea merchants called *Chashi*, who traded directly with the imperial court, the Shogunate and feudal lords. After the Meiji Restoration, *Matcha* came to be traded widely by general tea merchants.

*Sencha* successfully found a market in Edo (present-day Tokyo) when the Uji method of tea processing was invented in the Yuyadani area in the 18<sup>th</sup> century and its commercial market expanded beyond the surrounding area of production throughout Japan.

As Japan opened itself to the world in the latter half of the 19<sup>th</sup> century, *Sencha*, in particular, became an important export item, and was exported from the ports of Yokohama, Nagasaki and Kobe to the USA and other parts of the world. As a result, tea plantations spread throughout Japan, but in the post-war period (after 1945), domestic consumption became dominant.

*Matcha*, *Sencha* and *Gyokuro* are mainly used for drinking. Recently, new uses have also been emerging, including the use of *Matcha* as an ingredient of sweets. The popularity of *Matcha* and products using *Matcha* as an ingredient is also growing internationally.

### 1.7 How the landscapes relate to others and to their overall regional/national context

Tea production is often the major local industry for major tea production regions. Its visual landscapes play a symbolic role in supporting the local brand as agricultural landscapes representing the region.

Landscapes of tea production comprise not only tea plantations, but also many other elements. For example, since rice straw is necessary for tea cultivation regardless of the tea varieties concerned, tea plantations are invariably accompanied by rice paddies in the surrounding area. Since at shaded tea plantations, the rice straw is laid on reed screens that are placed on bamboo frames, it is also necessary for reed-growing wetlands to be located nearby. In addition, because a large amount of fertiliser was traditionally used, proximity to an urban area as a source of human manure was a prerequisite condition for the location of plantations. The distribution of tea mainly depended upon boats; therefore, it was also essential that there was a river nearby. These diverse elements are interrelated in the development of landscapes of tea production.

Throughout Japan, landscapes of tea production are profoundly associated with daily life and culture. In the past, tea plantations were modestly seated at a corner of farmland, the foot of the mountain, or a residence. Landscapes of tea plantations were part of daily life.

Tea-drinking culture ranges from day-to-day tea drinking to *Chanoyu* and *Senchado*, and is rooted deeply in the daily life and spiritual world of Japanese people. Landscapes of tea production that physically support that culture can be said to be of essential value as they support the foundation of Japanese culture.

## 2. Known tea landscapes and important tea landscapes

### 2.1 Location and size

The most important tea-producing area for understanding Japanese tea is the Yamashiro region in the southern part of Kyoto prefecture, centring around Uji city, which boasts one of the longest histories of tea production in Japan and still produces high quality tea known as “Uji-cha” (Image 5).

The three most representative categories representing Japanese tea are *Matcha*, *Sencha* and *Gyokuro*. All of them originate from the Yamashiro region, which continues to actively produce tea today. Not only is this region important as the origin of Japanese tea, but also for its landscapes that fully illustrate the historical developments of Japanese tea to the present day.

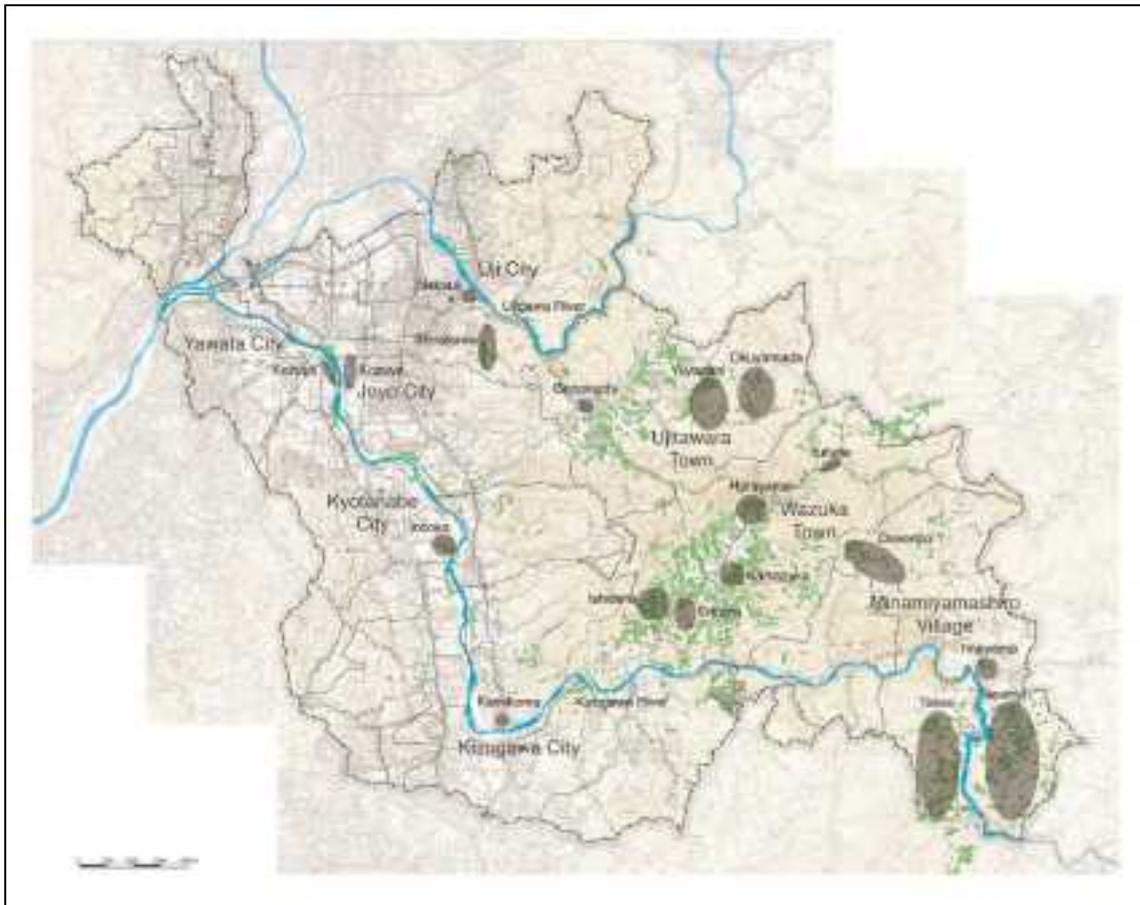


Image 5. Tea Plantations and Tea Producing Areas in the Yamashiro region. Source: authors.

In this region, the Ujigawa River and the Kizugawa River flow from the east mountain range, Tanakami and Kasagi to the Kyoto basin in the west. The characteristic locations of tea plantations are broadly categorised into two types: sloped terrains in the mountain area and flatlands on the banks of the aforementioned rivers.

Tea plantations on the river banks take advantage of the sandy soil, while those on the mountain slopes make use of varied climatic conditions that are determined by a combination of altitude and ventilation.

## 2.2 Key characteristics of each landscape

Image 6 is a schematic figure of the landscapes of tea production that can be seen in the Yamashiro region.

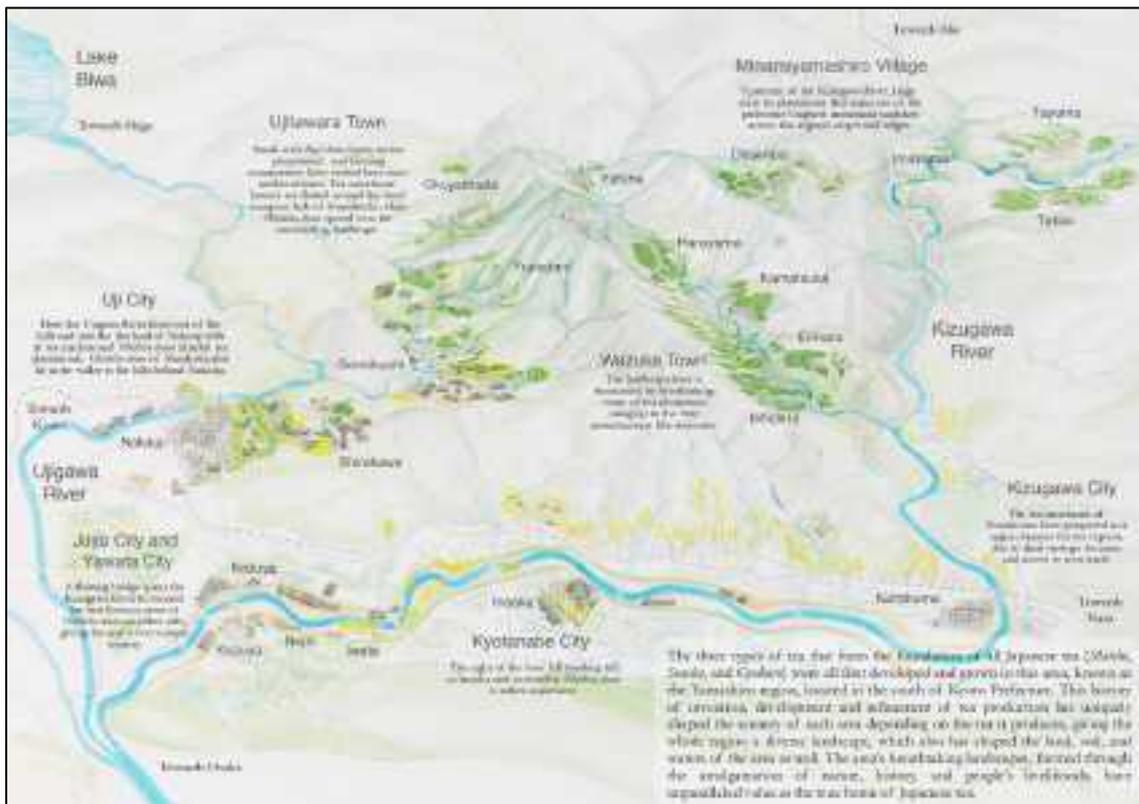


Image 6. Whole image of Tea Landscapes in Yamashiro Region. Source: authors.

The development of Japanese tea originates from Uji-cha, and the techniques that are essential to the present production of Japanese tea, such as shaded cultivation (*Ohishita-chaen*) and the Uji method (green *Sencha* processing method), were invented in the Yuyadani area and spread throughout Japan.

The Yamashiro region produces *Tencha* (tea leaves for *Matcha* before pulverisation), *Sencha* and *Gyokuro*. The tea plantations that cultivate them are divided into two: shaded tea plantations and open-air tea plantations. By the side of these tea plantations, there are tea farmers' settlements where *Aracha* (lit. "unfinished tea") is made. Tea leaves are gathered in tea merchant towns for final processing.

Shaded tea plantations produce either *Tencha* or *Gyokuro*. Bamboo shelves or wooden shelves are set up at the tea plantations before tea leaf plucking starts, and reed screens and straw are placed on them to shade the tea bushes. It is a unique cultivation method that has been proven to have been practiced as early as the latter half of the 16<sup>th</sup> century, according to the description by the Portuguese missionary João Rodrigues in his *Historia da Igreja do Japao*. In recent years, improved cheesecloth has also been used on the shading shelves to achieve the same shading effect as reed and straw. However, tea of the highest quality is still produced today at traditional

shaded tea plantations. Representative shaded tea plantations are seen on plateaus in Shirakawa in Uji city, Inooka in Kyotanabe city and on river banks in Kozuya in Joyo city and in Kozuya, Nojiri and Iwata in Yawata city (Images 7 and 8).



Image 7. *Ohishita-chaen (Shaded Tea Plantation) in Shirakawa, Uji City. Source: authors.*



Image 8. *Ohishita-chaen (Shaded Tea Plantation in Kozuya, Joyo City. Source: authors.*

The rice straw used for coverage previously came from the rice harvested in the surrounding rice paddies. The reed used was the reed naturally growing in the rivers and lakes nearby or in Lake Biwa to the east of Kyoto. Likewise, the bamboo and wood used for the shelves came from local bamboo and trees. In recent years, the use of local materials has been decreasing due to environmental changes and technical innovation. Nevertheless, it is still possible to perceive landscapes that illustrate linkages between tea plantations and the surrounding livelihood spaces.

Open-air tea plantations are related to *Sencha*. Up to the Edo period (1600-1868), shaded tea cultivation had only been permitted for communities centring around Uji (Uji-go) as an exclusive prerogative. In other areas, since shaded tea cultivation was not possible, open-air tea cultivation spread. Traditionally, tea had been cultivated mainly in valleys in the mountain area where there was good ventilation and frequent fog development. Since the modern period, tea plantations have expanded to other areas under the influence of various circumstances such as the increase in tea production for export to other countries, the promotion of the tea industry as part of post-war reconstruction, and the modernisation of tea plantations with the introduction of large agricultural machines. These historical developments are illustrated by Yuyadani and Okuyamada in Ujitawara town; Harayama, Kamatsuka, Ishidera, Erihara and Yufune in Wazuka town; and Tayama, Takao, Dosembo and Imayama in Minami-Yamashiro village (Images 9, 10 and 11).



*Image 9. Roji-chaen (Open Air Tea Plantation) at a Valley in Yuyadani, Ujitawara Town. Source: authors.*



*Image 10. Tea Plantation on a Sloped Terrain in Kamatsuka, Wazuka Town. Source: authors.*



*Image 11. Tea plantation on a sloped terrain in Ishidera, Wazuka Town. Source: authors.*



*Image 12. Tea factory of farmer's house in Yufune, Wazuka Town. Source: authors.*

In order for tea leaves cultivated at tea plantations to become Uji-cha, they need to go through two manufacturing processes: *Aracha* (lit. “unfinished tea”) and *Shiagecha* (lit. “finished tea”), as explained later. *Aracha* processing is carried out by tea farmers; therefore, their settlements are dotted with “tea factories” to process *Aracha*, forming unique landscapes different from ordinary agricultural settlements. Tea factories built over 50 years ago are wooden buildings with a series of openings on the wall to let in the sunlight and a steam-venting structure called *Koshiyane* on top of the roof (Image 12).

Today, as machines are becoming larger, it is not unusual for large factories to be built outside the settlements. Even so, tea factories around 100 years old still remain within the settlements. Even in large factories, the basic functions of the machines that operate inside them have not changed from those used in factories some 100 years old.

Tea merchant towns developed at Nakauji in Uji city, which was the central settlement at the birthplace of shaded tea plantations; Yuyadani in Ujitawara town, which is said to have been

the place where the Uji method (green *Sencha* processing method) was invented; Gonokuchi in Ujitawara town, an important point for transportation; and Kamikoma in Kizugawa city. Yuyadani was formed because Uji-cha had newly found a market in Edo (present-day Tokyo), and is characterised by distinctive landscapes of a series of merchants' and farmers' houses in the deep valley. Located at a place where a main road between Kyoto and Nara intersects with the Ujigawa River, Nakauji has been the core area of *Matcha* production since the 16<sup>th</sup> century, in which old houses of privileged tea merchants called *Chashi*, who presided over tea business, as well as tea farmers' houses are found (Image 13).

At Gonokuchi, a tea merchant town was established on the original basic structure of a castle town in the Warring States period (15<sup>th</sup> to 16<sup>th</sup> centuries). Kamikoma had for many years been prosperous as a node of transportation both by land and by water, and saw an increase in tea merchant shops as tea production in the upper valley of the Kizugawa River increased as part of the expansion of *Sencha* exports after the last days of the Tokugawa Shogunate (in the mid-19<sup>th</sup> century).



Image 13. Townscape and Tea Merchant's House in Nakauji, Uji City.

### 2.3 Planting traditions

Nowadays tea trees are usually re-planted every 20 to 30 years. Two methods are used for the propagation of tea trees: by using seedlings that are developed from seeds, and by grafting, which is an asexual propagation. For the production of Uji-cha, local native varieties that were naturally bred in the region used to be cultivated from seedlings. In the 20<sup>th</sup> century, specific varieties that were selected from native varieties gradually came to be preferentially used. As a result, it has become common practice to plant tea trees by grafting these varieties in asexual propagation.

### 2.4 Type of tea trees planted and techniques of tea cultivation

Tea trees of native varieties vary significantly in their characteristics and therefore it is difficult to ensure a stable production of tea of the same quality. Because of this, in the 20<sup>th</sup> century, specific varieties based on native varieties came to be preferentially used, particularly for tea trees cultivated at shaded tea plantations (for *Tencha* and *Gyokuro*). At present, while the

“Yabukita” variety occupies 75% of tea production at the national level, it is characteristic of Uji-cha producing areas that specific local varieties are cultivated in large quantities, such as “Goko”, “Uji Midori”, “Uji Hikari” and “Samidori”.

Not much is known about the genetic characteristics of native varieties or specific local varieties of Uji-cha, nor about their genetic relationships with other tea varieties. Recently, DNA analysis has shown that specific local varieties of Uji-cha, such as “Goko”, “Uji Midori” and “Samidori”, belong to a genetically different group from “Yabukita”, and that many of the native varieties that exist in different places in Japan belong to the group consisting of the native varieties and other specific varieties of Uji-cha (Image 14). These results scientifically prove the uniqueness of the local specific varieties of Uji-cha and the historical developments of the dissemination of the native varieties of Uji-cha throughout Japan.

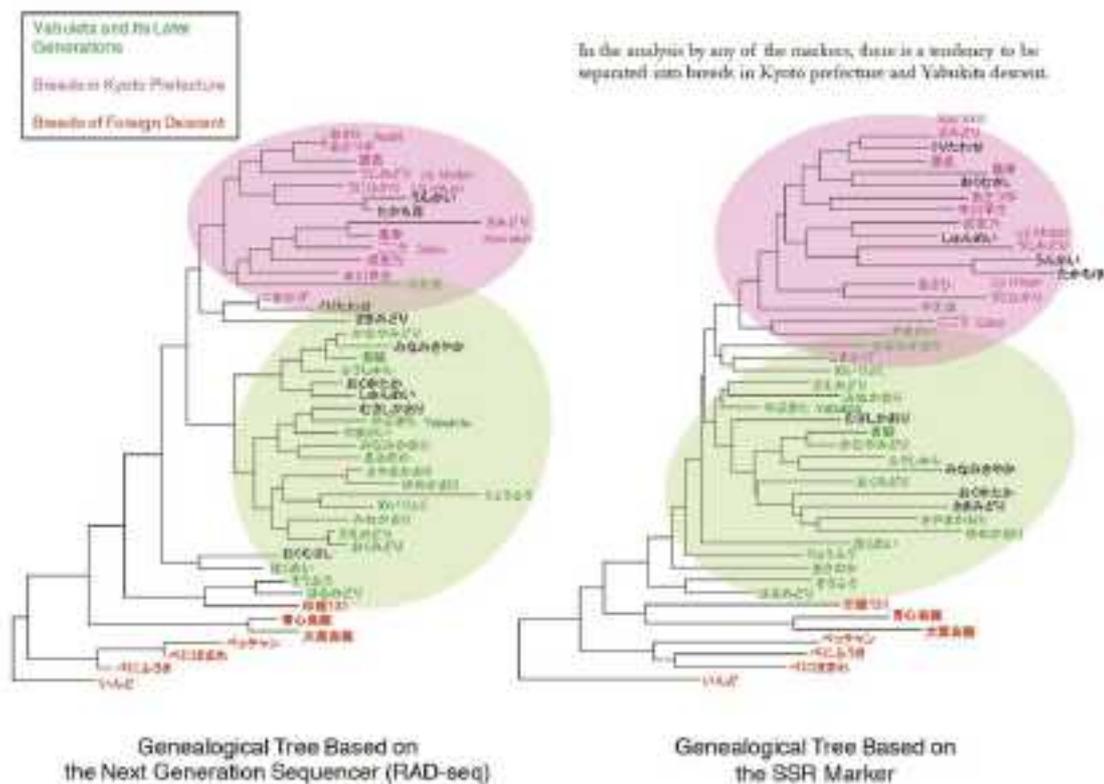


Image 14. Comparison of Genealogical Trees of Japanese Tea. Source: authors.

Furthermore, in the case of Uji-cha, it is not the variety of tea tree that is decisively important, because it is characteristic of Uji-cha that tea of high quality is produced by blending tea leaves that vary in character. Therefore, many tea plantations cultivate several varieties instead of a single variety.

Cultivation of many different varieties can effectively differentiate plucking periods. If only one variety is cultivated, the plucking period is concentrated in one specific period, which not only makes it difficult to secure the necessary labour, but also makes optimal tea leaf processing impossible as a result of exceeding the capacity of tea factories in Uji-cha producing areas, where traditional small-scale tea factories handle tea leaves. Despite the historical change from the general use of native varieties to the preferential use of specific varieties, there has been no change in cultivating tea trees that have diverse characteristics.

### 2.5 Harvesting and tea processing

The harvesting of high-quality tea is done only once a year, around May. In most cases, tea leaves are hand-picked. Only the youngest two or three leaves per stalk are harvested. Hand-picking requires a lot of labour, and was traditionally carried out by female workers. Each tea farmer had a more or less fixed channel to contact female workers, who may have come from neighbouring settlements or remote places. On the other hand, tea for ordinary drinking is harvested twice or three times a year with machines.

Tea processing is divided into *Aracha* and *Shiagecha*. Essentially, *Aracha* is processed in the settlements of tea-producing farmers while *Shiagecha* is processed in tea merchant towns. This commonly applies to *Tencha*, *Gyokuro* and *Sencha*. Coordination between tea-producing farmers and tea merchants is important for the production of Uji-cha (Table 1).

	Tea Farmers' Settlement		Tea Merchant Town	notes
	Tea Plantation	Unfinished Tea Factory	Finishing Factory	
<i>Tencha</i>	<i>Okubita</i> (Shaded)	Steaming	Sorting, Firing, Blending	Tea Leaves for Matcha before Flavorization
<i>Gyokuro</i>	<i>Okubita</i> (Shaded)	Steaming and Rolling	Sorting, Firing, Blending	
<i>Sencha</i>	<i>Koyi</i> (Open Air)	Steaming and Rolling	Sorting, Firing, Blending	

Table 1. Cultivation and Processing Methods of Uji-cha. Source: authors.

In the case of *Tencha*, *Aracha* processing involves steaming and drying. Japanese tea mainly uses steaming to stop enzymatic oxidation. Steamed tea leaves are dried to form *Aracha* of *Tencha*. Tea factories that carry out this processing are equipped with a machine that can steam and dry tea leaves continually, consisting of a steamer, a blower and a furnace. Before mechanisation, drying had been done manually on charcoal fire-heated Japanese paper. Brick tea-drying furnaces were invented in the early 20<sup>th</sup> century and it became possible to produce *Aracha* of *Tencha* of much higher quality. *Aracha* of *Tencha*, processed at tea factories of tea

farmers, is transported to tea merchants, who cut tea leaves uniformly, sort them using air, finish-dry them, and sort them again using static electricity and then by colour. Sorting requires strict and meticulous work and, before mechanisation, was carried out by eye and by hand by many experienced female workers.

Up to this stage, the processing is separated by tea plantation and by tea variety. At the final stage of processing, the blending of tea leaves is carried out in order to ensure a stable and consistent quality and price of the *Matcha*, *Sencha* and *Gyokuro* of Uji-cha throughout the year. Individual tea blenders develop their own characteristics. They assess the look, taste and smell of individual groups of tea leaves as well as the colours of brewed tea and leaves. Tea leaves that have a certain grade or distinctive characteristics are then selected and blended to make finished *Tencha*. If the *Tencha* is then ground with a millstone, this forms *Matcha* (lit. “powdered tea”).

In the case of *Gyokuro* and *Sencha*, the tea leaves are processed through steaming and rolling. This technique of hand rolling was invented in the Yuyadani area in the 18<sup>th</sup> century and has spread by the name of “Uji method” throughout Japan. Later, in Saitama prefecture, the hand rolling process was mechanised by combining a steamer and rough rolling, rolling, middle rolling and fine rolling machines, and today machine-rolled tea is produced. Nevertheless, the Yamashiro region and other major tea-producing areas continue using hand-rolling techniques.

*Aracha* is transferred to the finishing tea factories of tea merchants to complete the tea processing. There, after they are sorted by colour, tea leaves are fired for desiccation. The finished tea leaves are subjected to assessment in terms of look, taste, smell and brewed-tea colour, and then a decision is taken regarding the blending ratio.

## 2.6 Social structures and cultural systems

Social structures in relation to Uji-cha that need mentioning are the relationships between tea-producing farmers and tea merchants.

The production of Uji-cha is characterised by division of labour between tea-producing farmers, who cultivate tea leaves and process *Aracha*, and tea merchants, who finish the tea processing. Traditionally, there were two types of business relationships: direct trade between tea merchants and tea-producing farmers, and indirect trade through brokers. Farmers who trade a large percentage of their tea leaves directly with tea merchants have different business administration strategies from those who are highly dependent on brokers. Direct trade guarantees sales but increases dependency on tea merchants. On the other hand, brokers make fair judgements based

on quality but deduct commission fees. From the point of view of tea merchants, direct trade enables them to make requests to tea-producing farmers to supply the varieties, quality and quantity of *Aracha* desired. But, since tea leaves are products that are highly dependent on natural conditions, access to wide-ranging supply chains through brokers is also necessary in order to ensure the procurement of the amount of *Aracha* required. These two trade channels play complementary roles and are combined very well in the trading system of Uji-cha.

Brokerage, which used to be done by individual brokers, is now taken care of by agricultural cooperatives. Direct trade continues to be carried out between tea merchants and tea-producing farmers still today.

In terms of cultural systems, it should be mentioned that it is tea produced in Uji that is used for *Chanoyu*, which is widely known as a unique cultural activity of Japan. *Chanoyu* developed at the end of the 16<sup>th</sup> century under the auspices of the ruling class, which resulted in the protection of Uji-cha, too. Later, the protection of the ruling class was lost and its privileged tea-producing method spread to other areas, putting an end to the exclusive status of the Uji region. Nevertheless, Uji has maintained tea production through continuous efforts to improve varieties and mechanise tea-processing techniques.

## 2.7 Associated communities and settlements

Communities and settlements associated with Uji-cha production comprise tea-producing farmers at the aforementioned tea plantations, and tea merchant towns that carry out the finishing process and distribute the final products. In addition, during the tea-plucking season, “tea pluckers” are gathered from neighbouring settlements or remote areas.

## 2.8 Links to trade and trade routes

Tea leaves are gathered from tea-producing farmers and finished by tea merchants. As mentioned above, several tea merchant towns have formed. These tea merchants are the starting point of the tea trade.

Historically, in the Edo period (1600-1868), *Matcha* from Uji was a special product by appointment to the Tokugawa Shogunate in Edo (present-day Tokyo), the imperial household in Kyoto, and feudal lords throughout Japan, which supported the culture of tea ceremony in Japan. When the tea leaves were carried over to the Shogunate, great importance was attached and missions carrying Uji-cha were treated like processions of feudal lords.

After Japan opened itself to the global market in the middle of the 19<sup>th</sup> century, tea became a major export item and production for export increased in the Uji region. From the Uji region, tea was transported down the Kizugawa River and the Ujigawa River to Osaka Bay and then Kobe Port, from which tea was exported to the world.

### 3. Existing documentation

#### 3.1 Landscape surveys

Landscape surveys of Uji-cha producing areas have been carried out by municipal governments for their individual territories and by the government of Kyoto prefecture for the entire area. The municipal government of Uji city carried out a cultural landscape survey with a focus on nature, history, life and livelihood on the occasion of the selection of the area as an Important Cultural Landscape by the national government. The results were published in a report with the preservation plan for the Important Cultural Landscape (<https://www.city.uji.kyoto.jp/0000011397.html>).

The major areas of tea production landscapes at Wazuka town, Minami Yamashiro village, Yawata city, Joyo city, Kyotanabe city and Ujitawara town are registered as landscape properties of Kyoto prefecture. Among them, Wazuka town and Minami Yamashiro village are also designated as cultural landscapes of Kyoto prefecture. These registrations and selections were made in consideration of the outcomes of landscape surveys that were carried out for the entire tea production area by the Committee for Research and Study of Uji-cha Cultural Landscape, which was set up by the government of Kyoto prefecture. Their results have been compiled into reports, available on the website of Kyoto prefecture (<http://www.pref.kyoto.jp/nosei/1331098394335.html>), as part of the overall efforts towards the nomination of the Uji-cha heritage place on to the World Heritage List.

#### 3.2 Photographs and photographic surveys

There remain many old photos relating to Uji-cha production, which were taken in different periods since the end of the 19<sup>th</sup> century, including paper prints, albums, photo collections and picture postcards. Particularly, many photos remain that depict shaded tea plantations in Uji city; those in the storage of Uji City Historical Museum have been inventoried (<http://www.city.uji.kyoto.jp/category/3-11-8-5-0.html>). Old videos on the production of Uji-cha were recorded and are archived in the Museum of Kyoto. Videos on the whole process of the

production of Uji-cha and on the traditional hand-rolling tea processing technique are made and posted on a website (<http://www.ujicha.or.jp/>).

Aerial photos of the target area have been taken in different periods (<http://mapps.gsi.go.jp/maplibSearch.do#1>) and, in addition, a great number of photos were taken in the aforementioned landscape surveys and compiled in the database.

### 3.3 Archaeological surveys

The *Law for the Protection of Cultural Properties* requires that, when a development act is taken within an area known to contain Buried Cultural Properties, archaeological excavations should be carried out at the expense of the project undertaker. A great number of archaeological surveys are conducted throughout Japan. Within the area of the landscapes of Uji-cha production, Nakauji, which is the central town of Uji city, and Shirakawa, which is a major tea production area, are the areas known to contain Buried Cultural Properties dating back to the Heian period (794-1192), where archaeological surveys have been conducted many times and their results compiled into reports. Surveys have identified urban infrastructure from before the tea industry thrived, archaeological sites of Buddhist temples and aristocrats' residences, local features that formed the basis of the subsequent history of the tea industry, and archaeological remains related to the tea industry such as those of the levee built when engineering work was carried out on the Ujigawa River at the end of the medieval period in relation to the location of tea plantations. As a result, the multi-layered history of the place has been archaeologically clarified. Besides Uji city, there are other areas known to contain Buried Cultural Properties, such as Inooka of Kyotanabe city, and archaeological surveys have been carried out several times.

### 3.4 Inventories including recent mapping and databases

As part of the aforementioned landscape surveys by Kyoto prefecture and municipal governments, tea plantations, tea farmers' houses, tea factories, tea merchants' houses and so forth have been mapped and a compilation of their database is underway (<http://www.pref.kyoto.jp/nosei/1331098394335.html>).

### 3.5 Archive documents, written sources, early maps and plans, etc.

Historical materials related to Uji-cha production are stored in many places, including Uji City Historical Museum and Kyoto Prefecture Yamashiro Local Museum; therefore, the locations of these materials are clearly known, and their inventorying and codification are done one by



Image 15. Drawing of Tea Production. (Early 20th century, in the storage of the Chamber of Kyoto Prefecture Tea Public Interest Incorporated Association).

one. Documents related to production include the *History of Uji City*, which relates to production in the Uji region; the *Document of the Hori Family in Uji* (in the storage of the National Museum of Japanese History), which contains information about Uji-cha production in the medieval period (12<sup>th</sup>-16<sup>th</sup> centuries); the *Document of the Family of Kambayashi Shunsho* and the *Document of the Family of Kambayashi Sannyu*, which gives factual descriptions of tea blenders in Uji in the early modern period; the *Document of the Fujikawa Family* (in the storage of Uji City Historical Museum), which relates to production in the Shirakawa region; the *Document of the Family of Nagatani Sannojo (Nagatani Family)*, which discusses the tea producer based in Yuyadani who was involved in the invention of the Uji method; the *Document of the Family of Nagatani Ihachiro*; and the *Document of the Family of Shiomi Hiroshi (Shiomi Family)*, who was a tea merchant in Gonokuchi. Their inventorying and codification are also underway.

Old maps of different regions and different periods remain, including the drawing of Uji-go, the township of Uji (in the storage of Uji City Historical Museum), which dates back to around the 18<sup>th</sup> century. Drawings specifically related to production and distribution are, for instance, the *Scroll of Tea Jars* (in the storage of the National Library), which depicts a mission carrying Uji-cha to the Edo Shogunate in the Edo period (1600-1868); the *Pictorial Explanation of Uji-cha Production from the Beginning to the End* (1861, in the storage of the National Institute of Japanese Literature); and the *Drawing of Tea Production* (early 20<sup>th</sup> century, in the storage of the Chamber of Kyoto Prefecture Tea Public Interest Incorporated Association). There remains

an abundance of historical material that visually illustrates what the past landscapes looked like and how production and distribution were carried out.

### **3.6 Conclusion, including consideration of appropriate documentation for undertaking comparative studies**

As far as landscapes of Uji-cha production are concerned, a basic study has been completed, including surveys of the existing landscapes, photos, mapping and a database. Their summaries are available on the internet. Inventorying and codification of historical materials such as written records, old maps, old drawings and old photos are underway, and their summaries have been compiled in the reports of landscape surveys by Kyoto prefecture and Uji city. The outcomes of the above have been made available as a whole on the website of Kyoto prefecture introducing its efforts towards World Heritage nomination. Information necessary for comparative studies can be obtained from this website.

## **4. State of historic and technical knowledge concerning tea landscapes studies**

### **4.1 Definition of the period or periods during which the tea landscapes flourished**

The period during which the landscapes of Uji-cha production flourished can be defined as the period from the mid-14<sup>th</sup> century, when tea introduced from Song dynasty China to Japan was accepted in the Uji area and tea production started, up to the present day. *Matcha*, which was produced in Uji, had become the most popular kind in Japan by the mid-15<sup>th</sup> century; this was followed by the initiation of shaded cultivation that led to Japan's unique *Matcha*, which continues to this day. In the 18<sup>th</sup> century, the Uji method of processing tea leaves was invented, giving rise to Japan's unique *Sencha* and resulting in the expansion of tea plantations. In the early 19<sup>th</sup> century, shaded cultivation and the Uji method were combined to create *Gyokuro*, which led to the expansion of shaded tea plantations. Since then, the landscapes of Uji-cha production have continued to be representative tea production areas of Japan.

## 4.2 Have the landscapes evolved and, if so, how?

Landscapes of Uji-cha production have evolved continuously along with innovations and developments in Uji-cha production. The first innovation was the invention of the shaded cultivation of *Matcha* around the 16<sup>th</sup> century. This cultivation method of shading the entire tea plantation with reed and straw brought about unique tea field landscapes in Uji. Tea blenders in Uji, who exclusively processed and sold Uji-cha, built their houses in the urban area of Uji, forming unique townscapes.

In the 18<sup>th</sup> century, the Uji method was invented for processing *Sencha*. At places such as Yuyadani of Ujitawara town, settlements of *Sencha*-producing tea farmers and tea merchants were formed. Open-air tea plantations expanded to the mountain areas, resulting in the development of tea plantations on the sloped terrains that did not change the original landforms of the mountains.

In the early 19<sup>th</sup> century, shaded cultivation was combined with the Uji method in Uji, prompting the emergence of *Gyokuro*. As a result, shaded tea plantations that had only been permitted for privileged tea merchants in Uji spread to other areas along the Kizugawa River such as Joyo city, Yawata city and Kyotanabe city.

In the latter half of the 19<sup>th</sup> century, tea became a major export item and tea plantations came to be developed widely in the mountain area too, such as Minami Yamashiro village. At the same time, a tea merchant town was formed at Kamikoma, which was a node of transportation.

In the 20<sup>th</sup> century, in response to increasing production, the mechanisation of tea leaf plucking and of tea processing progressed. In the process of rationalisation of production, various ingenious endeavours were made, such as concentration of tea plantations, modification of tea plantations to become compatible with machine plucking, cooperative operation of tea processing factories, installation of frost-proof fans, and use of cheesecloth at shaded tea plantations.

## 4.3 State of current research on history of landscapes, plants, planting methods, harvesting and processing methods, social structures and cultural systems

Kyoto Prefecture Tea Industry Institute has been studying livelihood-related aspects and ecological aspects of Uji-cha production on a continual basis. An enormous amount of research

by individual scholars has been accumulated with regard to the production, distribution and consumption of tea, associated social structures and cultural systems, and history.

With regard to landscapes of tea production, Kyoto prefecture has been conducting research in preparation of a potential World Heritage nomination related to Uji-cha. The overall landscape characters of the target areas have been identified (refer to 3.1), among which the central urban area and shaded tea plantations of Uji city have been selected and protected by the national government as an Important Cultural Landscape. In preparation of the selection, landscape characters were examined (ibid).

## **5. Threats to tea landscapes**

### **5.1 Pressure from new development**

In general, pressure from new development is decreasing due to depopulation and the ageing of society. Changes in the landscape are due to small-scale developments in the suburban area, where control measures based on city planning are not sufficiently strong, and environmentally or visually inappropriate land uses such as outdoor stock yards. In addition, in recent years, the construction of photovoltaic power generation facilities has raised concerns from landscape perspectives, although the threat is not so serious in hilly areas where open-air tea plantations lie.

In Uji, Yawata and Joyo cities, where tea merchant towns and shaded tea plantations are located, landscapes are partially affected by urban sprawls or the construction of buildings of non-traditional styles and large scales. Nevertheless, the historic centre of Uji city and the surrounding tea plantations have been selected by the national government as an Important Cultural Landscape and are protected accordingly in order to restrict or minimize the negative impacts on the landscape, through the enforcement of development control measures and compliance with guidelines for historic building conservation and townscape development. When historic buildings are repaired or restored for conservation purposes, care is taken to maintain their originality, as is the case with the rehabilitation work on the tea merchant house of Nakamura Tokichi.

In Yawata and Joyo cities, urbanisation is tightly controlled in tea-producing areas, whereas areas constituting their middle-ground views are not unaffected by the construction of an expressway and large-scale buildings. An issue to be addressed in the future is how to enhance

the balance between development and the value of the cultural landscapes of Uji-cha tea through control measures under the city planning act and the landscape act.

Near Gonokuchi of Ujitawara town, where a tea merchant town exists, an expressway (Shin-Meishin Expressway) and the Ujitawara interchange (IC) are planned to open in 2024. Since new access roads and other structures are expected to be constructed along with them, it will be essential that these developments are conducted in harmony with the value of the cultural landscapes of Uji-cha tea.

## 5.2 Abandonment of traditional cultural practices

The high quality of Uji-cha has been maintained as traditional techniques that have been acquired over a long history have been passed down from generation to generation. In particular, hand-plucked *Tencha* and *Gyokuro* have been cultivated at shaded tea plantations that have more than 400 years of history and are symbolic of Uji-cha, known for its high quality. However, owing to a reduction in domestic demand for the highest quality tea, the ageing of producers and the necessary workload, the number of hand-plucked shaded tea plantations is decreasing, resulting in concerned anticipation of their decline and eventual disappearance.

At shaded tea plantations, as tea production facilities are modernised, black cheesecloth is generally used to cover tea plantations; however, there are still some tea plantations that use traditional reed and straw screens and conventional cheesecloth, and where tea leaves are plucked by hand from natural-style plantations.

Despite the modernisation of tea processing, the traditional hand-rolling tea processing techniques of Uji-cha (designated by Kyoto prefecture as an intangible folk cultural property) have been passed down. These hand tea processing techniques are also referred to as the model for mechanisation.

## 5.3 Changes in social structures

The number of tea farmers' households in the Yamashiro region decreased almost by half between 2003 and 2014, from 1,633 households to 858, according to the statistics of Kyoto prefecture. It is a significant reduction. At present, the percentage of aged people, who are 60 years old or older, is as high as approximately 60%. The ageing population, and the shortage of successors, make it difficult to maintain tea plantations, resulting in the appearance of abandoned tea plantations. As experienced, skilled tea leaf pluckers become old, it becomes

more and more difficult year by year to find the necessary number of workers for tea leaf picking, which is a seasonal activity with irregular work hours. A shortage of human resources for tea production in the future is an issue.

The area of land under tea cultivation in the Yamashiro region and the output of *Aracha* have not changed much in the past ten years. Although the number of tea farmers is decreasing, individual tea plantations have expanded; as a result, the total area of tea plantations is maintained. When considering the specific subcategories of *Aracha* production in Kyoto prefecture, it is observed that the output of *Sencha* decreased by more than 40%, from 1,001 tons in 2004 to 576 tons in 2014, while *Tencha* doubled from 541 tons in 2004 to 1,078 tons in 2014. The low demand for *Sencha* has led to tea variety conversions, and the growing demand from the food processing industry for items such as *Matcha* sweets has caused a big change.

The average price (average of all the categories including *Sencha*, *Kabusecha*, *Gyokuro* and *Tencha*) of Uji-cha (first leaves) decreased by about 13% from 2003 to 2013 as the custom of steeping tea leaves in hot water and drinking the extract has become less frequent among consumers, and domestic economic downturn has pushed down the demand for quality tea as gifts.

While the conventional market of quality green tea is in a downward trend, as shown by the decreasing number of shops specialised in tea and the low demand for tea as gifts, new styles of quality green tea consumption are emerging, as shown by the increasing number of Japanese tea cafes in large cities and other places.

Furthermore, in recent years, international companies such as Haagen-Dazs, Starbucks and KitKat have started to use *Matcha*, which has attracted international interest as tea you can eat. Japanese tea, and specifically *Matcha*, are gaining popularity outside Japan.

#### **5.4 Impact of modern techniques of tea cultivation, processing and management**

Tea cultivation by traditional cultivation methods characterised by covering plantations and hand plucking is highly labour intensive, and it is not easy to expand its size or enhance its efficiency. With regard to screens at shaded tea plantations, for which reed and rice straw were used traditionally, many have been replaced with black cheesecloth screens, which can provide shading and insulation similar to traditional screens, in order to rationalise production.

The reduced use of reed and straw screens reflects changes in relation to the places of their production, though local rice straw continues to be used still today. With regard to reeds, Lake Ogura, which used to be the major source, was lost due to land reclamation in the mid-20<sup>th</sup> century. Today, reeds are obtained from the reed fields at Omi-Hachiman city near Lake Biwa, located in the upper reaches of the Ujigawa River, which are protected as an Important Cultural Landscape. The exact place where reeds are harvested has changed, but locally produced reeds are still used.

Using black cheesecloth greatly contributes towards the continuation and transmission of tea production to future generations; however, it results in a slight decline of the quality of tea and significant visual impacts. Therefore, Kyoto prefecture is currently trying to develop a new cheesecloth with characteristics close to those of traditional screens in order to improve the tea quality.

Since frost in the spring sprouting season can cause tremendous damage to tea production, frost-proof fans have been installed as a measure to prevent frost damage by controlling the temperature of the air. This is essential and unique equipment that represents the process of the organic evolution of Japanese tea production. This equipment might appear to be an intervention on the traditional land use of tea plantations that are compatible with the natural environment, but it is actually used to complement it, and as a preventive measure to mitigate the damage of severe frost that occurs irregularly. Measures should also be taken to mitigate the visual impact, such as harmonising the colour of the supporting posts of the fans, most of which are currently made of concrete, with the surrounding environment. On the other hand, there are tea plantations where no fans are installed, such as those which are old or where frost hardly occurs due to landforms and microclimatic conditions. Measures to protect these tea plantations are to be explored.

As a result of the mechanisation of tea leaf plucking in the latter half of the 20<sup>th</sup> century, it became easy to expand the size of plantations; slopes in mountainous areas were newly developed into tea plantations, which created the distinctive landscape of mountains covered by tea bushes with farmhouses at the foot of the mountain. Tea plantations located on the slopes or steeply-sloped terrains present beautiful landscapes to the eye, but their mechanisation and expansion is difficult, and it is also difficult to enhance the efficiency of the work.

Tea processing was completely manual up to the middle of the Meiji period (1868-1912) and was then mechanised in the Showa period (1926-1989). However, this mechanisation was based on traditional hand-rolling techniques.

## 5.5 Lack of maintenance

With the exception of Uji city, wooden buildings that were formerly used as tea factories but went out of use as a result of the modernisation of tea processing and the shortage and ageing of workers have been left in a deteriorated condition or dismantled without much preservation or utilisation. The situation is quite the same with regard to the preservation and utilisation of tea merchants' houses.

## 5.6 Inappropriate or only partially appropriate reuses

There are no particular inappropriate reuses.

## 5.7 Specific threats (*modern/industrial large-scale cultivation, climate change, tea plants diseases and parasites; partial abandonment of tea plantations, change of species or plant die-off, etc.*)

Large-scale cultivation of tea plantations was promoted in different regions through the large-scale tea field development projects that started in the 1960s and 1970s. As a result, tea plantations that were divided in an orderly manner suitable for cooperative cultivation spread. However, because of geological constraints, the degree of conversion to large-scale cultivation is not so dominant in the Yamashiro region compared to other tea-producing regions in Japan.

## 5.8 Changes to integral buildings and related settlements

Nakauji of Uji city, the urban area that has played a central role in the long history of *Matcha* production, has some privileged tea merchants' residences and many tea merchants' shops and tea farmers' houses, constituting a tea industry town where both the processing and sale of tea are conducted. Some tea merchants' and farmers' houses have a tea factory within their precinct. In the process of the modernisation of tea processing, the number of factories in operation is decreasing. Besides Nakauji, other tea merchant towns developed at the nodes of transportation by land and by water, such as Kamikoma in Kizu city and Gonokuchi in Ujitawara town. While the style of tea distribution has changed, these towns still retain their original townscapes. In addition, throughout the entire Uji-cha producing region, there still remain unique landscapes of settlements dotted with tea factories together with tea plantations. In particular, Yufune of Wazuka town retains a group of traditional private houses accompanied by tea factories.

## 6. Protection

### 6.1 Legal protection

#### 6.1.1 THE LAW FOR THE PROTECTION OF CULTURAL PROPERTIES (PROTECTION OF CULTURAL LANDSCAPES)

Multi-layered protection is provided for Important Cultural Landscapes that have been selected by the national government, based on the following three-tiered legal system: (i) notification and management of important constituent elements in the statutory preservation plan for the cultural landscape under the *Law for the Protection of Cultural Properties*; (ii) notification and recommendations concerning the height, design and colour of buildings and other structures and development acts through statutory landscape plans, landscape ordinances and landscape development standards under the *Landscape Act*; and (iii) conservation of agricultural land and natural environment (notification and permission) under individual laws such as the *Act Concerning Establishment of Agricultural Promotion Areas*, the *Forest Act* and the *Natural Parks Act*. The *Law for the Protection of Cultural Properties* requires anyone intending to conduct an act that alters the existing state of an Important Cultural Landscape or affects its conservation to submit prior notification to the Commissioner of the Agency for Cultural Affairs, which provides necessary instructions, advice and recommendations. In the Uji-cha producing area, the “Cultural Landscape of Uji” (an area of 228.5 ha) was designated in 2009 as an Important Cultural Landscape.

#### 6.1.2 LANDSCAPE ACT (ENFORCEMENT OF LANDSCAPE PLANS AND LANDSCAPE DISTRICTS)

Under the *Landscape Act*, buildings and other structures within the landscape planning area determined by a landscape administrative organisation are controlled through the requirement of prior notification and the subsequent issuance of recommendations. The mayor may issue an order for corrective measures, when needed, with regard to form, colour, design, etc., of buildings and other structures. Furthermore, within Landscape Districts or Quasi-Landscape Districts, in the framework of the city planning, legally binding measures can be taken by municipal governments to control the form, size, height, etc., of buildings.

#### 6.1.3 CITY PLANNING ACT (DEVELOPMENT CONTROL)

Within the Urbanisation Control Area under the *City Planning Act*, development acts that stimulate urbanisation are restricted in principle. New construction and remodelling of buildings and other structures require the submission and approval of the application for building confirmation.

#### 6.1.4 AGRICULTURAL LAND ACT AND ACT CONCERNING ESTABLISHMENT OF AGRICULTURAL PROMOTION AREAS (PROTECTION OF AGRICULTURAL LAND)

The *Agricultural Land Act* requires prior permission when agricultural land is changed to other land uses, with the aim of securing good agricultural land and promoting planned land use. When agricultural land is converted to other land uses, prior permission from the governor of Kyoto prefecture is required. In particular, with regard to agricultural land within the Land for Agricultural Use designated by the municipal governments in their *Agricultural Promotion Area Development Plans*, the policy is not to permit land use conversion in principle.

### 6.2 Planning or other forms of formal protection

#### 6.2.1 KYOTO PREFECTURAL ORDINANCE FOR THE PROTECTION OF CULTURAL PROPERTIES

Cultural landscapes that are deemed important by Kyoto prefecture are selected as prefectural cultural landscapes, which is a category of prefectural property. Necessary measures for preservation and utilisation are taken for the prefectural cultural landscape. In the Uji-cha producing area, “Tea Field Landscapes of Uji-cha in Wazuka Town” (an area of about 96 ha) and “Landscapes of Uji-cha Production in Minami Yamashiro Village – Tea Fields Sprawling Over the Mountain Bodies and Farmhouses at the Foot of the Mountain” were selected in 2008 and 2015, respectively.

#### 6.2.2 KYOTO PREFECTURE LANDSCAPE HERITAGE REGISTRATION SYSTEM

Kyoto prefecture registers important landscape resources in consideration of the deliberation of the Kyoto Prefecture Landscape Council, and, by sharing their values and disseminating information, promotes actions to enhance the attractiveness of the locality, develop local landscapes, and build local communities. So far, tea plantations sprawling over the mountains in Wazuka town and Minami Yamashiro village; riverbank tea plantations around Kozuya in Yawata and Joyo city, where high-quality Tencha is produced; landscapes of shaded tea plantations and settlements on the plateau of Inooka in Kyotanabe city; and tea plantation landscapes at Yuyadani of Ujitawara town, among others, have been registered.

#### 6.2.3 TEA INDUSTRY PROMOTION PLAN

In 2015, Kyoto prefecture developed the *Kyoto Prefecture Tea Industry Promotion Plan* with the aim of sustaining production at the tea plantations that spread over the mountains in the Yamashiro region, and maintaining the practice of hand-plucking tea leaves at shaded tea

plantations as a livelihood. The prefecture has also translated the plan into an action plan of concrete measures and is taking steps to promote the tea industry.

### 6.3 Traditional protection

Kyoto prefecture has been conducting research to identify better tea varieties by crossing parent trees selected from the native seedling nurseries centring on the Yamashiro region. Still today, excellent tea trees are stored as a “genetic resource stockpile” at the Kyoto Prefecture Tea Industry Institute.

## 7. Conservation and management of tea landscapes

### 7.1 Conservation of natural and cultural features

#### (1) CONSERVATION OF TEA FIELDS

Most of the tea fields in the Yamashiro region are designated as Land for Agricultural Use in the *Agricultural Promotion Area Development Plan*. Because the policy is not to permit land use conversion in principle, these agricultural lands are to be conserved and maintained as agricultural lands.

#### (2) CONSERVATION OF CULTURAL LANDSCAPES

Among the Uji-cha producing areas, a part of Uji city (about 228.5 ha) was selected by the national government as an Important Cultural Landscape in 2009; particularly important tea fields and buildings, such as tea merchants' houses and tea factories, which reflect the different stages of the tea industry from tea cultivation to processing and sales, have been identified as important landscape constituent elements. For these elements, the policy is to minimise interventions to exterior repair and to avoid to the extent possible interventions within the area visible from the public space, such as roads, without excluding the enlargement of the existing buildings, etc. For alterations to the existing state, prior notification is required. Efforts are being made to integrate traditional methods into repair and visual harmonisation works and to support such actions.

In the Uji-cha producing areas other than Shirawara of Uji city, research is underway in preparation of the selection by the national government as an Important Cultural Landscape.

## 7.2 Management of overall landscapes, including traditional management

For the conservation of landscapes of tea-producing areas, it is essential to sustain the production of tea as a livelihood and pass on traditional production techniques from generation to generation. In 2015, Kyoto prefecture developed the *Kyoto Prefecture Tea Industry Promotion Plan*, with the aim of sustaining production at the tea plantations covering the mountains in the Yamashiro region, and maintaining the practice of hand-plucking tea leaves at shaded tea plantations as a livelihood. This plan includes measures to establish a mechanism to maintain tea plantations in cooperation and coordination with producers and to strengthen the branding power of hand-picked tea.

Furthermore, the Chamber of Kyoto Prefecture Tea Public Interest Incorporated Association carries out activities to deepen consumers' understanding of Uji-cha culture, conserve traditional techniques associated with Uji-cha, improve the quality of Uji-cha, raise awareness about Uji-cha, and provide assistance for the promotion of Uji-cha. In addition, the Kyoto Prefecture Tea Industry Research Institute, which studies both traditional and new production techniques, the Kyoto Prefecture Tea Cooperative and the Kyoto Prefecture Tea Production Council also work to promote the tea industry and provide assistance to people working in the tea industry.

In 2013, Kyoto prefecture, relevant municipalities and tea industry groups set up a regional coordination committee and held discussions on the preparation of a comprehensive management plan for the conservation of the cultural landscapes of Uji-cha production.

In the same year, university scholars carrying out research related to Uji-cha, stakeholders of the tea industry, businesses, non-profit organisations and others gathered to create a platform, which has been undertaking actions based on strategies for maintaining and utilising the landscapes of Uji-cha production.

## 7.3 Sustainable development including strengthening resilience of traditional systems

Because Uji-cha has an established status as a high-quality brand, traditional production systems such as shaded cultivation and hand-plucking were economically viable, and landscapes of Uji-cha production have thereby been passed down from generation to generation. However, in order to address present issues such as the low price of tea and the shortage of human resources, more aggressive measures to promote the livelihood would be needed. It should be noted that tea plantations that have excellent landscapes are, more often

than not, inefficient in terms of production; therefore, demerits in efficiency need to be recompensed by benefitting from other areas, such as making use of landscapes for branding and tourism promotion.

In 2015, the Uji-cha producing areas of the Yamashiro region were registered under the Agency for Cultural Affairs' Japan Heritage programme as "A Historical Walk Through 800 Years of Japanese Tea". The areas have been attracting more and more tourists from abroad and within Japan, who are moved by the tea field landscapes and the taste of Uji-cha they savour on site. Measures to sustain and renew the dynamic functions of this heritage should be explored, including the possibility of repurposing buildings and facilities related to tea production that have gone out of their original use for the promotion of the tea industry, including tourism.

## 8. Conclusion

### 8.1 An overview of the profile of these tea landscapes

Japanese tea is characterised by unique green teas - *Matcha* (lit. "powdered tea"), *Sencha* (lit. "tea for brewing") and *Gyokuro* (lit. "gem drop, high quality tea for brewing") - which are created by original production techniques, such as shaded tea plantations and the Uji processing method, that were invented in the Yamashiro region, in the south of Kyoto prefecture, founded on the tea production method of Song dynasty China. In Japan today, tea is widely produced at relatively temperate areas on the Honshu, Shikoku and Kyushu islands of the Japanese archipelago, which is elongated north-south, but these tea-producing areas invariably use the tea production method that originated in the Yamashiro region and spread from there throughout Japan. Tea produced in the Yamashiro region is called "Uji-cha". Landscapes of Uji-cha production can be regarded as representative of the landscapes of tea production in Japan.

The production method of Uji-cha has a long history of approximately 700 years, and gave rise to shaded tea plantations on river banks and hilly terrains, where tea leaves for *Matcha* and *Gyokuro* are cultivated, and open-air tea plantations characteristically unfolding over sloped mountain sides, where *Sencha* is cultivated. Distinctive landscapes have also been developed, consisting, among others, of settlements with tea farmers' houses and tea factories where *Aracha* (lit. "rough tea") is processed, and tea merchant towns in locations

convenient for water transportation where *Shiagecha* (lit. “finished tea”) is processed and blended. These processes have been passed down to the present day, while evolving historically with repeated innovations.

This region, through the production of *Matcha*, *Sencha* and *Gyokuro*, supports the tea-drinking cultures of *Chanoyu* (tea ceremony) and *Senchado*, respectively. In addition, the production of *Sencha* has turned the practices of making tea with a teapot and imbibing tea into a common culture rooted in daily life, which has been a great contribution to the development of the green tea drinking culture of Japanese people from all walks of life.

## **8.2 Whether the lack of documentation and research hinders full analysis of the tea landscapes**

Historical materials related to the landscapes of Uji-cha production, such as documents and drawings that date from the 12<sup>th</sup> century, remain in good condition. Their inventorying and content analysis are underway. Comprehensive landscape research has been carried out by Kyoto prefecture and others. As a result, sufficient research data to allow for comparative analysis have already been obtained.

## **8.3 The distinctiveness of these tea landscapes in relation to other sub-regions**

Japanese tea falls under a sub-group of Chinese tea, but its production method is differentiated from other “non-fermented” (non-oxidised) teas, i.e. green teas, of the Chinese tea group. It is still processed by a steaming method that has the longest history in Chinese tea. With regard to tea-drinking methods, the drinking of powdered tea leaves, a culture that has been disrupted and lost in China, has survived in Japan as *Matcha*.

At the same time, historical methods of green tea production and drinking have also been passed down from generation to generation in a multi-layered manner, undergoing unique developments through technical innovations.

Landscapes of Uji-cha production represent the tea-producing areas of Japan, comprising characteristic shaded tea plantations and open-air tea plantations that correspond to unique methods of production and drinking, as well as tea merchant houses and settlements of tea farmers' houses that have tea factories. They have potential Outstanding Universal Value as a type of landscape or an example of land use that illustrates significant stages in the history of

the tradition and innovation of green tea production and has contributed to the development of a tea-drinking culture for people from all walks of life.

#### **8.4 Which landscape might be said to best reflect the particular characteristics of this region and which, if any, might have the potential to demonstrate OUV, either on their own or in a series?**

The particular characteristics of the landscapes of tea production in Japan are best reflected in the landscapes of Uji-cha production. The developments of Japanese tea originate from Uji-cha. Techniques that are essential to Japanese tea today, such as shaded cultivation and the Uji method, spread from Uji throughout Japan. Uji-cha tea landscapes thus include the main elements present in the history and tradition of Japanese tea production and trade, that can be seen in the fields, small factories, merchants' houses and settlements. The land use has been maintained and they may be considered as evolving cultural landscapes that represent a testimony of a cultural heritage linked to tea. The present landscapes of Uji-cha production include all elements necessary to bear testimony to the history of tradition and innovation, as well as the diversity, of tea production, such as land uses and facilities related to cultivation, processing and distribution of tea. These constituent elements have survived to this day, maintaining mutual relations.

#### **8.5 What are the main vulnerabilities of the tea landscapes of this sub-region?**

Landscapes of Uji-cha production are vulnerable to changes in the traditional methods of cultivating, harvesting and processing tea leaves, changes in social structure, and development pressures.

Changes in the traditional methods of cultivating, harvesting and processing tea leaves have occurred since the 20<sup>th</sup> century in order to enhance production efficiency, by mechanising the harvesting and processing of tea leaves, concentrating tea plantations, expanding the size of individual tea plantations, and changing the landform to decrease steep slopes. Changes in social structure include the ageing of tea farmers, shortage of successors, low demand for *Sencha* consumption, and the decreasing price of tea. Development pressures are in a decreasing trend in the context of the declining population of Japan, but the new construction of an expressway and small-scale developments could cause landscape changes, which is a matter of concern.

## 8.6 How are these impacting on conservation, authenticity and integrity?

The cultivating and processing methods of Uji-cha have been mechanised and rationalised without losing the essential value of the traditional methods. Traditional methods have also survived in some areas and *Matcha*, *Sencha* and *Gyokuro* are all produced using traditional techniques in those places. Therefore, careful preservation and management are needed in the future. The impact of changes in the social structure is not small, but efforts have been made to conserve landscapes by mobilising legal control measures for landscapes, ensuring management and promoting tea production as a livelihood. To address development pressures, legal control measures are planned to be taken, with a view to controlling landscapes appropriately.

## 8.7 How effective is current protection and management and in what ways might these be improved?

Current protection and management are based on the laws and ordinances of the national government and local governments, which provide protection of cultural landscapes as a cultural property, landscape conservation, development control, and protection and promotion of agricultural land. Moreover, necessary actions for management purposes are being promoted through the *Kyoto Prefecture Tea Industry Promotion Plan*, the concept of “Kyoto, Ancient Capital City of Tea”, and also as part of the efforts to develop a management plan in preparation of a potential future nomination to the World Heritage List. Despite these measures, cultural landscape protection and landscape conservation do not yet cover all of the important constituent elements of the totality of the landscapes of Uji-cha production. Therefore, a policy has been taken to address these elements one by one, once specific conditions are in place, and to proceed with the selection of an Important Cultural Landscape and the subsequent preparation of Landscape Plans in accordance with the *Landscape Act*.

## 8.8 Possible recommendations for the future

Measures for landscape protection and for the promotion of tea production are currently implemented in parallel. However, an overarching plan will be needed to handle both of them in a holistic manner, and measures to promote management actions also need to be continued. It is recommended that branding and tourism promotion that make use of the landscapes be pursued. In addition, it is necessary to take actions to address changes in the social structure

such as ageing, shortage of successors, low demand for tea consumption, and the low price of tea. New consumption styles and new demand for high-grade green tea, such as the use of *Matcha* as an ingredient of sweets, have appeared recently, opening possibilities of finding new markets in addition to keeping and expanding conventional ones.

### **8.9 Views on the studied landscape potential to demonstrate Outstanding Universal Value, including integrity and authenticity, as well as ecological and cultural resilience, and an adequate state of conservation**

Landscapes of Uji-cha production are representative landscapes of tea production in Japan, which include the main elements necessary to express their value and have maintained their mutual relationships. They have evolved out of necessity over time, while the essence of traditional methods is passed down from generation to generation and can still be seen vividly as integral part of the way that tea is produced, processed and distributed today. They are considered as cultural properties and the abundant historical materials evidencing the value of the production techniques and their transition may serve as the basis to justify their authenticity.

With tea production continuing still today, ecological resilience is maintained; cultural resilience of the individual elements is ensured through the designation of the landscapes as a cultural property.

Therefore, Uji-cha tea landscapes could deserve an in-depth study of their potential Outstanding Universal Value.

### **Selective bibliography**

#### **Japanese Tea**

Kato, Tokusaburo, *Nihon Cha Boeki Gaikan* (Outline on the Tea Trade of Japan), Chagyo Kumiai Chuo Kaigisho, Tokyo, 1935.

Konishi, Shigeki, *Nihon Cha no Miryoku wo Motomete* (Pursuing the Value of Japanese Tea), Taiga Shobo, Tokyo, 2005.

Oishi, Sadao, *Nihon Chagyo Hattatsu Shi* (History of the Development of Tea Industry in Japan),

Nosangyoson Bunka Kyokai, Tokyo, 1983.

Nosangyoson Bunka Kyokai, *Cha Daihyakka* (Tea Encyclopedia), Nosangyoson Bunka Kyokai, Tokyo, 2008.

Teramoto, Masuhide, *Senzenki Nihon Chagyo Shi Kenkyu* (Study on a History of Japanese Tea Industry in Pre-war Period), Yuhikaku, Tokyo, 1999.

## Uji-cha Tea

Adachi, Hisakichi, *Kyotofu Chagyo Shi* (A History of Tea Industry in Kyoto Prefecture), Kyotofu Chagyo Kumiai Rengo Kaigisho, Uji, 1934.

Horii, Nobuo, *Uji-cha wo Katari Tsugu* (Handing down the Story of Uji-cha Tea), Earth Work, Kyoto, 2006.

Kyotofu Chagyo Hyakunen Shi Hensan linkai, *Kyotofu Chagyo Hyakunen Shi* (History of a Hundred Years of Tea Industry in Kyoto Prefecture), Kyotofu Chagyo Kaigisho, Kyoto, Uji, 1994.

Ujishi Rekishi Shiryokan, *Uji-cha: Meishoe kara Seichae e* (Pictures of Uji-cha: from Famous Places to Tea Processing), Ujishi Rekishi Shiryokan, Uji, 1985.

Yamashiro Chagyo Kumiai, *Yamashiro Chagyo Shi* (A History of Tea Industry in Yamashiro Region), Yamashiro Chagyo Kumiai, Uji, 1984.

Yoshimura, Toru, *Uji-cha no Bunka Shi* (Cultural History of Uji-cha Tea), Ujishi Rekishi Shiryokan, Uji, 1993.

## Local History and Research of Uji-cha Area

Hayashiya, Tatsusaburo and Kenjiro, Fujioka, *Uji Shishi* (History of Uji City), 6 vols., Uji City, Uji, 1973-1981.

Ishii, Kanji, and Reiko Hayashi, *Kinsei Kindai no Minamiyamashiro* (Minamiyamashiro in the Edo Period and the Modern Period), Tokyo University Press, Tokyo, 1998.

Joyo Shishi Hensan linkai, *Joyo Shishi* (History of Joyo City), 4 vols., Joyo City, Joyo, 1979-2002.

Minamiyamashiro Sonshi Hensan linkai, *Minamiyamashiro Sonshi* (History of Minamiyamashiro Village), 3 vols., Minamiyamashiro Village, Minamiyamashiro, 2002-2006.

Ujitawara Cho Kyoiku linkai, *Ujitawara Choshi* (History of Ujitawara Town), 2 vols., Ujitawara Town, Ujitawara, 1980.

Ujitawara Cho Kyoiku linkai, *Ujitawara Cho Chashi Chosa Hokokusho* (Report on the Survey of the History of Tea in Ujitawara Town), Educational Board of Ujitawara Town, Ujitawara, 2014.

Uji Shi Rekishi Shiryokan, *Ryoku Cha no Jidai: Uji, Oubaku no Kinsei Shi* (Age of Green Tea: History of Uji and Oubaku in the Edo Period), Uji Shi Rekishi Shiryokan, Uji, 1999.

Uji Shi Kyoiku linkai, *Uji Shi Bunkazai Sogo Haaku Chosa Hokokusho I Uji, Shirakawa Chiku* (Report on the General Survey of Cultural Heritage in Uji and Shirakawa of Uji City), Uji Shi Kyoiku linkai, Uji, 2011.

## Brochures and Web Sites in English

*Brochure of Japan Heritage* (Designated Story No. 9), Agency for Cultural Affairs, [http://www.bunka.go.jp/seisaku/bunkazai/nihon\\_isan/pdf/nihon\\_isan\\_pamphlet\\_english.pdf](http://www.bunka.go.jp/seisaku/bunkazai/nihon_isan/pdf/nihon_isan_pamphlet_english.pdf) .

*Uji-cha Tea Cultural Landscape; Aiming for World Cultural Heritage Status*, <http://ujicha.kyoto/en/>

*We Love Ujicha*, <http://www.kyocho.or.jp/we-love-ujicha/> .

## Videos

*Art of Uji Tea* (English), Chamber of Kyoto Prefecture Tea Industries, <http://www.ujicha.or.jp/>

*Uji-cha Temomi Seicha Hou* (Traditional Hand-rolling Tea Processing Techniques of Uji-cha), Chamber of Kyoto Prefecture Tea Industries, [http://www.ujicha.or.jp/\\_](http://www.ujicha.or.jp/_)

# The Tea Landscape of Hwagaegok Valley in Korea

*Je-Hun Ryu, Endowed-Chair Professor, Korea  
National University of Cultural Heritage*

*Gil-Sik Hwang, Director, Myeongso Agricultural  
Heritage Center in Korea*

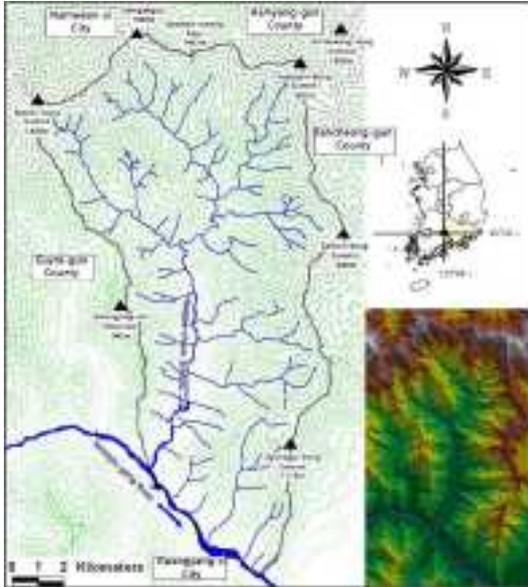
*Jae-Hoon Cheong, Researcher, Myeongso  
Agricultural Heritage Center in Korea*

## 1. General characteristics

Hadong-gun County is located on the western edge of South Gyeongsang Province, which lies in the southern region of the Korean Peninsula. It is surrounded by Jirisan National Park to the north, the Seomjingang River to the west, and the South Sea to the south. Hadong-gun County has an area of 675.5 square km, with a total population of approximately 50,000, and produces the second highest amount of tea in Korea after Boseong-gun County, South Jeolla Province. In 2005, Boseong-gun County became Korea's largest area of tea cultivation (571.3 ha) and producer of the largest amount of tea production (996 tonnes), while Hadong-gun County has 474 ha under tea production and produces 264 tonnes. However, tea cultivation in Boseong-gun County can be traced back only to the period of Japanese colonialism (1910-1954), while in Hadong-gun County it started in the period of the Silla Kingdom (57 BC-935 AD). Hadong-gun comprises thirteen lower administrative divisions: one eup (town) and twelve myeon (townships). In terms of tea production, Hwagae-myeon, in the northwest part of Hadong-gun, is today the most prominent among these lower administrative divisions, with an area of tea cultivation amounting to 597.8 ha (Map 1). Today, this accounts for 87.8% of the annual tea production in the county.

Hwagae-myeon Township is located in a valley surrounded by Jirisan Mountain and consists mainly of a mountainous topography ranging in elevation from 100 m to 1,000 m above sea level. Henceforth, the natural name is "Hwagaegok Valley", although from time to time this will be used alongside the administrative name, "Hwagae-myeon". The Seomjingang River flows along the southwest border of Hwagae-myeon, while the Hwagaecheon Stream flows from the north through the centre to merge into the Seomjingang River in the south (Map 1). The total area of Hwagae-myeon is 13,437 ha and there are a variety of land uses, including fields (274 ha: 2.0%), paddies (345 ha: 2.6%), forested land (12,194 ha: 90.8%), and others (534 ha: 4.0%).

In 2015, 84.2% of households were engaged in tea cultivation, which amounts to 801 out of 951 households. This is 40.9% of the total number of households engaged in tea cultivation in the whole of Hadong-gun County. Tea in Hwagae-myeon, Hadong's largest tea producer, is



Map 1. Location and Topography of Hwagae-gok Valley. Source: Yu, 2007.

produced by a group of small, individual households rather than in plantations, and the sale and distribution of tea products is also done individually. By contrast, tea in Boseong-gun, Korea's largest tea producer, is grown and processed by a small number of agribusiness companies that were originally created by Japanese colonialists.

Hwagae-myeon still maintains a traditional system and process of tea production. Indeed, it is Korea's foremost tea-producing region and leads the development of the nation's tea industry and tea culture. The tea fields, created on mountain slopes suitable for native tea varieties, are surrounded by Jirisan Mountain to the south and the Hwagaecheon Stream to the

north. Hwagae-myeon marks the northern boundary of tea cultivation in Korea. Geographically, this area displays certain adverse conditions for tea cultivation, which local residents have overcome by locating the tea fields on the slopes. This enables the forest to block the cold winds while the moisture naturally arising from the Hwagaecheon Stream maintains optimal humidity and temperature. In other words, the Hwagaecheon Stream forms a microclimate environment that is suitable for planting and growing tea trees. This is why tea cultivation in Hwagae-myeon has been able to persist for over a thousand years despite challenging geographical and climatic conditions.

## 2. Key characteristics of tea cultivation landscape

Tea cultivation is conducted across the entire Hadong-gun region, but what is unique about the Hwagae-myeon tea fields is their location on steep slopes of 30 degrees or more. On these sloping fields, tea trees have adapted to the natural environment by nestling and naturalising, with little human intervention over a long period of time. Traditional tea fields are distributed mainly along mountain slopes at an altitude of 100-400 m above sea level along the Hwagaecheon Stream (Image 1).



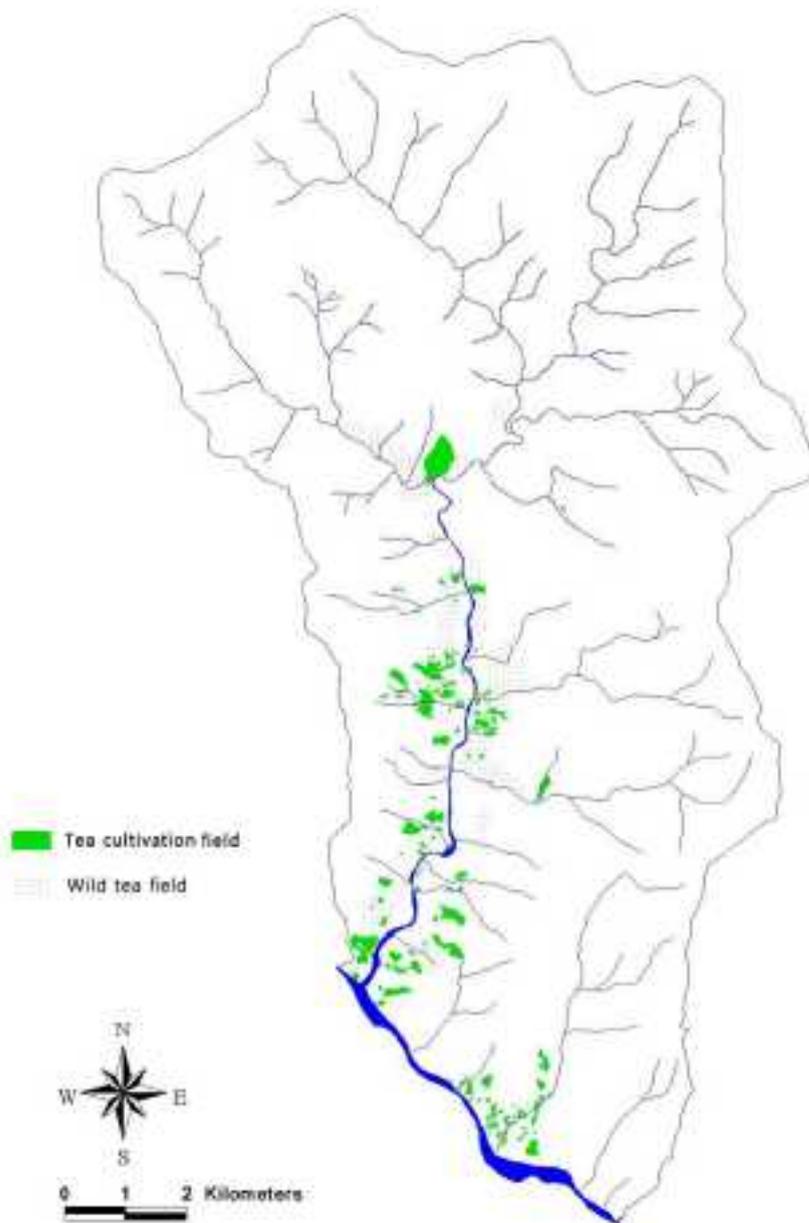
Image 1. Location of Traditional Tea Fields in the Hwagaegok Valley.  
 Source: Hadong-gun County Office.

Most of them are concentrated at altitudes between 300 metres and 400 metres, but some are found as high as 800 metres. As such, the local residents refer to them as “wild” or “traditional” tea fields (Map 2, 3).



Traditional tea fields usually form small units in four different locations: between rock cracks; under forest trees; near streams; and on forest boundaries. All of these locations are on slopes between streams and forests that local residents consider suitable for overcoming climatic and geographical limitations. Despite such a locational pattern, traditional tea field landscapes are continuous in form because fields are not individually divided by stone walls or fences.

Map 2. Distribution of Wild Tea Fields (1960-70). Source: Yu, 2007.



Map 3. The Distribution of Traditional Tea Fields (1990). Source: Yu, 2007.

With regard to the landscape, the traditional tea fields in Hwagae-myeon, in addition to neighbouring townships in Hadong-gun County, differ from those in China and Japan. This is because the tea trees carpet the rocky slopes with lush vegetation by forming a colony together with other trees, crops and plants. Landscape diversity is also evident in seasonal changes in the scenery. In addition to tea trees, local residents cultivate other crops in traditional tea fields, which in turn contribute to enhancing the biodiversity of the cultivation system. Tea trees form colonies between the rocks and other kinds of vegetation on the slopes. Thus, the whole area under tea cultivation provides a habitat for a wide variety of vegetation, including arboreous plants, shrubs and forest shelter, in harmony and with a distinctive beauty. Unlike terraced or flatland tea fields, the fields do not appear in a regular linear pattern due to being dispersed

irregularly along the slopes. To further illustrate this, the area features a wild landscape, with colonies of tea trees interspersed with adjoining forest, large and small rocks and relatively larger shrubs.

In harmony with the vegetation (the arboreous, shrub and ground vegetation) and the rocks on the slopes, traditional tea fields create a distinctive scenery that intermingles with the surrounding mountains. Some large colonies of tea trees have formed in lines along the ridges, but many small colonies are also distributed sparsely on the slopes. Between the colonies are many large and small rocks, and arboreous plants that are bigger than the tea trees. On the borderline zones where the Hwagaecheon Stream and the tea fields meet, the first type of colony is formed on the slopes in the upper valley, where flooding of the tea trees is unlikely (Image 2).



*Image 2. Traditional Tea Fields on the Mountain Slopes. Source: Hadong-gun County Office.*

These zones also create a distinctive scenic view, with the rocks along the river intermingling with the seasonal mist. The second type of colony is the traditional tea fields that have formed between the autogenous arboreous plants (or fruit trees) and crevices in the rocks (Image 3).



*Image 3. Traditional Tea Fields between the Rocks. Source: Hadong-gun County Office.*

They make up a landscape which looks untouched by humans and is similar to mountainous landscapes depending on the number of arboreous plants, tree shape and rock size and shape. The third type of colony is found sparsely in borderline zones between the forests and the fields where the trees cannot grow on the steep slopes (Image 4). Forest vegetation, rather than tea trees, is predominant in these zones where tea fields are formed in a triangular shape.



*Image 4. Traditional Tea Trees below the Forest. Source: Hadong-gun County Office.*

## 2.1 Planting traditions

In traditional tea fields, various kinds of fruit trees (chestnut trees, apricot trees, etc.) and forest products are usually planted along with tea trees (Image 5). Unlike the terraced fields of China, Japan and Boseong-gun County in Korea, in Hwagae-myeon, deciduous trees, such as persimmon, chestnut and bamboo, are planted and grown together with these tea trees. Such a mixed cultivation of trees is of great benefit for maintaining the livelihoods of local residents. It also contributes to controlling sunlight and maintaining the composition and fertility of the soil. This method produces tea leaves with diverse tastes, even in a single field. Maple sap, bracken, fatsia and Japanese apricot also grow in the tea fields and in the nearby forests.



*Image 5. Traditional Tea Fields in the Forest. Source: Hadong-gun County Office.*

Management of the traditional tea fields on the slopes was not an easy task for local residents. One major difficulty lay in field management due to the need of a workforce two or three times larger than that required for fields on level ground, because tea trees grow in the crevices of the rocks on the slopes and form atypical colonies in connection with adjacent forests. The local residents, however, effectively developed a combination of methods to manage the tea fields, with the result that tea trees are selectively naturalized according to zones with natural conditions favourable to their growth, such as climate and soil. Such management is conducted according to a four-step process: first, tea fields are created by utilizing the geographical and ecological characteristics of the area and minimizing artificial land clearance; second, tea trees are propagated by seed on the land rather than propagation by tea tree cuttings; third, pesticides and chemical fertilizers are avoided throughout the tea tree cultivation process; fourth, maintenance, harvesting and processing are performed by hand rather than being mechanized.

## 2.2 Tea tree types cultivated and tea cultivation techniques

In general, native tea trees in the Hwagaegok Valley originate from indigenous tea trees that grew near temples such as Ssanggye-sa Temple and Chilbul-sa Temple. While they are closely related to Chinese species with small leaves, they have adapted to local conditions over a long period of time. Although Chinese species have oval leaves, those in the Hwagaegok Valley have leaves with a variety of shapes. This is because the tea trees have evolved genetically over time into different species through this process of adaptation to the local environment.

Depending on the propagation method, native tea trees can be classified into two species types: the first type is one that has been sowed through seedling propagation (Type 1). This has a “tap-rooted” characteristic by which the root grows deep down into the soil and improves the nutrient uptake of the tree. It is strongly resistant to hazardous natural conditions such as drought, frost and blight. The second type has been seeded by vegetative propagation (Type 2). It is horizontally-rooted, which is a characteristic whereby tea tree roots grow horizontally to the surface. Type 1 is the dominant native species in the area and has enabled local residents to overcome natural limitations and develop the current tea production method. The Institute of Hadong Green Tea has recently verified that the native tea trees are of a different species to the native varieties of China and Japan.

## 2.3 Harvesting and tea processing

The first harvest of tea leaves, called Ujeon, is normally carried out during a special day known as Gogwu (穀雨), or Grain Rain (20<sup>th</sup> April). However, due to the effects of climate change, the Ujeon harvest season is becoming earlier in the year, and is now over by late March. The later the harvest is completed, the more the quality of the tea leaves degrades. This is due to excessive sunlight causing the fostering of certain substances that make the tea taste bitter. During the harvest season, the collection of tea leaves on cloudy or rainy days is prohibited. The collection of tea leaves around noon on a sunny day is not allowed, either. This is because the tannin components produced at this time activate a bitter taste. The best time to collect high-quality tea leaves is at dawn or in the morning when the sunlight is not too excessive.

The residents of Hwagae-myeon have long maintained the traditional method of processing tea which features roasting the tea leaves in a cast-iron cauldron. This may seem reminiscent of the Chinese method at first glance; however, a closer inspection reveals it to be very different. After being roasted, the tea leaves are rubbed against a straw mat before being put back into the cast-iron cauldron for another rubbing. This combination of roasting and rubbing is repeated several times. As traditional tea fields are dispersed all over the mountain slopes, the harvest time of the tea leaves varies depending on the location. Variation in the harvest time, in turn, gives the tea leaves different characteristics. In order to ensure that tea leaves with different

characteristics embody the same taste and aroma, the local residents had to develop a tea processing method in which tea-roasting is repeated several times.

Hand-roasted tea, *sujedeokeum-cha*, is a traditional variety with a pleasant smell and taste that is made by roasting tea leaves in a cauldron. The term, *deokeum*, derives from the nominal conjugation form of the Korean verb *deok-da*, meaning to roast without adding additional water. The *sujedeokeum-cha* recipe, therefore, features “roasting by hand”, which is said to have been a traditional Korean method. Specifically, this method is recorded in the *Dongsasong* (1837), a historical document written by a Buddhist monk named Choeui (1786-1866). The document contains information about tea tree types as well as their locations, in addition to the history and qualities of the tea products made from them. Choeui, a Zen (meditation) master, is well-known for leading the revival of Korean tea culture. Moreover, the traditional tea recipe in Hwagae-myeon can be found even in historical records from the Three Kingdoms period (4<sup>th</sup> to 7<sup>th</sup> century).

## 2.4 Social structures and cultural systems

Traditional tea made in the Hwagaegok Valley was highly praised and enjoyed by renowned Buddhist priests and Confucian scholars. Even during the time when tea cultivation was in decline, monks at Ssanggye-sa, such as Zen master Choeui, and Confucian scholars relished the local tea together while improvising poems about drinking tea. Since the late 1970s, tea culture in Korea has been rapidly reviving after a long decline. Buddhist society was the leading force in the movement to revive tea culture. Monks not only practised Zen Buddhism, but also revived the tea fields that had been deserted and uncultivated since the early 20<sup>th</sup> century. Furthermore, they were enthusiastic about transmitting their method of cultivating tea fields and processing tea leaves to local residents.

Traditional tea culture, which is still alive among local residents, can also be found in their marriage customs. When two families agree upon the marriage of their children to each other, they exchange tea seeds within a lucky pouch, or *bok-jumeoni* in Korean. The *bok-jumeoni* is a small traditional Korean pouch to be dearly kept, and the seeds within it symbolize chastity between the couple. The seeds are meant to promise the couple a constant marriage just like the tea tree that grows with vertical roots. This tea tree is also called the *silhwa-sangbong-su* (fruit reunion tree) or *moja-sangbong-su* (mother-and-son reunion tree). This is because it bears fruit when it blooms, and then retains it until the next bloom which comes one year later. Such a characteristic thus symbolizes the love between parents and children. Likewise, the tea tree has its cultural roots in the area not only as a means of survival but also as a local custom among residents.

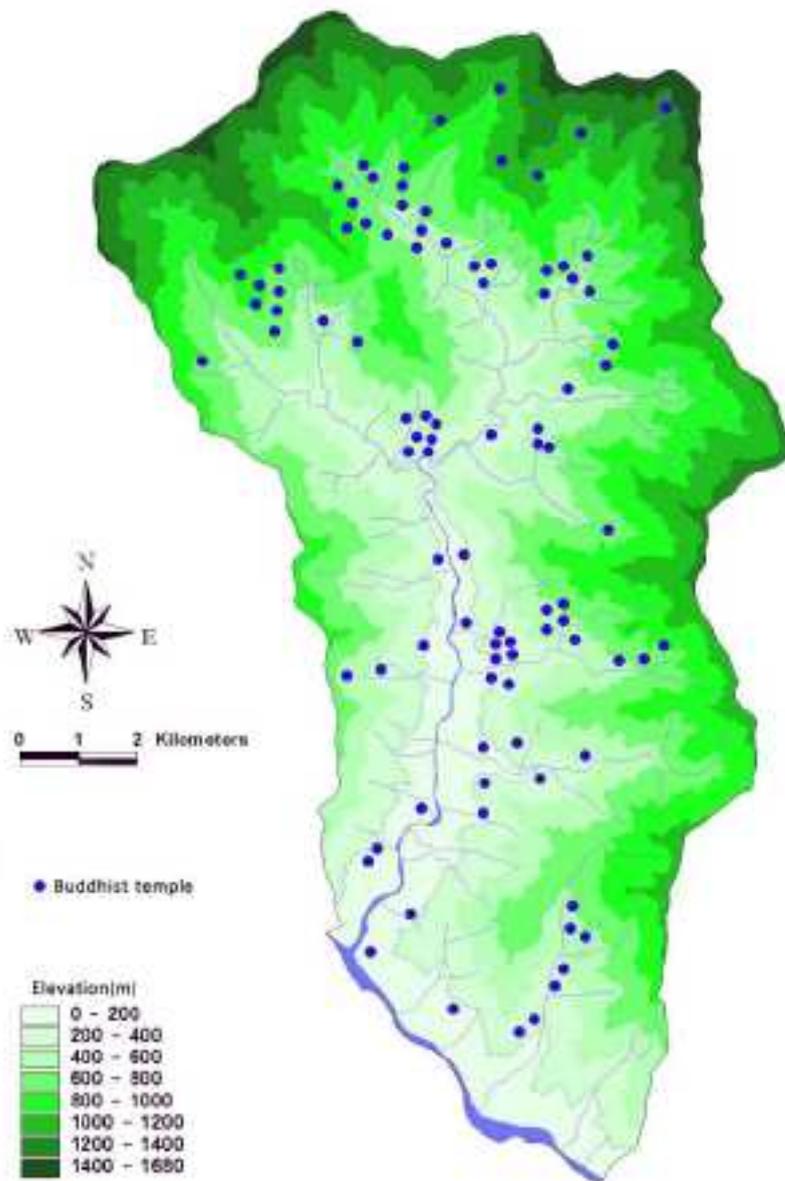
Hadong-gun, including Hwagye-myeon, has served as the heart of tea culture and is recognized as the home of tea cultivation. Various kinds of folk songs, tales and poems originated here and have been passed down through the generations to the present day. Since the period of the

Silla Kingdom (57 BC-935 AD), many songs and poems expressing the moment of enjoying tea have been composed and passed down to the present in the Hwagaegok Valley. These include poems by two great Buddhist masters: Seosan (1520-1604) and Buhyu (1543-1615). The former improvised a poem while enjoying tea after he built a hermitage named *Naeunjeok-am*, and the latter composed a poem to express his joy after planting tea in the forest around Chilbul-sa Temple while devoting himself to Buddhist doctrines and practices. Folktales, which describe tea as a folk medicine and a tribute to the king, have also been passed down orally.

## 2.5 Associated communities and settlements

Buddhist culture once flourished in present-day Hwagae-myeon, which corresponds to the Hwagaecheon Stream Valley. It is in this area that temples played such an important role in the spread of Buddhism that they are recognized as part of what is known as “Jirisan Mountain Buddhism”. The temples and their monks on Jirisan Mountain spearheaded tea production in the surrounding land while spreading traditional cultivation and processing methods nationwide up until the modern period. Traditional tea fields are still found in abundance around these temples, including at Ssanggye-sa and Chilbul-sa Temples. The monks and the local residents have been working together to cultivate the tea fields and process tea leaves into tea materials while sharing traditional techniques and knowledge.

Until the middle of the Joseon dynasty (17<sup>th</sup> century), Buddhism maintained its power in the Hwagaegok Valley along with the production of tea. A Confucian scholar, Ji-baek Kim (1574-1637), wrote in his travelogues that “Chilbul-sa Temple beyond Samshin-dong Village provides the most beautiful scenery among 370 temples on Jirisan Mountain.” Based on these records, it is assumed that a great number of monks must have been accommodated at these numerous temples (Map 4). In a folktale, it is even said: “A person took off his straw shoes and visited the temples across the area, and then he returned to where he had taken off his straw shoes and found them to have already gone rotten”. All in all, these facts suggest that the tea fields had expanded up until the mid-Joseon dynasty alongside the prosperity of Buddhist culture.



Map 4. The Distribution of Buddhist Temples before 1632. Source: Yu, 2007.

In the early Joseon dynasty (1392-1550), the tea fields in the Hwagaegok Valley expanded in line with Buddhist temples. The only temples that remain today from this time are Ssanggye-sa Temple and Chilbul-sa Temple. The revival of tea cultivation in the modern era also began mainly around these two temples. Before the modern era, temples alone cultivated tea fields with local residents participating only partially in temple tea cultivation. The knowledge and skills of tea production accumulated in the temples over a long period of time, and these have been transmitted to local residents. In other words, the cooperation between the monks and local residents ensured that unique tea production methods were developed, maintained, and then passed on to their descendants.

## 2.6 Links to trade and trade routes

The residents of the Hwagaegok Valley sold tea products by visiting households and markets, including temporary markets such as the Jaeksal-jang Market. Jaeksal-jang was alone in opening periodically during the barley harvest season. With their abundant tea production, Hwagae-myeon residents went to Agyang-myeon or Hadong-eup, and even as far as Namhae-gun or Busan-si, in order to sell their tea products. Since tea leaves are light in weight, the participants in Jaeksal-jang Market were mostly women who went across the Seomjingang River and over Jirisan Mountain to sell their tea products. This method of selling tea products lasted over a long period, and meant that the producer was simultaneously the distributor. Tea leaves were usually exchanged for rice or barley, but sometimes for other items such as red beans, silk, and so on.

Currently, tea leaves are sold at Hwagae-jang Market, which is located at the entrance to Hwagaegok Valley, at the crossroads of the land and waterborne routes along the valley of the Seomjingang River. This used to be one of the largest traditional markets in Korea, but the tradition of Jaeksal-jang has not been maintained. It is not known when the market opened for the first time, but it is thought to have originated at the nodal point, Hwagae-naruteo Pier. The pier is believed to have served as the centre of trade along and across the Seomjingang River, which activated trade and traders. Hwagae-jang had been open as a five-day market since King Yeongjo's reign (1770), and was so thriving that it was regarded as among the seven largest markets in the country until the end of Japanese rule (1945). Today, the market remains a famous tourist spot that attracts thousands of visitors every year.

## 3. Existing documentation

In terms of tea history and culture, present-day Hwagae-myeon is the most noteworthy of all Korean tea-producing regions. During the Goryeo (918-1392) and Joseon (1392-1910) dynasties, it was recognized as the area in which the first tea tree plantation was located and with the largest area under tea tree cultivation in the country. Historical records affirming Hwagae-myeon as not only the origin of tea tree production but also an excellent producer can be found in documents such as the *Samguk-sagi*, *Dongguk-isangguk-jib* and *Dongdasong*. It is said that Zen master Choeui (1786-1866; the author of *Dongdasong* and *Dasinjeon* and Confucian scholar Kim Jeong-hee (1786-1856) both agreed that tea from the Hwagaegok Valley was of the best quality; they wrote on the topic when exchanging letters and tea products at the time. Jeong Yak-yong (1762-1836), another scholar from the realist school of Confucianism, also praised the flavour of traditional tea from the Hwagaegok Valley while acknowledging that he used such tea to concentrate on his writing while in exile in present Gangjin-gun County.

Other historical documents which add support to the claim that present-day Hwagae-myeon was historically highly renowned for its tea production include the following:

- (1) During the Unified Silla Kingdom (676-935), *Samguk-Sagi* (Silla-bongi Vol. 10: King Heungdeok, beginning of Ch. 17) records the following: "Kim Dae-ryeom, the envoy to Tang China, came back with tea seeds which the king ordered to be planted near Jirisan Mountain. Tea has been present in the country since the day of Queen Seondeok, the 27th monarch, from when tea began to be prevalent in the country".
- (2) During the Goryeo dynasty (918-1392), Yi Gyubo (1168-1241) reported in the *Dongguk-isangguk-jib*: "To talk about the tea harvest in the Hwagaegok Valley, the local government encourages both the old and the young to harvest it. They harvest the tea leaves by the skin of their teeth and carry them over to the capital in loads". This record implies that Hwagaegok Valley was a leading tea-producing area in the country at that time, and the quality of the tea product was excellent enough to be supplied to the royal court.
- (3) During the Joseon dynasty (1392-1910):
  - Ha Yeon, a scholar-official in the early Joseon dynasty, who served as the governor of Gyeongsang Province, presented tea products from the Hwagaegok Valley to Minister Min Eui-saeng, who was going on a private trip to China. At that time, he said: "I have heard that Hwagaegok Valley has some excellent tea. It is as refreshing as the tea from Yangseon Mountain in China, and the value of its aroma is akin to precious metal and gems. I send it to you from my heart as a supplement for your trip".
  - Choeui, a Zen master in the late Joseon dynasty, praised the excellence of Hwagae tea in his panegyric titled *Dongdasong*: "In the Hwagaegok Valley near Jirisan Mountain, tea trees grow well enough to cover an area as wide as 40 to 50 *ri*" (one *ri* corresponds roughly to 15-20 kilometres).

#### **4. State of historical and technical knowledge concerning tea landscapes studies**

The first tea tree of the thousand-year history of Korean tea culture was planted in the Hwagaegok Valley in 828 on the order of the king. It was near Ssanggye-sa Temple that the tea seed brought from China was sowed. Following this, Buddhist temples in the surrounding area followed suit by cultivating tea fields. With an influx of farmers who brought more land into cultivation by slashing and burning the forests, villagers later joined the monks in the production of tea. Furthermore, at the entrance to Ssanggye-sa Temple, "Cha Sibaeji", or the First Tea Field, and "Choego Chanamu", or the Oldest Tea Tree, vividly testify that Korea's history of tea cultivation began here (Image 6).



*Image 6. The Oldest Tea Tree in Korea. Source: Hadong-gun County Office.*

In the 1960s, monks from Ssanggye-sa Temple led the revival of tea cultivation in the Hwagaegok Valley, starting from the “Cha Sibaeji”, which is still owned and managed by the temple. It is now used as a tea-harvest experience centre for visitors every year during the Hadong Wild Tea Cultural Festival.

Tea production in the Hwagaegok Valley, however, continued to decline during the Joseon dynasty (1392-1910), which, to the detriment of Buddhism, adopted Confucianism as the national ideology. Along with the retreat of Buddhism, heavy taxes and frequent wars caused a decline in tea production. In the late Joseon dynasty, villages that were once dependent upon the temples gradually became more independent as paddy-rice and dry-field farming expanded into the foothills of Jirisan Mountain. Because the residents of these villages valued the food crops, such as paddies, higher than tea trees, there was a decrease in arable land for tea cultivation. Traditional tea produced in the Hwagaegok Valley was sent as a tribute to the king until the late Joseon dynasty in the early 1700s. In the Hwagaegok Valley, where there were more temples than villages, the temples took over the control of tea production from the local residents.

During Japanese colonization (1910-1945), individuals who had lost land settled around Jirisan Mountain. They cleared the forest and turned tea fields into agricultural land where they could plant and grow paddies, dry crops and fruit trees, such as persimmon and chestnut. However, during this time of reclamation, they also tried to maintain tea tree colony areas as much as possible. Reclamation was restricted to minimal areas for planting and growing other crops in areas of old tea cultivation in order to preserve some of the tea trees. Such a process of reclamation has contributed a great deal to the extent of traditional tea fields that survive today.

It was not until the 1960s, after the Korean War, that tea cultivation in Hwagae-myeon began to be revived. As society stabilized, people from outside the area settled and began to engage in the cultivation of tea trees. In the past, tea was produced mainly to meet the demand for religious use in temples at the national level, but now there was also a popular demand in the markets. During the 1960s and 1970s, however, tea cultivation in the area was carried out by several farming households that owned traditional tea fields. These tea fields were scattered sparsely and did not form large colonies in comparison with today's landscape.

## 5. Threats to the tea landscapes

Urbanization accompanied by industrialization since the 1960s, along with increasing productivity, has caused rapid social change in Hwagae-myeon. Urbanization alone has driven younger generations out of rural areas and to the cities, and the total population of Hadong-gun has consequently decreased, from 60,848 in 1999 to 50,840 in 2015. Hadong-gun, moreover, was classified as an aging society in 1999, and subsequently as a super-aging society in 2003. The ratio of over-65s in the population has gradually increased by 2-4%, and now this cohort accounts for 28% of the total Hadong-gun population. In particular, Hwagae-myeon has maintained its traditional manual method of tea production, but the fall in the labour force poses a challenge to labour procurement for the management of the tea fields.

The aging local population and shrinking labour force are the main causes of the reduction in tea field area and production. There were 2,016 households involved in tea production in 2012, but this dropped within a year to 1,956. Tea fields on flat land have been created in locations near streams and the Seomjingang River (Image 7).



*Image 7. Modern Tea Fields on the Flatland near the Stream. Source: Hadong-gun County Office.*

Traditional tea fields on the slopes, in contrast, are becoming increasingly deserted, mainly due to the difficulties in maintenance. On these fields, other cash crops more profitable than tea trees are also often planted. However, due to the aging agricultural population and a reduction in tea consumption, tea production has been experiencing a steady decline in terms of the area under cultivation, households and income. The traditional agricultural tea production system, moreover, is facing a direct risk of losing its labour force, and indiscriminate development threatens the landscape's scenic value.

## 6. Protection

In 2015, traditional tea cultivation in Hwagae-myeon was recognized for its heritage value as a traditional agro-system and listed as a Korean Important Agricultural Heritage System (KIAHS). In 2017, two years later, it was finally listed as a Globally Important Agricultural Heritage System (GIAHS) under the name "Traditional Tea Agrosystem in Hadong". This recent achievement for its protective status as globally as well as nationally important agricultural heritage provides the legal and institutional foundation for planning and implementing more effective protection.

On 25 May 1981, Hanguk Dainhoe (The Korean Tea Culture Association) installed a monument in commemoration of Sir Kim Dae-ryeom, who first brought the tea seed from China to Korea during the Unified Silla Kingdom period. The monument was located on the specific site that is said to be the place of the first tea seed plantation. The date on which the monument was erected was also designated the "Day of Tea". After the event, from 1985 to 2003, research into wild tea trees located across the country was carried out by two major institutions: the Korea Record Institution and the Korean Tea Association. In July 2008, these institutions officially recognized Hwagae-myeon as the place where tea cultivation first began in the country. The Office of South Gyeongssang Province then designated it as Gyeongsangnam-do Monument No. 61. In addition to the first tea field, the existence of the oldest tea tree is living evidence which testifies to the long history of tea cultivation. The oldest tea tree, the age of which is estimated to be 1,000 years old, still stands alive in a village called Jeongguem-ri in Hwagae-myeon. Furthermore, according to research by both the Korean Tea Association and the Korean Tea Culture Research Association, the tree is the largest in the country, with a height of 4.15 m, a distance of up to 3 m between two branches, and a girth of 48 m. It is designated as Gyeongsangnam-do Monument No. 264.

Hand-roasted tea, or *sujedeokum-cha*, is a kind of traditional tea that has a pleasant smell and taste, and is made by roasting tea leaves in a cauldron. The recipe features roasting by hand, which can be said to be the traditional Korean method that is recorded in the historical record *Dongdasong*, written by the Zen master Choeui (1786-1866). The roasting procedure goes as follows: first, place the leaves that have been collected during the day on a straw mat; second, remove the large leaves that are too old to be roasted, and stem and crumb the leaves that remain; third, put an adequate amount into a heated cauldron and roast them without burning. The traditional procedure of tea-making can also be found in historical records from the Three Kingdoms Period (4<sup>th</sup> to 7<sup>th</sup> century). With the acknowledgment of such historical value, in 2016, the roasting procedure was designated as National Intangible Cultural Property No. 130.

## 7. Conservation and management of tea landscapes

In 2012, Hadong-gun County Office made an agreement with both individual and household tea producers for mutual cooperation in the preservation of agricultural heritage. Upon the agreement, an action plan for the conservation of tea landscapes with agricultural heritage value was drawn up, along with an initiative to increase awareness among producers of the value of agricultural heritage. The first initiative undertaken was the maintenance and management of 200 ha of “wild” tea fields in Hwagae-myeon. While warning about the threat of ecological damage from tourism, the County Office strongly promotes various eco-friendly measures to tackle climate change and make a green resort city. Such an ambitious effort enabled the area to be proudly awarded the Korea Environmental Award under the ecological culture category.

Currently, due to the aging population in the area, it is becoming more and more difficult to maintain and pass down traditional tea cultivation culture to the next generation. One way of resolving this problem is to increase local awareness of the heritage value of traditional tea cultivation. To this end, an action plan has been drawn up to increase awareness in society of traditional tea cultivation and to promote the transmission of traditional tea-related culture. For the benefit of local residents, who will play a central role in such transmission, the action plan includes educational programmes on agricultural skills and the vitalization of tea culture to raise local awareness of its agricultural heritage values. Furthermore, the action plan aims to foster local experts as present and future agents in the dissemination of the heritage values that are inherent in traditional tea cultivation and processing.

## 8. Conclusion

Since the tea seed from China was first planted in 828, Hwagaegok Valley has been recognized as the location of the first tea tree cultivation and the largest traditional cultivation area in the country. Today, residents of the valley still maintain the traditional tea production process and system largely as it was practised in the past. Moreover, the residents of the valley have maintained the traditional method of processing tea, which has been passed down over many generations and features roasting tea leaves in a cast-iron cauldron. Although this method may seem similar to the Chinese method at first glance, on closer inspection, it is very different. The valley is also Korea’s prominent tea-producing area and, as such, leads the development of the national tea industry and tea culture as a whole. Geographically, although the area displays some adverse conditions for tea cultivation, the local residents have been able to overcome them by locating tea fields on slopes and maintaining the traditional method of tea cultivation. Native tea trees in the valley have descended from indigenous tea plants that grew near the temples. While Chinese species have oval leaves,

the leaves of the tree specimens found in the valley boast a variety of shapes. This indicates that the tea trees have genetically evolved into a different species through a long process of adaptation to the local environment.

Tea culture in Korea has revived rapidly since the 1970s, following a long decline which began in the 19th century. The Buddhist community was the leading force in the movement to revive the culture of tea cultivation. Knowledge and skills relating to tea production had accumulated in the temples over generations, and these were transmitted to local residents. The tea landscapes in the Hwagaegok Valley differ from those found in China and Japan. Here, tea trees, together with other trees, crops and plants, form a colony of lush vegetation carpeting the rocky slopes. Unlike the terraced fields of China, Japan and Boseong-gun County in Korea, deciduous trees, such as persimmon and chestnut and bamboo, are planted and grown together with the tea trees. Therefore, it is argued that the authenticity and integrity of the tea landscape in the Hwagaegok Valley have largely been maintained to the present day, through a recent revival after the long decline mentioned above. In conclusion, therefore, the long pedigree and history of the tea landscape in the valley is the result of an evolutionary process that could have the potential to satisfy the Outstanding Universal Value criteria for World Heritage. The tea landscapes of Hwagaegok Valley, in particular, could satisfy the criterion under Article 2 (v) to: “be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures), especially when it has become vulnerable under the impact of irreversible change”. Further study should confirm the above.

In 2015, traditional tea cultivation in the Hwagaegok Valley was recognized for its heritage value as a traditional agro-system and was listed as a Korean Important Agricultural Heritage System (KIAHS). In 2017, two years later, it was finally listed as a Globally Important Agricultural Heritage System (GIAHS) under the title “Traditional Tea Agrosystem in Hadong”. These recent achievements in protective status as a “globally as well as nationally important agricultural heritage” provide the legal and institutional foundation for more effective protection to be planned and implemented. Furthermore, the traditional tea-making procedure featuring the roasting method was designated in 2016 as National Intangible Cultural Property No. 130. Currently, due to the aging population in the valley, it is becoming more and more difficult to maintain and pass down traditional tea cultivation techniques to the next generation. Increasing local awareness of the heritage value of traditional tea cultivation is one way of resolving this threat. To this end, an action plan has been drawn up to encourage more community involvement in traditional tea cultivation and to promote the transmission of traditional tea-related culture.

### Selected bibliography

Hadong County, *Traditional Tea Agrosystem in Hadong: GIAHS PROPOSAL*, 2017 (in English).

Jeong-Lan Yu, *The Making of Local Identity in the Hwagae Valley*, Master's Thesis, Korea National University of Education, 2007 (in Korean).

Jeong-Pil Yi, *A Study on the Role of Buddhism in the Development of Korean Tea Culture*, Master's Thesis, Wonkwang University, 2010 (in Korean).

Jeong-Wun Kim, et al., "The Current Status of Tea Cultivation in Korea", *Journal of Korean Tea Society*, Vol. 2, 1996, pp. 209-216 (in Korean). Ji-Ho Lee, "A Geographical Study of the Korean Tea Industry," *Geography and Education*, Vol. 7, 1977, pp. 1-18 (in Korean).

Ji-Ho Lee, "A Geographical Study of the Korean Tea Industry", *Geography and Education*, Vol. 7, 1977, pp. 1-18 (in Korean).

Korean Cultural Heritage Administration (Munhwajae-cheong), *Making Tea (Jeda)*, Daejeon-si City, 2016 (in Korean).

Youngsik Park, "A Study on Goryeo Tea Production Areas and the Production of Tributary Tea", *Journal of Korean Tea Society*, Vol. 23, 2017, pp. 12-21 (in Korean).

# Indian Tea Landscapes

*Dr Priyaleen Singh, Landscape and  
Conservation Architect*

*Ridhima Bajaj, Conservation Architect*

## 1. General characteristics

### 1.1 General geographical/ecological/geological data

Tea is an evergreen plant that mainly grows in tropical and subtropical climates. The ideal temperatures for the production and growing of tea are between 21°C and 29°C, with 150-250 cm of rainfall. Tea cultivation also needs fertile, well drained land in the form of hill slopes; as one of the world's largest producers and exporters of tea in the world, almost all of India's commercially managed tea plantations are located in the highlands and on hill slopes where these ecological conditions prevail. Growers rely on ample precipitation to develop the plants' foliage that is ultimately plucked for tea. Conversely, growers also require dry periods to harvest the leaves. Generally, the plants thrive in a range of humidity between 70-90%.

Other factors that influence tea cultivation are the presence of hills, mountain ranges, major bodies of water, and major weather phenomena. Hills can provide protection for a tea garden in an otherwise unfavourable environment - either protecting tea plants from harsh winds or giving them favourable sun exposure. Temperature decreases as elevation/altitude increases, so a mountain site that might otherwise be too warm has the potential to be suitable for tea. As noted above, moisture is important in tea cultivation, and tea gardens in mountainous locations can benefit from the fog that regularly settles in the valleys. Oceans and other major bodies of water have a moderating effect on the local climate, meaning that temperatures get neither as hot in the summer nor as cold in the winter as nearby inland locations. Therefore, places at higher latitudes near an ocean might be able to grow tea, while an inland location at the same latitude might not. Finally, the major weather phenomena affecting tea cultivation are the monsoons, which bring rains that provide the moisture needed for lush tea plant growth, but are also associated with the necessary dry periods when the tea leaves can be harvested and during which the plants can rest. Though the major portion

of tea production in India is concentrated in some specific regions, it is scattered in different states. In India, the three significant geographical locations for tea cultivation are the east region (Assam, Darjeeling, Dooars and Terai), the north region (Kangra), and the southern region (Anamallais, Nilgiri, Wayanad, Karnataka, Munnar-Hiah Ranaes and Travacore). The rainfall in all these areas is seasonal but heavy, and is over 78 cm annually. Most of the rain falls in the period from May to November, and is adequate for the growth of tea vegetation during the entire year.

North-east India is typified by a monsoonal climate coupled with high humidity and warm temperatures in most parts of the year. Traditionally, tea grows well in the hot-humid region of north-east India due to plentiful rainfall and sunshine. In terms of temperatures, tea plants are more tolerant of high temperatures than they are of cold. While they might be able to withstand frost, they typically do not produce well if they face any substantial period below freezing point (0°C or 32°F).

In India, tea is grown in a wide range of climatic variables, at latitudes from 8°12'N in Nagercoil in Tamil Nadu to 32°13' in Kangra in Himachal Pradesh, and at altitudes ranging from near sea level in Assam to 2,414 m (7,920 feet) above mean sea level (MSL) in Korakundha in the Nilgiris in south India. In north-east India, tea is planted in the Brahmaputra and Barak Valleys of Assam, the plains of Dooars and Terai, and the Darjeeling hills in north Bengal. In Brahmaputra Valley, it is planted in plain lands at elevations ranging from 50 to 120 m above MSL. The valley represents a tecto-sedimentary province developed during the quaternary period of alluviation, between the organic belts of Himalayan foothills in the north and the Shillong massif in the south. It is formed at stepped sequences of three or four geomorphic substances, each having a steep slope near the mountain front, which merges gradually into flat lands towards the river.

The plains of north Bengal were also similarly formed by alluviation in the quaternary period. Tea is planted in a long and narrow tract at elevations ranging from 80 to 300 m above MSL, in well-weathered, deep, acidic soil. In the Brahmaputra Valley, plantations are mostly on medium texture, sandy loam soil, and heavy soil of silty loam to silty clay loam structure. Soils of Dooars are mostly loamy in texture, and coarse and sandy.

In the Barak Valley, tea is cultivated largely on hillocks (*teelaks*) and on flat land adjoining hillocks and *bheels*. In the mountainous area of Darjeeling, tea plantations are located at elevations ranging from 600 to 2,000 m above MSL. Darjeeling tea soil is chocolate brown loam formed in situ. It is shallow and underlaid by stones and big rocks. The average annual rainfall in the tea areas of the north-east is between 2,000 to 4,000 mm, but in a few pockets it may exceed 5,000 mm.

The tea soils of south India extend along the Western Ghats, which run in a north to south direction, parallel and close to the west coast of the peninsula. The six major tea districts of the Nilgiris, Anamallais, central and south Travancore, Wayanad, and the High Range vary

in elevation from 300 to 2,500 m above MSL. Regarding their geological origin, the soils are mainly derived from gneissic rocks and contain a lot of mica. The soils have undergone considerable weathering as is evident from their low calcium content. The soils of Anamallais, central and south Travancore and the High Range are open in texture, with coarse and fine sand factors comprising 62-67% of the soil. The soils of Nilgiris and Wayanad are of a clay loam type, with the clay fraction prepondering. The presence of high organic matter in the soils of Nilgiris offset the disadvantages of clay to a certain extent. All the soils are distinctly acidic and are of poor chemical quality, but the organic matter helps in building structure and microbial activity.

## 1.2 Historical context

There is no substantial documentation of the history of tea drinking in the Indian subcontinent for the pre-colonial period, although it is known that the tea plant was a wild plant in India that was brewed by local inhabitants of different regions. The practice of Ayurveda adopted a long-standing tradition of herbal teas. Consumption of tea in India was first documented in the Sanskrit epic, the *Ramayana* (750-500 BC). The next records of tea consumption appear during the first century AD, with stories of the Buddhist monks Bodhidharma and Gan Lu, and their involvement with tea. Tea appears to be indigenous to eastern and northern India, where it was cultivated and consumed for thousands of years. Commercial production of tea in India began after the conquest of large areas by the British East India Company, at which point large tracts of land were converted for mass tea production. The widespread popularity of tea as a recreational drink began in earnest in the 1920s, after a successful advertising campaign by the Tea Board and several mass promotion drives by the government at the time, using railway stations as a base.

Records from pre-colonial times describe tea cultivation as either a medicinal plant grown at a small household scale, or a wild plant. It is also believed that the first recorded reference to tea in India was in the ancient epic of the *Ramayana*, when Hanuman was sent to the Himalayas to retrieve the stimulant Sanjeevani tea plant for medicinal use. According to a popular legend, tea was discovered by the Chinese Emperor Shen Nung, roughly around 2737 BC, when a few leaves were blown from a nearby tree into his pot of boiling water, changing the colour. After taking a sip of the brew, to the emperor's pleasant surprise, not only did the leaves improve the taste of the water, but the drink seemed to have a stimulating effect on the body. Another legend tells us how Prince Dharma was touched by divine grace and went out to preach the teachings of Buddha in China. In order to make himself worthy of such a graceful mission, Dharma took an oath never to sleep during the nine years of his journey. However, at the end of the third year, he was overcome by drowsiness and was about to fall asleep, when, incidentally, he plucked a few leaves from a wild tea plant and began to chew them. Instantly, the stimulating qualities of tea had their effect. Dharma felt

much more alert and henceforth attributed the strength he found to stay awake during the six remaining years of his apostolic mission to these leaves. Yet another Indian tale tells the story as to why tea is supposedly a creation of Lord Buddha himself: during a pilgrimage to China, Lord Buddha was said to have taken a vow to meditate without rest for nine years, but, after sometime, he dozed off. Upon awakening, he was said to have torn off his eyelids and thrown them to the ground out of frustration. Supposedly, the eyelids took root and germinated into plants that sprouted leaves with an eyelid shape. He then chewed the leaves and his fatigue vanished. The plant, of course, was said to be the first tea plant, which he carried with him to China. However, it is important to note that there is no evidence that Buddha ever went to China. The extent of the popularity of tea in Ancient India is unknown, and the origin of tea cultivation in India is somewhat ambiguous. It is known that tea was a wild plant in India which was brewed by local inhabitants of different regions. Irrespective of whether these legends have any basis in fact or not, tea has played a significant role in Asian culture for centuries as a staple beverage and a curative. Hence, it is not surprising that the theories of its origin are often religious or royal in nature.

In 1821, Mr Robert Bruce, who visited the country on a mercantile exploration, first discovered the plant growing wild in Upper Assam. A few specimens were forwarded to the Superintendent of the Botanical Garden, Calcutta. In 1832, Lord William Bentinck, the then Governor General, appointed a committee to promote the cultivation of the plant. Chinese varieties of tea were first introduced into India by the British, in an attempt to break the Chinese monopoly on tea. The British using Chinese seeds, in addition to Chinese planting and cultivating techniques, launched a tea industry by offering land in Assam to any European who agreed to cultivate tea for export. Initially, a few seeds were brought in from China but it was found that the tea plant was indigenous in Assam. In 1835, the first tea garden was opened in Lakhimpur, and in 1838 the first chests of tea were sent to England.

By 1910, there were 730 gardens, which provided employment to 846 Europeans and 409,000 natives. In 1911, India's largest tea research centre, managed by the Tea Research Association, was started in Jorhat, Assam, and since then has made significant contributions towards the tea trade.

In 1849, Dr Jameson conducted a feasibility survey of the valley of Kangra in Himachal Pradesh and found it suitable for tea cultivation. He brought Chinese tea plants from the nurseries at Almora and Dehradun and planted them in government-owned gardens at Kangra, Nagrota and Bhawama. The plants grew well, which encouraged the government to go ahead and establish the tea industry in the Kangra Valley. Tea in Kangra, which thrived and grew from the time of its introduction in the mid-19th century, fell off the map following a devastating earthquake which struck the region in 1905. That disaster, which totally disrupted the industry, resulted in an exodus of the British from the area, leaving behind the ethnic marginal growers. Having never fully recovered from that catastrophe, the industry today is confined to approximately 2,500 hectares of smallholdings run by a handful of planters.

The Nilgiris, in south India, with its dense evergreen tropical rain forest, was originally a summer retreat for Europeans. Tea was planted on an experimental farm in the Ketti Valley in 1853, but the first full-scale efforts to plant tea in the Nilgiris took place on Thiashola and Dunsandle Estates in 1859. Tea plantations in Munnar were established in the 1870s by A.H. Sharp, a European, at the A.H. Sharp Parvathy estate (now known as the Silent Valley Estate). In 1895, Finlay, a European company, entered the scene and acquired approximately 33 tea estates in Munnar. In 1897, the Kennan Devan Hills Produce Company was formed to manage Finlay's estates. The Tata Group, an Indian corporate giant, entered into a collaborative venture with Finlay in 1964, leading to the formation of the Tata-Finlay group. In April 2005, tea plantations under the Tata Group were transferred to a new company called Kanan Devan Hills Produce Co, Pvt Ltd, which today manages 16 estates spread over about 8,600 hectares of land.

### 1.3 Scale of landscapes

On the basis of the ownership pattern, tea estates can be broadly classified under the following headings:

1. Small holdings, which are owned by proprietors and may extend from one acre (0.40 ha) to twenty-five acres (10.12 ha);
2. Small gardens, which are owned by a single proprietor or partnership firm, and have a tea area of less than 200 hectares. This heading may be further subdivided into:
  - (i) Estates where tea is cultivated and the green leaf is taken to a nearby factory for processing,
  - (ii) Estates where both the cultivation and the processing of tea is undertaken onsite;
3. Estates owned by limited liability companies, which may again be further subdivided into Public Limited and Private Limited Companies;
4. Estates owned by large companies; and
5. Estates owned by government undertakings and co-operatives.

Traditionally, tea plantations in India are large holdings, but in recent years, small-scale tea cultivation has gained momentum, and at present there are approximately 200,000 small tea growers, accounting for 24% of the production.

### Distribution and Characteristic of Tea Landscapes, Including Overview of Type of Plants and Methods of Cultivation and Harvesting, Spatial Characteristics



Map 1. Map showing the Main Sites of Tea Cultivation in the Sub-region of India. Source: Ridhima Bajaj based on the data of the Tea Association of India.

#### North-eastern India

North-eastern India is more or less a triangular area mainly located in Assam and West Bengal. It extends from 23°N to 28°N in latitude and from 88°E to 96°E in longitude. This is the most important tea-producing region of India, accounting for about three quarters of the tea produced, and for approximately the same percentage of the area used for tea production in India. Tea plantations here are small in number but fairly large in size (generally more than 200 hectares).

## Assam

The state of Assam is one of most important tea-producing regions of the world. Assam manufactures high-end graded tea, which contributes to around 17% of global tea production, and annually produces more than 50% of India's total tea. Large-scale monoculture tea plantations (also called estates or gardens) generally supply commercial cultivation. In contrast, local-scale smallholder production is traditionally used to supplement subsistence agriculture. The Brahmaputra Valley, extending from Sadiya to Goalpara, comprises the main tea-producing belt. It accounts for 44% of India's tea, using 40% of the country's tea area. With a summer temperature of 30°C and a winter temperature never falling below 10°C, frost-free weather throughout the year and 300-400 cm annual rainfall extended over 9 months, the area provides ideal climatic conditions for tea cultivation. Tea estates are located on raised grounds (up to 450 m) so that annual inundations and stagnant water encountered during the rainy season do not harm the crops. There are 676 tea estates, located mainly in the districts of Dibrugarh, Lakhimpur, Sibsagar, Darrang, Kamrup, Nagaon and Goalpara.

Surma Valley is the second important tea-producing area in Assam. This valley, lying in Cachar district, produces about 5% of the country's tea, using 9% of the country's tea-producing land. Here, the tea gardens are scattered over small mounds called *teelas* or *bheels*, or well-drained flats along the river and its tributaries. Annual rainfall is 300-400 cm, and no month is completely dry.

## West Bengal

West Bengal is the second largest tea-producing area in India, contributing over 22% of India's tea from approximately one quarter of the country's total tea-cultivating land. In 2002-2003, West Bengal produced 180,000 tonnes of tea, from 103,000 hectares of land. The tea of West Bengal is produced in the three northern districts of Darjeeling, Jalpaiguri and Coochbehar. These districts are contiguous to the main tea-producing belt of Assam. Tea-producing areas of West Bengal are divided into two geographical regions, the first including the Duars in Koch Bihar and Jalpaiguri districts, and the second comprising the Darjeeling district.

The Duars in Koch Bihar and Jalpaiguri districts is a 16 km wide strip at the foot of the Himalayas. Here, tea is cultivated on slightly elevated areas where suitable slopes for proper drainage are available. Tea estates are found up to a height of 900-1,200 m in altitude.

The Darjeeling district is well-known all over the world for its most exquisite aromatic tea. In Darjeeling, tea is the main crop in the region and is grown over a vast area of hilly land at various altitudes, covering 17,542 hectares divided into 87 estates. The annual rainfall of 300 cm, moderate temperature, and fertile soils give a special flavour to tea, although yields are quite low and generally below 15 quintals/hectare. Tea estates are found within 900-1,800 m elevation, beyond which the temperature is low and does not support tea cultivation.



*Image 1. Tea Plantations en route to Darjeeling, North East Region. Source: Priyaleen Singh.*

### **South India**

In south India, tea is produced in the Nilgiri, Cardamom, Palni and Anaimalai hills in Tamil Nadu, Kerala and Karnataka estates, extending from 9°N to 14°N in latitude. This region accounts for 25% of tea production, and about 24% of India's tea-growing area. Tea gardens are mostly located on the hill slopes of the Western Ghats between 300 and 1,800 m in altitude. The tea estates are rather large in number but small in size. Temperatures are uniformly high and annual rainfall exceeds 400 cm. There is no fear of frost in south India, and weather conditions are quite congenial. Therefore, the productivity is higher, generally 15-25 quintals/hectare, although the quality of tea is inferior. Nevertheless, some south Indian teas have a good combination of taste and flavour. In south India, Tamil Nadu is the largest producer of tea, accounting for about 16% of the total tea production of India from just 11% of the tea-growing land. Tamil Nadu has the distinction of giving a high yield of over 25 quintals/hectare in comparison with 18.5 quintals/hectare for India as a whole. Nilgiri and Anaimalai produce 46% and 33% of Tamil Nadu's tea respectively. Kerala is another important producer of tea in south India, accounting for 8.45% of the total tea production of India. Kottayam, Kollam and Thiruvananthapuram are the main tea-producing districts. Some tea is produced in the Hassan and Chikmagalur districts of Karnataka.



*Image 2. Terrace Slopes of Munnar Tea Gardens, South Region. Source: Shalin Ronald.*

### **North-west India**

Kangra, in north India, cultivates both black tea and green tea. Black tea constitutes around 90 percent of tea production here and is cultivated in individual tea gardens as opposed to tea estates. As of May 2015, there are 5,900 tea gardens in the area, covering about 2,312 hectares of land between Shahpur, Palampur, Baijnath and Jogindernagar.

Tea gardens are set up on cleared hill slopes on which shade trees have been planted in advance. Seeds are sown in the germination beds and the saplings transplanted to the garden. Fifty years ago, tea plants were raised from tea seeds. Each plantation grew its own seed bearers in tea trees, which grew to a height of approximately 25 cm. Today, young plants are raised from the cuttings obtained from a strong and rich bush. They are carefully tended in special nursery beds until they are 12-15 months old, and then planted in the tea gardens. Trees are often planted geometrically and widely-spaced between the tea plants, in order to protect them from intense heat and light, particularly on the plains of Assam, where the sunshine is most intense. This, again, ensures uniform shade and ease in mechanized operations. Common shade trees are Erythrina, Gliricidia and Silver Oak. Tea bushes are planted 1 metre to 1.5 metres apart to follow the natural contours of the landscape. Sometimes they are grown on specially prepared terraces to help irrigation and to prevent erosion. The garden is regularly hoed and weeded so that the tea bush can grow without any hindrance. Use of manures and fertilizers is a common practice in the gardens. Oil cakes and green manures are widely used. Pruning of the plant is an essential part of tea cultivation, as it helps to maintain

the proper shape of the tea bush to a height and diameter of about 1 metre. The aim of pruning is to have plenty of new shoots bearing soft leaves and to facilitate the plucking of leaves from the ground by female labourers. Regular 2 to 3 year pruning cycles encourage the supply of shoots, known as the 'flush', which are plucked every seven to ten days, depending on where the tea is cultivated.

There are two main ways of producing tea in India, namely CTC (crush, tear and curl) production and orthodox production. The tea produced with the CTC method is mostly used in tea bags. These methods vary due to their manufacturing differences: orthodox teas are manufactured with the help of an orthodox roller during the process of rolling, while a CTC machine/Rotervan is used in rolling processes in manufacturing CTC teas.

The orthodox production method consists of five stages, namely withering, rolling, fermentation, drying and finally sorting. While both methods have their uniqueness, the quality of tea depends on factors such as rainfall, soil, wind and the method of plucking tea leaves. The freshly-picked green leaves are spread out to dry on ventilated trays. During this process, approximately 30% of leaves' moisture is extracted, making them soft and pliable for further processing. The leaves are then rolled by applying mechanical pressure to break up the cells and extract the cell sap. After 30 minutes, the leaves, still damp from the sap, are sieved to separate the finer leaves. These are spread out immediately for fermentation, while the remaining coarse leaves are rolled for a further 30 minutes under higher pressure. If necessary, this process is repeated several times. A short rolling time produces larger leaf grades, while longer rolling breaks the leaves up more, resulting in smaller grades. During the rolling process, the cell sap runs out and reacts with oxygen, thus triggering the fermentation process. At the same time, the essential oils responsible for the aroma are released. After rolling, the tea is spread out in layers approximately 10 cm high for one to three hours in a cool, damp atmosphere to finish off the fermentation process. During this process, the substances contained in the cell sap oxidise. In this production phase, the green leaf gradually turns to a copper colour. The colour and typical odour tell the person supervising the process how far the fermentation has progressed. Various chemical reactions cause the leaf to heat up during fermentation. It is critical for the quality of the tea that the fermentation process is interrupted at its peak, when the temperature is at its highest. Next, the tea is dried with hot air at a temperature of approximately 85- 88°C in order to interrupt the oxidation process. The residual moisture is thereby extracted from the leaves, the extracted sap dries on the leaf, and the copper-colour leaf turns dark brown to black. Finally, the dried tea is sieved to separate the different leaf grades. The orthodox production method provides teas of all leaf grades: leaf, broken, Fanning and Dust. Leaf grades only refer to the leaf size, however, and are not necessarily an indication of the quality of the tea.



*Image 3. Processing Unit in the Tea State of Darjeeling, North East Region. Source: Rohit Jigyasu.*

Fine tea is invariably prepared via the CTC method. The name of this method, “cut, tear, curl”, sums up its three stages. The rollers used are based on those used in flour mills and consist of a series of cutting edges that have to be kept sharp. These were introduced in the late 1950s and 1960s. Cutting and tearing gives a higher concentration of tea by volume.

Orthodox rolled tea has less processing as the leaf is not cut as much and makes a weaker tea. The CTC process takes 25-40 minutes and after that the marl, as it is now called, is allowed to cool so that the oxidisation process can continue. Temperature is crucial, for if it exceeds 35°C the marl will be spoilt. Subsequently, cold air is blown onto the marl while it moves along a conveyer belt. Marl used to be left on the floor in heaps to oxidise, but this made it difficult to check the speed of oxidisation. There is no machine that can tell when fermentation has finished. It is left to the skill and experience of the manager and their staff to halt the process at the right time before drying, which can take place after 45 minutes to 2.5 hours. The dryers are used to arrest the oxidisation process. In the dryers, hot air blows through the marl and the chaff is separated from it by suction. It is then run through rollers that are covered in plastic, which creates static electricity, attracting finer dust particles. The cleaned dried tea is sifted by size into different containers. Tea dust itself is wrongly assumed to be of very poor quality, but it can be better than others as it dissolves faster in hot water and is much more concentrated, thereby giving many more cups of tea per leaf than ordinary tea.

Until the 1960s, the orthodox tea method dominated India's tea production, and, until the 1980s, a significant share of tea (32%) was produced using this method.

The pattern and types of production of tea are directly linked to market demand and the different sale practices of each region. The market demand sometimes forces producers to change the nature of production and mode of manufacturing tea. The nature of production

mainly ranges from chemical to organic forms, and the type of tea shifts from orthodox tea to CTC. The consistent demand for organic tea from Germany, for instance, forced some producers in the south to maintain organic cultivation. The high demand for Darjeeling tea from European countries forced producers to stick to orthodox production in some of the Darjeeling plantations.

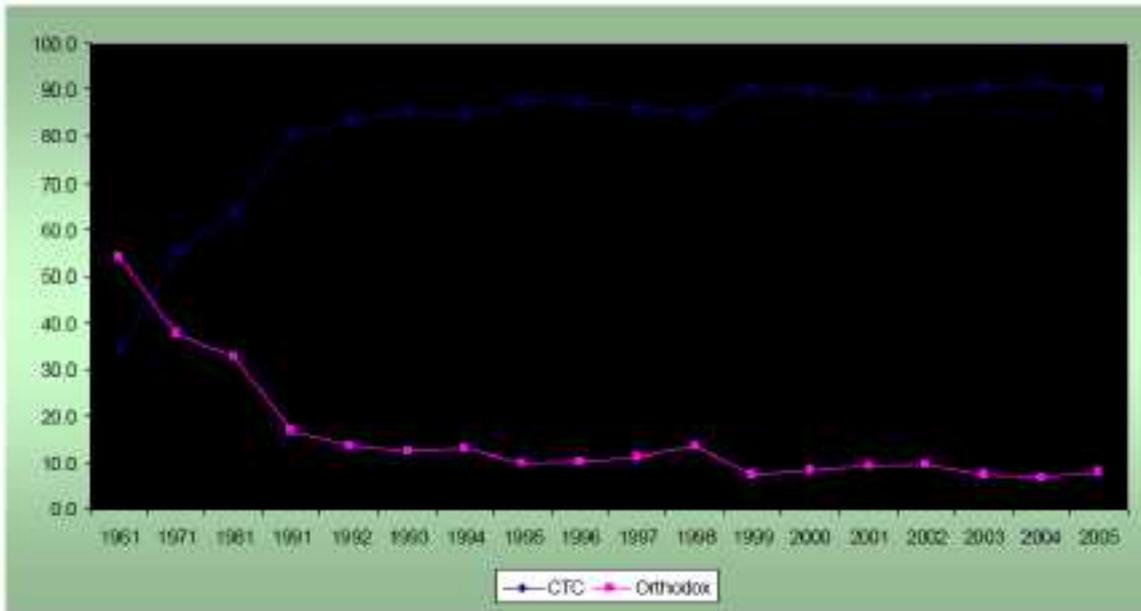


Image 4. Production of Orthodox and CTC Tea Plantations in India. Source: author.

#### 1.4 Social and cultural systems

The tea industry exerts a major influence on the life of the people associated with it. Tea landscapes play a pivotal role in livelihood security at various levels. Tea is a labour intensive crop and requires an abundant supply of cheap and skilled labour, especially at the time of plucking the tea leaves. This is a tedious process that requires skilled manipulation of fingers for plucking two leaves and a bud at a time, and needs a large labour force. Over 10 million people derive their livelihood from tea cultivation and harvesting. Most tea workers have worked in the tea industry for more than three generations; it has become their way of life, with many of them settling down within tea estates.

The tea industry is one of the largest employers of women among organised industries of India, with women constituting over 50 percent of the total workforce. Though increase in women workers from 2001 to 2005 has been marginal, they still constitute the majority of workers in the tea industry in India. Female workers are paid less than men and do not receive any benefits. Since there are no crèches, women often bring their children into the fields, where the latter help pluck, weed and hoe, and do nursery work. The labourers live in dilapidated houses in squalid "coolie lines". When they retire, they are turned out of the estates. Those who have saved some money often buy land nearby, but those who do not have the money to buy land are pushed into absolute destitution. Lately, the recession has led many tea gardens to

close down, rendering hundreds of workers, who are not efficient in any other trade, without any job. In the context of the closure of tea gardens and crisis in tea industry, a number of studies have pointed out the issues and challenges of workers in the tea industry, and address gender-based issues. Recruitment for workers in the tea plantations outside Assam began in the late 19th century. They were recruited from tribal groups such as the Sanhals, Mundas, Oraons, Kharias, Gonds, Khonds, Kisang and Nagesias. As information about these ethnic groups is not available, thorough research on their migration, settlement and role as tea plantation workers should be undertaken.

The tea industry in India includes both small and large growers and government plantations. Small tea growers in India are economically and socially vulnerable as they are mostly marginal farmers from tribal communities. Many of them do not possess rights over the land they cultivate. Though the quantity of tea produced by small tea growers has increased over time, the profit they accrue is very marginal. The reasons for this are several, chief among them being the low price-realisation owing to inefficient and incompetent production structures, and the inability of small tea growers to access national and international markets directly.

The Tea Festival is held in the district of Jorhat in the north-eastern state of Assam in India. Jorhat is well-known for its extensive tea gardens, and is the nerve centre of the tea industry. Jorhat hosts the world famous Tocklai Experimental Centre, where research work is carried out to find new varieties of tea and also on the curative effects of green tea. The island of Majuli, the largest island on the Brahmaputra, and the Nambar Forest Reserve can be visited from Jorhat. In Majuli, there are numerous monasteries and the Nambar Forest Reserve is famous for its regenerating hot spring. The celebrations of the Tea Festival in Jorhat include visiting tea gardens, playing golf, safaris into the jungles, tasting delicious food, shopping and cultural entertainment. The adventure sports on offer include angling and white water river rafting. This is a very contemporary festival and while traditional ceremonies and celebrations around tea would have existed, there is no record of them. More ground research is required on this aspect.

Chai ("tea" in Hindi) is engrained in each and every household of India. It is commonly sold by small-scale vendors all across the country as a brew of Indian black tea with a unique blend of spices, typically including cinnamon, ginger, nutmeg, cloves, cardamom and pepper, although the recipe varies region to region. Chai is consumed morning and afternoon by many Indian families, and is customarily the first thing offered to house guests. So prevalent is the service of Chai throughout India that hawkers/vendors, known as Chaiwallahs, can be found at just about every corner.



*Image 5. Tea Planters' Club (19th century), Darjeeling, North East Region.*

*Source: Priyaleen Singh.*

### **1.5 Links to trade, trade routes and economic opportunities**

Historically, India has played a dominant role in the global tea trade. The Tea Horse Road was a network of caravan paths winding through the mountains, from Sichuan and Yunnan provinces in south-west China, along the eastern foothills of the Hengduan Mountains (a centre of tea production in China), then across the Hengduan mountain range and deep canyons of several major rivers, before finally reaching India, south of the Himalayas. The road also served as a significant corridor for migration and was a bridge for international, cultural and economic exchange between China and India. In the seventh century, when powdered tea became fashionable in China, caravans carried tea along this route from Yunnan, one of the first tea-producing regions, to Bengal via Burma.

Although the 1600s and early 1700s saw the East India Company primarily focused on the trade of textiles, by the mid-18th century the Company's trading patterns began to change. One of the reasons for this change was the growing desire for Chinese tea in Europe. This was a potentially massive market for the Company, but they were held back by the fact that the Chinese only traded their tea for silver. As Britain was on the gold standard at the time, and had to import silver from continental Europe, the whole tea trade was financially unviable.

In the late eighteenth and early nineteenth century, the East India Company periodically experimented with the establishment of tea cultivation in India. However, the incentive to promote tea production was offset by the profitability of the Company's monopoly in the trade of Chinese tea. With the loss of this monopoly in 1835, a concerted effort was made by the Company to promote the establishment of tea plantations and profit through the leasing out of land and the taxing of the tea produced upon it. In 1840, the Assam Company was established by London merchants who took a pre-eminent role in the early development of the Indian tea industry and took up the majority of leases and experimental tea gardens in Assam prior to the abolition of the East India Company in 1858.

In 1881, the Tea Association of India was established to market tea drinking. Tea consumption expanded in Indian urban and industrial settings in the early twentieth century, and was well established in India post-independence in 1947. By the 1960s, an Indian mass market for tea had been established, and today India is the number one consumer of tea in the world, and one of the world's largest producers.

## 2. Known tea landscapes and important tea landscapes

In India, the three significant geographical locations for tea cultivation are:

1. East Region (Assam, Darjeeling, Dooars and Terai);
2. North Region (Kangra);
3. South Region (Anamallais, Nilgiri, Wayanad, Karnataka, Munnar–Hiah Ranaes, and Travacore).

### 2.1 Location and Size

#### i. East Region (Assam, Darjeeling, Dooars and Terai)

	Total area under tea production	Production	Elevation	Rainfall
ASSAM	312,210 ha	507 million kg	45-60 mts	2,500-3,000 mm
DARJEELING	17,820 ha	9.8 million kg	90-1,750 mts	3,000-3,300 mm
DOOARS AND TERAI	97,280 ha	216 million kg	90-1,750 mts	3,000-3,500 mm

**ii. North Region (Kangra Belt)**

	<b>Total area under tea production</b>	<b>Production</b>	<b>Elevation</b>	<b>Rainfall</b>
KANGRA BELT	2,348 ha	0.8 million kg	700-1,000 mts	2,300-2,500 mm

**iii. South Region (Nilgiri, Anamallais, Wayanad, Karnataka, Munnar- Hiah Ranaes and Travancore)**

	<b>Total area under tea production</b>	<b>Production</b>	<b>Elevation</b>	<b>Rainfall</b>
NILGIRI	66,175 ha	135 million kg	1,000-2,634 mts	1,000-1,500 mm
ANAMALLAIS	12,625 ha	30 million kg	900-1,600 mts	3,000-3,800 mm
WAYANAD	5,470 ha	16 million kg	850-1,400 mts	2,000-2,500 mm
KARNATAKA	2,140 ha	6 million kg	750-1,000 mts	2,000-3,500 mm
MUNNAR	13,000 ha	27 million kg	950-2,600 mts	1,300-7,000 mm
TRAVANCORE	14,000 ha	20 million kg	750-1,350 mts	2,000-6,000 mm

**2.2 Key characteristics of each landscape**

**2.2.1. EAST REGION (ASSAM, DARJEELING, DOOARS AND TERAI)**

Assam is a land through which the mighty Brahmaputra winds its majestic course. The state consists of the northern Brahmaputra Valley, the middle Karbi and Cachar hills, and the southern Barak Valley. It experiences heavy rainfall between March and September, with very high humidity in the summer months. Assam is the single largest tea-growing region in the world. The low altitude, rich loamy soil conditions, ample rainfall, and a unique climate help it to produce some of the finest orthodox leaf teas, which allows orthodox Assam Teas to qualify as a Geographical Indication.<sup>1</sup>

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<sup>1</sup> A Geographical Indication (GI) is a sign used on products that have a specific geographical origin and possess qualities or a reputation due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place. In addition, the qualities, characteristics or reputation of the product should be essentially due to the place of origin. Since the qualities depend on the geographical place of production, there is a clear link between the product and its original place of production.

The ecosystem of the Darjeeling hill areas comprises the mighty Kanchanjunga range and the Tista, Great Rangit, Mahananda, Murti and Jaldhakaas as the important river and tributaries in the region. The altitude, the soil and the intermittent cloud and sunshine all seem to work together to give Darjeeling tea its distinctive taste. Darjeeling tea has also been registered as a Geographical Indication in India and is protected internationally. To this day, the Chinese variety of tea is planted in Darjeeling. It has been discovered that, when this tea variety is planted anywhere else in the world, the Darjeeling taste cannot be reproduced. Tea gardens are situated at high elevations on steep slopes, which provide ideal drainage for the generous rainfall the district receives.

Lying in the Himalayan foothills, the Dooars have great natural beauty with wildlife-rich tropical forests, innumerable hill streams cutting across the green carpet of tea gardens, with undulating plains and low hills rising up from the rivers. The name Dooars is derived from 'doors' as the region is the gateway to the north-east of India and Bhutan. Dooars is also the gateway to the hill station of Darjeeling and the Sikkim region and is famous for its tea gardens, planted by the British. There are innumerable streams and rivers flowing through these fertile plains from the mountains of Bhutan.

#### 2.2.2. NORTH REGION (KANGRA BELT)

In Himachal Pradesh, tea is grown in the Mandi and Kangra districts. Kangra Valley's tea region is the smallest in the whole of India. Although considered superior to the tea produced in other parts of India, Kangra tea today is all but lost on the map. The valley, blessed by the twin advantages of a temperature range of 13-35°C during the cropping season from March to October and an annual precipitation of 250-230 cm of well-distributed rainfall, makes it the ideal tea cultivation area. The term "Kangra Tea" has been registered as a Geographical Indication since 2005 under the Himachal Pradesh Patent Information Centre, Shimla.

#### 2.2.3. SOUTH REGION (NILGIRI, ANAMALLAIS, WAYANAD, KARNATAKA, MUNNAR- HIAH RANAES AND TRAVANCORE)

Nilgiri Tea, one of India's most distinctive teas, was named after the Nilgiris or Blue Mountains where it is grown, and now accounts for about 10% of the total tea production of India. Nilgiri Orthodox tea was recently registered as a Geographical Indication in India.

Spanning an area of 389 square km of picturesque hills, ranging from 900 to 1,600 metres in height, the Anamallais are wedged between Tamil Nadu and Kerala. With over 12,000 hectares of tea-producing land, it occupies an important place in the planting map of south India. The Tea Research Foundation, the second largest tea research institute managed by UPASI (United Planters Association of Southern India), is situated in the Anamallais.

The evergreen forests of the Wayanad-Nilgiris range in Kerala and Tamil Nadu mark the transition zone between the northern and the southern eco-regions of the Western Ghats.

Located at a distance of about 76 km from the sea shore of Calicut, the area is full of tea plantations, forests and wildlife. The Wayanad hills are contiguous to the Mudumalai Wildlife Sanctuary and National Park in Tamil Nadu and the Bandhipur National Park in Karnataka.

Nestled in the Baba Budan hills of the Sahyadris range, Chikmagalur, around which most of the tea in Karnataka grows, is a calm, scenic landscape with a salubrious climate.

Munnar, the commercial centre of some of the highest tea growing estates in the world, is set at an altitude of 2,000 metres in Idukki district. Unending expanses of tea plantations sit amidst pristine valleys, mountains and waterfalls, with exotic species of flora and fauna in its wild sanctuaries and forests and the aroma of spice scented cool air.

### 2.3 Planting Traditions

Healthy, vigorously-growing and high-yielding bushes are selected to prepare tea saplings. Generally, manure is applied to each selected bush up to 5 years before taking the cuttings, in April-May and August-September. Semi hard-wood cuttings are prepared with one leaf and an internode with a slanting cut at the bottom. Holes are made in the soil: the cuttings are inserted and the surrounding soil is pressed firmly to avoid airspace, following which the plants are watered. Small polythene tents may be provided, which maintain high humidity and regulate the temperature inside. It may take 10-12 weeks for cuttings to root. After 90 days, when all the cuttings have rooted, the polythene tent may be removed gradually over a period of 10-15 days. After the tent is removed, the cuttings are sorted and staked. The hardening of 4-6 months old cuttings is achieved by removing shade and extending the time of sun exposure gradually over a period of 4-6 weeks, starting from a few hours to daily sun exposure.

The young tea plants are reared in nurseries, and when sufficiently mature, they are transplanted to the fields and planted about 1-1.5 metres apart. The soil is well-hoed and kept completely free from weeds. The shrubs are pruned to counteract the tendency to shoot upwards. They begin to yield in the third year and attain their maximum produce in the seventh year.

Plantation and cultivation of tea is managed by government stakeholders; in recent times, the pattern and the method of the plantation adopted in each region is more or less similar, following the same methods and processes to yield a good quality product.

### 2.4 Type of Tea Trees Planted and Techniques of Tea Cultivation

While some Darjeeling tea gardens cultivate the native Indian tea bush variety (*Camellia sinensis assamica*), much of the tea cultivated in this region is the Chinese variety (*Camellia sinensis sinensis*) that has acclimatized to the region. Many Darjeeling tea bushes are China-India hybrids, which can be found nowhere else in the world. The China bush variety of *Camellia sinensis sinensis* cultivated in Darjeeling produces small, delicate leaves compared to its India bush cousin *Camellia sinensis assamica*, from which Assam tea is produced. It takes about

twice as much China bush tea leaf to equal the same weight of India bush tea leaf. This is another reason why Darjeeling produces such a small fraction of the annual tea yield in India.

An important part of tea cultivation is the art of pruning. Collar pruning is the severest form of pruning, requiring cutting the bole of the bush near or at the ground level. The main objective is to provide a new frame for the plant by removing old and unproductive branches affected by diseases and pests, particularly in situations where uprooting of unproductive bushes is not possible. In heavy pruning, which is a variant of collar pruning, the bole is cut at 15 to 45 cm above the ground for frame renewal. Medium pruning is often carried out to reduce the height of the bushes so that they do not exceed 80 cm. Continuous picking of shoots on the top of a bush gradually increases the height of the bushes, as well as causing congestion at the top with weak and twiggy branches. To bring back the plants to a productive level, stimulate new wood, and renew maintenance foliage, medium pruning becomes necessary.

In north-east India, this operation is ideally carried out between the end of December and the end of January. Top or light pruning is the standard method of recurring pruning. The main objective of this pruning is to renew the leaf bearing branches, as well as cleaning out the bush. Top pruning is usually applied 2 to 3 cm above the last prune, leaving a considerable amount of foliage on the plants. When lung pruning is applied, all leaves below the plucking level are left and the peripheral branches are not cut. These branches function as lungs, ensuring that a sufficient amount of actively synthesising foliage is left on the bush to enable optimal growth of the plants. Skiffing is the lightest form of pruning and is essentially the levelling of the foliage, either by giving a cut in the green stem in the lighter forms of skiffing, or into the red wood in harder forms of skiffing. The object of skiffing is not only to generate an early start to crop production, but also to achieve more of the high quality first flush and total crop. Skiffing helps to thicken the pruning wood and improve the general health of the bushes. Immediately after pruning, the plants enter a phase of unrestricted growth; if this unrestricted growth is allowed, most of the shoots will mature as branches. To prevent this, the new growth has to be controlled so that a uniform plucking table is formed. Tipping is therefore an operation aimed at forming a level and flat plucking surface.

## 2.5 Harvesting and Tea Processing

Plucking or picking denotes the harvesting of the tea crop. It requires skill and attention since only some of the most delicate, young and ripe tea leaves with part of the stem and bud (or tips) are to be taken from the bush. Plucking of young shoots, the two leaves and buds, as a complex art, consumes about 15% of the total cost of tea production. Much of the quantity and quality of harvested crop depends on the standard of plucking. These leaves, together with the stem and tips, are called “flush”. This is the basis of tea production. Flush with just a couple of leaves is called sorted or “golden”. Usually flush has three, four and sometimes five leaves. Every 20 kg of green leaves gives 1 kg of dry tea.

Assam's tea plucking and producing season runs from March to November. The Assam tea leaves are generally harvested twice during a season; the harvests are known as "first flush" and "second flush". The first flush is picked during the early spring harvest in March and produces Assam's more delicate teas. The second flush in mid-summer produces the "tippy" teas considered to be the most distinctive of the Assam teas.

Because the winter weather is severe across the Darjeeling region, its tea bushes are dormant for many months of the year. Depending on the tea garden location, harvest season runs from February to November and yields several seasonal flushes along the way. Each flush represents the new growth in the tea bush and reflects the seasonal effects on the leaf as the leaves mature. The first flush is the picking of the brand new two leaves and a bud in the earliest spring growth of the plant in February and March. These early leaves are usually more delicate and tender and therefore more light, floral, fresh and astringent in flavour. The second flush is picked in May and yields larger, more mature leaves with a purplish hue and silver tips or leaf buds. These leaves are known for their full-bodied and fruity flavour. The "monsoon flush" from June to October yields large leaves that brew into a stronger colour and bolder flavour that is less nuanced than the previous flushes. The "autumnal flush" happens in October and November and yields a rich copper-coloured liquor that can be described as full and smooth in flavour. No matter which flush it comes from, each batch of fresh leaf will be different from one day, one garden and one season to the next.

In contrast, Nilgiri's monsoon seasons, with distinct wet and dry periods, define the growing and plucking schedules for the tea. The tropical climate allows for year-round plucking and production, although the best Nilgiri teas are those harvested between November and March. The tea is grown among cypress and eucalyptus trees as well as a myriad of spices, which all influence the tea's fragrant taste. It is a high-yielding crop compared to that of Darjeeling.

The processing of tea involves two methods that are described above.



*Image 6. Women working in the Tea Plantations, North East Region. Source: Niladari Gupta.*

## 2.6 Social Structures and Cultural Systems

In the first half of the 19th century, in the clearings of the lands now occupied by the Assam tea plantations, the local people were reluctant to take employment as they enjoyed an existence and an economy that were almost self-sufficient. Consequently, the labourers were recruited from various cultural, linguistic and ethnic heritages from surrounding states such as Bengal, Bihar, Orissa, Madhya Pradesh and Andhra. A good majority of the tribes and castes that migrated from these different parts of the country some generations ago have now become fully settled and live in the rent-free quarters provided by the tea garden authorities. Most of the workers in the tea industry continue to be from tribes from east, south-east and central India: the Mundas, Oraons, Gonds, Tantis, Kols and Kumhars. Some of them have embraced Christianity in the course of their initial contact with the European tea planters.

The *Plantation Labour Act 1951* (PLA), which regulates the wages of tea garden workers, their duty hours, and the amenities that the management is supposed to provide (such as housing, drinking water, education, health care, child care facilities like crèches, accident cover and protective equipment), is not very effective; amenities, where provided, are of very poor quality.<sup>2</sup>

In plantations in the south, the situation is no different. Earlier plantations operated as semi-autonomous socio-economic systems that were largely separate from the wider economic and cultural contexts in which they operated. This isolation afforded tea workers some protection from direct, daily exposure to stigma and discrimination on the basis of caste, still prevalent in parts of the region. Plantation workers, after years of struggle, were even provided with certain welfare measures such as housing and healthcare. Such privileges were not enjoyed by other informal sector workers, and access to these rights gave tea workers a sense of worth within the plantation system. However, of late, with the withdrawal of the welfare measures they previously enjoyed, tea plantation workers have faced increasingly unhygienic work environments, and have now joined the ranks of the massive workforce powering India's unorganised and informal sectors. Their outcast social status has combined with their identities as manual labourers, also known as Tamil coolies, to perpetuate their economic underdevelopment and social marginality. Although the government has undertaken many reforms to address marginalised populations, tea plantation workers continue to be one of the most stigmatised and marginalised communities in India.

The economic crisis has also pushed many tea workers to seek employment outside the plantations, forcing them to re-engage with the caste hierarchy from which their ancestors attempted to escape.

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<sup>2</sup> [www.actionaid.org-india-what-we-do-assam-rights-tea-garden-workers-assam](http://www.actionaid.org-india-what-we-do-assam-rights-tea-garden-workers-assam)

## 2.7 Associated Communities and Settlements

In the first half of the 19th century, in the clearings of the lands now occupied by the Assam tea plantations, the local peoples were reluctant to take employment as they enjoyed an economy which was almost self-sufficient. Consequently, the labourers were recruited from various cultural, linguistic and ethnic heritages from places such as Bengal, Bihar, Orissa, M. P., Andhra, Madras, etc. A good majority of the tribes and castes who migrated from these different parts of the country some generations ago have now become fully settled and live in the rent-free quarters provided by the tea-garden authorities. During the British regime, the construction of railway and motorable roads, and the opening of tea gardens in Assam, opened new avenues of employment, which led a large number of people to migrate to Assam from other parts of India, Nepal and Bangladesh. These new migrants disturbed the original ethnic structure of settlements. The tea garden labourers, belonging to tribes such as the Munda, Ho, Santhal, Savara, Oraon and Gond settled in the Doomni, Menaka and Nagrijuli tea estate areas in the north of the Pagladiya-Morapagladiya drainage complex. In the case of the Mancotta tea plantation in Dibrugarh, Assam, the total labour population is composed of 32 different tribe and caste groups and 383 families. 53% of the households and 50.4% of the population belong to the Savara tribe, and many of them have been settled in this garden for the last three generations. The post-independence period witnessed a remarkable change in the demographic as well as settlement structure of this area. Just after independence, there was a large-scale migration of minority Bengali Hindus from East Pakistan (present Bangladesh).

The communities associated with tea industry in north-east India are the Mundas and Madesias, originally from the Jharkhand and Bihar regions. These communities have been associated with tea estates since the early 1900s. About two million labourers are dependent on Assam's tea industry, and almost all of them are the descendants of those who were brought to Assam as labourers by the East India Company. The Santhals, Kurukh (Oraon), Gonds, Kharia, Bhumij and Saora are the other communities associated with tea plantation.

Several settlements have been impacted in various ways over time due to changes in tea production formats or the development of towns, which have had an impact on tea production. One such example is Tihu town in Assam; the growth and development of this town is connected with British commercial enterprises through the development of the railway and roads. The British constructed the Tihu-Doomni road, which was known as "Chahabar Ali", from Tihu to Doomni Tea Estate. This road was used for exporting tea and rice from the Tihu-Baska area to Kolkata. After independence, Tihu became the gateway for the south-western part of the region (i.e. the old Kamrup district), connecting with other towns and service centres of Assam. All the roads and railway transportation facilities play a major role in attracting people to settle in the greater Tihu area. The growth of Nalbari demonstrates a similar pattern to most of the commercial and trade centre towns in Assam. The main phases in the town's founding and growth are the British period (1841-1947) and the independence period. During the first phase,

not much change occurred in terms of functional morphology, and growth took place under the influence of some stimuli such as the town's position as the central market for the surrounding rural areas and the centre for administrative services for the whole area. The construction of the railway line in 1909-1910 helped to usher in the commercial and trade activities of the town. The post-independence period, due to the expansion of the built-up area, has been associated with the increase of administrative functions, as well as educational, medical and other socio-economic services.



*Image 7. Kurseong Station on the Darjeeling Himalayan Railway (a component of the World Heritage Property) that cuts across the Settlement of Kurseong, North East Region. Source: Priyaleen Singh.*

## 2.8 Links to Trade and Trade Routes

Currently, tea exports from India account for about 13% of world trade. Kolkata is the chief port of tea export from India. The other major ports through which tea is exported are Chennai, Mangalore and Kochi. The Darjeeling Himalayan Railway (DHR), a component of the World Heritage property "Mountain Railways of India", is a 2 ft (610 mm) narrow-gauge railway, managed by Indian Railways, that extends from Siliguri to Darjeeling, connecting the two districts of Jalpaiguri and Darjeeling in the Indian state of West Bengal. Darjeeling became a well-known British settlement and trading point for tea in the colonial period. Increasing traffic by people and commodities overstressed the existing cart-road and a new transportation

system was required. Transportation of tea by road was pioneered by Great India Roadlines, which is now a specialized road transportation for the tea industry in the tea-producing states of north-east India and caters to tea estates in Assam. Some of the largest tea manufacturers are associated with it.

The narrow-gauge 120 km long railway link between Jogindernagar, Palampur and Pathankot also facilitates transportation of Kangra tea to the Kolkata and Amritsar auction centre.

The Nilgiri Mountain Railway is a railway in Tamil Nadu, India, built by the British in 1908. The railway still relies on its fleet of steam locomotives. In July 2005, the World Heritage Committee inscribed the Nilgiri Mountain Railway on the World Heritage List as an extension to the World Heritage property of the Darjeeling Himalayan Railway. The property then became known as the "Mountain Railways of India" after it fulfilled the necessary criteria. The Nilgiri Mountain Railway also played an important role in the tea trade in India.



*Image 8. Darjeeling Himalayan Railways traversing the Tea Estates, North East Region.  
Source: Niladari Gupta.*

The Mountain Railways of India World Heritage property includes three railways: the Darjeeling Himalayan Railway, located in the foothills of the Himalayas in West Bengal (north-east India); the Nilgiri Mountain Railways, located in the Nilgiri Hills of Tamil Nadu (south India); and the Kalka Shimla Railway, located in the Himalayan foothills of Himachal Pradesh (north-west India). All three railways are still fully operational. Out of these, the first two have tea landscapes along large stretches of the railway tracks. The people engaged and employed in the tea estates use the railways to commute.

The sites are inscribed under the following criteria:

**Criterion (ii):** The Mountain Railways of India are outstanding examples of the interchange of values on developments in technology, and the impact of an innovative transportation system on the social and economic development of a multicultural region, which was to serve as a model for similar developments in many parts of the world. The Mountain Railways of India exhibit an important cultural and technological transfer in the colonial setting of the period of its construction, particularly with regard to the eminently political function of the terminus station,

Shimla. The railway then enabled significant and enduring human settlement, of which it has remained the main vector up to the present day.

**Criterion (iv):** The development of railways in the 19th century had a profound influence on social and economic developments in many parts of the world. The Mountain Railways of India are outstanding examples of a technological ensemble, representing different phases of the development in high mountain areas. The Mountain Railways of India are outstanding examples of how access has been provided to the plains and plateaus of the Indian mountains. They are emblematic of the technical and material efforts of human societies of this period to disenclave mountain populations through the railway. They are well-maintained and fully operational living lines. They are used in a spirit and for purposes that are the same as those at their inception.

The owner of the three components is the Ministry of Railways of the Indian Government. All the laws of the Indian Union relating to railways apply to the property, in particular: the *Railway Act* (1989) for technical protection measures, and the *Public Premises Act* (1971), which in particular provides the right to expel unauthorized occupants. The Ministry of Railways makes efforts to remove unauthorized occupation of land within the property as well as within the buffer zones adopted for the Kalka Shimla and Nilgiri Mountain Railways, but the lack of a recognised boundary and buffer zone for the Darjeeling Himalayan Railway component makes it difficult to assess if encroachment is occurring. The adopted buffer zones encompass tea landscapes.



Image 9. Darjeeling Himalayan Railway, a component of the World Heritage Property.

Source: Priyaleen Singh.

### 3. Existing documentation

#### 3.1 Landscape surveys

There are no landscape surveys specifically devoted to the mapping of tea landscapes. The Regional Development Plans located at the local Town and Country Planning offices would need to be consulted in order to understand the extent of the tea landscapes on the ground. The Survey of India maps, as a chronological series, located in its headquarters at Dehradun, could be another source to understand the landscape profile of the tea landscapes.

#### 3.2 Photographs and photographic surveys

No photographic surveys exclusively of tea estates have been carried out, however, photographs can be sourced from:

- [www.teaclimate.com](http://www.teaclimate.com), which features several images of tea landscapes and workshops with the community relating to a collaborative initiative between the University of Southampton and the Tea Research Association. The project is investigating the impacts of climate change on tea production and livelihoods in north-east India. This project is funded under the UK-India Education Research Initiative UKIERI (2014-2016).
- *Burra Bungalows and all that, Glimpses of Built Heritage and Memorabilia of the Tea Industry and Assam*, a publication by INTACH edited by GM Kapoor, has a complete photo documentation of built heritage associated with tea estates in the regions of Silchar, Jorhat, Dibrugarh and Upper Assam, which are all sites in north-east India.

#### 3.3 Inventories including recent mapping and databases

INTACH has prepared a basic inventory of the various surviving tea garden bungalows, which has been published as a book titled: *Burra Bungalows and all that, Glimpses of Built Heritage and Memorabilia of the Tea Industry and Assam*.

#### 3.4 Archive documents, written sources, early maps and plans, etc.

There are no archival maps and plans that could be identified for the tea landscapes, their demarcations or the built heritage associated with them. Archival documents such as Gazetteers are sources of information on administrative, cultural and social aspects. *The gazetteer of Assam: India-Assam State, Vol. I*, Government of Assam, Guwahati: Assam, 1999, and *Census of India, 1971*, Assam Series 3, Part II-A, General Population Table, are important sources for identification of the migrations during the establishment of tea estates. The *Report on the Administration of Eastern Bengal and Assam, 1905-6*; the *Assam Administration Report, 1874-76*; *The Imperial Gazetteer of India*, Vol. VI, Argaon to Burdwan, published under the

Authority of His Majesty's Secretary of State for India in Council, Oxford, 1908; Edward Gait, *A History of Assam*, Calcutta, 1905; and A. Mackenzie, *History of the Relations of the Government with the Hill Tribes of the North-East Frontier of Bengal*, Calcutta, 1884, are other important sources of information on tea landscapes and social and economic situations during the establishment of the tea estates.

### **3.6 Conclusion, including consideration of appropriate documentation for undertaking comparative studies**

While the history of the tea industry has been well-researched, a detailed inventory of all the tea landscapes in the country is lacking. In order to carry out a comparative study, this inventory will need to be supplemented by studies on socio-economic cultural aspects related to communities, data for which is presently lacking.

## **4. State of historic and technical knowledge concerning tea landscapes studies**

### **4.1 Definition of the period or periods during which the tea landscapes flourished**

As indicated in the timeline outlined below, tea landscapes in India are essentially a colonial construct:

- In 1841, it was discovered that the Chinese tea bush could be cultivated in Darjeeling.
- Commercial cultivation began in approximately 1853.
- By 1874, there were 113 tea gardens in the Darjeeling district alone.
- James White set up the first Terai plantation, named Champta, in 1862. Planting was then extended to the Dooars. Gazeldubi was the first Dooars garden and, by 1876, the area had 13 plantations, which led the British to set up the Dooars Tea Planters' Association in 1877.
- India's largest tea research centre, managed by the Tea Research Association, is located in Jorhat. This centre, which was established in 1911 at Tocklai (Jorhat), has made significant contributions towards tea attributes.
- In 1849, Dr Jameson conducted a feasibility survey of the valley of Kangra in Himachal Pradesh and found it suitable for tea cultivation. He brought Chinese tea plants from the nurseries at Almora and Dehradun and planted them in government-owned gardens at Kangra, Nagrota and Bhawama.
- In the Nilgiris, tea was planted on an experimental farm in the Ketti Valley in 1853.
- In 1869, Glenmorgan became the first estate in south India to produce green tea.

- Tea plantations in Munnar were first established in the 1870s by A.M. Sharp.
- In 1895, Finlay, a European company, acquired approximately 33 tea estates in Munnar.
- In 1897, the Kanan Devan Hills Produce Company was formed to manage Finlay's estates.
- In 1964, the Tata Group, an Indian corporate giant, entered into a collaborative venture with Finlay leading to the formation of the Tata-Finlay group.
- In April 2005, tea plantations under the Tata group were transferred to a new company called Kanan Devan Hills Plantations Company Private Limited. Today, the company manages 16 estates spread over about 8,600 hectares of land.

#### **4.2 Have the landscapes evolved and, if so, how?**

The Indian tea industry and its related landscapes have witnessed many changes. The recent crisis in the Indian tea industry that started in 2001 has challenged the plantation model economy. During the crisis, several plantations were closed down or abandoned, which directly affected thousands of workers and resulted in the expansion of the small tea-growers sector in India.

In early 2005, the industry also witnessed the old model of production being replaced by the business model of achieving high productivity and competitiveness in international standards. Tata Tea, previously one of the major companies holding a large market share of tea in India, formally exited from its South Indian Plantation Operation (SIPO), by handing over tea estates to the newly-formed Kanan Devan Hills Plantations Company Private Limited (KDHP). A new paradigm shift from the colonial mode of production to participatory management in tea cultivation is also taking place.

The Indian domestic tea market is predominantly a loose tea market, constituting around 60% of the total tea consumption, with the remainder comprising packet tea. Over the past few years, however, there has been a shift in the domestic market from loose tea to branded packet tea. Apart from the changing scenario in the production sector and the intensifying brand products and markets, the tea industry is also witnessing a diversification of crops. Most companies have initiated new projects for diversification of products, developing retail market and nature-based tourism in and around their tea gardens.

#### **4.3 State of current research on history of landscapes, plants, planting methods, harvesting and processing methods, social structures and cultural systems**

Generally, tea estates have been researched and articles are published in journals such as *Economic and Political Weekly* and *Journal of the Royal Society of Arts*.

*Notes on the History of Tea*, by Gordon P. DeWolf Jr, discusses the history of tea cultivation and its expansion as an outcome of colonization. *Indian Tea Research*, by Saji M Kadavil, is

one of the most comprehensive research documents, detailing critical issues in the tea sector of India and the social, economic and ecological conditions. *Notes on the Production of Tea in Assam, and in India Generally* by J. C. Marshman is an archival document on land resources, communities, migration and the structure of tea growth during the 1860s. *Ethnicity and Isolation: Marginalization of Tea Plantation Workers* by Sharit K. Bhowmik addresses the conditions of tea plantation workers in the framework of ethnicity and marginalization. There is, however, comparatively very little research on the Nilgiris and the plantations in the south. *Participation and Control: Study of a Co-operative Tea Factory in the Nilgiris* is one of the publications which discusses the plantations in Nilgiri. *Burra Bungalows* also mentions the traditional and modern systems used for tea processing.

## 5. Threats to tea landscapes

### 5.1 Pressure from new development

The urbanisation and expansion of new urban areas have significantly affected the tea landscapes. The railways that used to cut across the tea estates now largely run through urban areas. The setting and the cultural landscape of the Darjeeling and the Nilgiri railways, and the tea estates as established during the British period, are gradually being affected. The Indian tea industry has witnessed many structural changes over the years. The emergence of small tea growers and Bought Leaf Factories, crises in the tea industry, and the closure and abandonment of tea estates are the some of the changes in the recent history of the tea industry in India. In early 2005, the industry witnessed major companies withdrawing from production and concentrating on the packaging of tea, such as Tata and Hindustan Unilever Limited (HUL). In the south, there is a new paradigm shift from the colonial mode of production to participatory management in tea cultivation. In the north, McLeod Russel acquired the HUL tea gardens and became the largest global plantation company. Tata and HUL intend to focus on brand business and exploring the market substantially, rather than on the plantation business, which is a low-margin sector.

### 5.2 Abandonment of traditional cultural practices

The cottage industry is facing tough competition from the establishment of modern tea factories in the region. Maximum planters are selling green leaf directly to the tea factories instead of processing it at small-scale cottage factories or households. As a result, many such small cottage factories have closed.

### 5.3 Impact of modern techniques of tea cultivation, processing and management

Tea plants face contamination due to the growth of industrial farming, which is why organic tea cultivation is gaining significance and has become the go-to source for clean, flavourful tea leaves. As with other organic farm products, organic tea is produced using environmentally-friendly methods of cultivation. Instead of relying on hazardous chemicals that damage the environment and remain in the finished product, organic tea farmers use traditional, natural methods of pest and weed control. The result is an organic tea estate that works with the surrounding ecosystem to produce healthy, vibrant crops and strong, flavourful teas.

### 5.4 Lack of maintenance/controls

Absence of adequate checks and controls during the processing of tea adversely affects the tea industry, and by consequence the tea landscapes. Tea planters consider that the main issues are the failure of tea factories to sell the produce at appropriate rates, poor quality production, outdated rules and regulations, lack of skilled labour and tea experts, lack of coordination between different factories, and lack of interest of the small planters in quality enhancement. For example, different grades of green leaves are collected together. Grade A, which is generally considered two leaves and a bud, and Grade B are not collected separately. When the two grades are mixed, it affects the quality of green leaves. Plucking of green leaves after the prescribed duration makes the leaf stronger and increases quantity, but has a significant effect on the quality. With tea prices declining due to these adulterations, the livelihoods of the workers are affected.

### 5.5 Specific threats (modern/industrial large scale cultivation, climate change, tea plants diseases and parasites, partial abandonment of tea plantations, change of species or plant die-off, etc.)

Climate risk is high in Assam, ranging from the annual flooding of the Brahmaputra River, due to intense monsoon rains and soil waterlogging, to winter precipitation deficits with seasonal droughts. These changes in temperature and precipitation are thought to have an impact on tea productivity. Over a thousand species of arthropod pests are known to attack tea plants around the world, including 300 species of insects recorded in India alone. Crop production in India is significantly impacted by attacks from a wide variety of pests, including red spider mites, mosquitos, pink and purple mites, termites, red slug caterpillars and looper caterpillars. Studies show that mites can cause more than 18% loss<sup>3</sup> in crops when the infestation is severe. The

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<sup>3</sup>Functional and Numerical Responses of the predatory mite, *Neoseiulus longispinosus*, to the red spider mite, *Oligonychus coffeae*, infesting tea" by Rahman et al. *Journal of Insect Science*.

cumulative crop loss due to pest attacks can become as high as 55%, and in some cases even 100% crop loss has been reported. At the same time, large numbers of weeds also restrict the yield of tea.

In order to combat pest attacks, a huge quantity of pesticides is used in the industry, and this has led to their indiscriminate use rather than integrated pest management. This has also added to the costs of production, as pesticides are a high cost input. Such reasons have led to more and more tea estates adopting organic methods of tea production. There are many varieties of organic tea already available on the Indian market, which are certified by Indian agencies. The Tea Board has several schemes for assisting plantations to adopt eco-friendly methods of production.

The buildings within the tea estates are also undergoing change. INTACH has identified approximately 110 tea estate bungalows and other built heritage structures associated with tea landscapes in the north-east region. In the absence of any recognition that these structures are an important part of the built heritage and an integral part of the cultural landscape, additions and alterations to these structures are carried out, completely transforming their historic character.

## 6. Protection

### 6.1 Legal protection

The tea industry in India is highly regulated. Permission has to be obtained from the Tea Board in order to plant tea on any land not currently planted with tea, as well as to replace tea planting areas with other crops. The Tea Board also regulates and controls the total area of land under cultivation. The Food Safety and Standards Authority of India (FSSAI) has prescribed maximum residue limits for seven Plant Protection Formulations (PPF). Tea Research Institutes have recommended limits for 17 more PPFs, which are awaiting notification by FSSAI.<sup>4</sup> All these measures will help protect the tea landscapes.

### 6.2 Planning or other forms of protection

The acts and rules for tea production, cultivation, management and processing in India are:

- *Tea Act*, 1953 (No. 29 of 1953)
- *The Tea Rules*, 1954;

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<sup>4</sup>*Policy on usage of Plant Protection Formulations in Tea Plantations of India*, Ministry of Commerce and Industry, Govt. of India 14, B. T. M Sarani, Kolkata- 700 001 West Bengal, India

- *The Tea Board Bye Laws, 1955;*
- *The Tea (Distribution & Export) Control Order, 1957;*
- *The Tea (Waste) Control Order, 1959;*
- *The Investigation of Tea Undertaking/Tea Units (Procedure) Rules, 1981;*
- *The Tea (Regulations of Export Licensing) Order, 1984;*
- *The Tea (Marketing) Control Order, 1984;*
- *The Tea Warehouses (Licensing) Order, 1989;*
- *The Tea Board (Write Off Losses) Rules, 1996.*

Under the 1953 *Tea Act*, the Tea Board was established by the Government of India to regulate the production and extent of the cultivation of tea, improve the quality of tea, promote cooperative efforts among growers and manufacturers of tea, and secure better working conditions and improvement of amenities and incentives for workers.

The Tea Board also periodically organizes several awareness-raising workshops in collaboration with the Tea Research Institutes in order to disseminate scientific information.

Blending Indian tea with other cheaper quality tea from different origins and packaging this blend as tea from Indian origin (particularly as Darjeeling tea) affects the market of Indian tea. Against this backdrop, Darjeeling tea, in particular, and Indian tea, in general, require full protection under the umbrella of IPR (Intellectual Property Rights) and GI (Geographical Indications) as per Trade Related Aspects of Intellectual Property Rights (TRIPS) guided by the World Trade Organisation (WTO). In order to ensure the supply of genuine Darjeeling tea and check labelling of other teas as “Darjeeling Tea”, the Indian government has incorporated a compulsory system of certifying the authenticity of exported Darjeeling tea into the *Tea Act*. In addition to other varieties, orthodox Assam teas have also been registered as a GI in India.

### 6.3 Traditional protection

There is no record of traditional protection practices, and presently the Tea Board is the key body looking after the interests of the tea plantations and the tea planters.

## 7. Conservation and management of tea landscapes

### 7.1 Conservation of natural and cultural features

The tea estates are not protected or identified as World Heritage, despite existing in the buffer zone of the World Heritage property of the Mountain Railways of India, which includes the Darjeeling Himalayan Railway and Nilgiri Mountain Railway. These tea estates have demarcated boundaries as per the ownership of the land and include the tea plantation terraces

with vernacular housing and built heritage in the form of bungalows and processing units. The terraced landscapes have maintained their authenticity in terms of form, continuity of function, practices and traditional knowledge.

## 7.2 Management of overall landscapes, including traditional management

The plantation model of the tea industry works with its own structure and development mechanisms and relies on the *Plantation Labour Act* for its operation and regulation. Various Acts and Rules regulate and control the structure and function of the plantation sector in India, which has its own methods of addressing issues such as the quality of green leaves, production of tea, and social and economic responsibilities at the field and market levels. The present Tea Board functions as a statutory body of the Central Government under the Ministry of Commerce. The Board is constituted of 31 members (including the Chairman) drawn from Members of Parliament, tea producers, tea traders, tea brokers, consumers, and representatives of governments from the principal tea-producing states and trade unions .

Briefly, the primary functions of the Tea Board are as follows:

- Rendering financial and technical assistance for the cultivation, manufacture and marketing of tea;
- Export promotion;
- Aiding Research and Development activities for augmentation of tea production and improvement of tea quality;
- Extending financial assistance in a limited way to the plantation workers and their wards through labour welfare schemes;
- Encouraging and assisting both financially and technically the unorganised small growers sector;
- Collecting and maintaining statistical data and publication.

The ITA (Indian Tea Association) has played a multi-dimensional role in formulating policies and initiating actions towards the development and growth of the tea industry and its people, while liaising with the Tea Board, the government and various other stakeholders of the industry. Their role is to design and implement inclusive and sustainable welfare initiatives catering to the rural population and the tea community at large. The thrust areas identified by the ITA are health, family welfare, female empowerment, education, agricultural extension and vocational training. The ABITA (Assam Branch of Indian Tea Association) in partnership with UNICEF started various welfare programmes in 2000 in the fields of education, crèche development and nutrition, and later expanded and diversified into a more structured intervention to promote health, nutrition, sanitation and child rights amongst the tea garden population.

Training is carried out regularly by the Tea Board of India in collaboration with the Tea Research Association through the organization of workshops, training programmes, seminars

and refresher courses on new technologies and quality development in order to meet the quality requirements of the world market. The Tea Research Association also publishes a quarterly bulletin covering every aspect of tea production and management, and the practices to be followed in the ensuing quarter. The bulletin is distributed to estate managers well in advance of each quarter to provide statistical and other relevant information regarding necessary action.

UPASI (The United Planters' Association of Southern India) is an apex body of tea planters in south India. There are three State Planters' Associations and 13 District Planters' Associations affiliated to UPASI. It is the premier representative body of buyers, sellers, processors, exporters, co-operatives and all other market intermediaries of tea, coffee, rubber and spices.

### **7.3 Sustainable development including strengthening resilience of traditional systems**

The Tea Research Association and the Darjeeling Tea Research and Development Centre play important roles in conducting research in order to develop a sustainable model of tea planting. The procedures outlined include working in harmony with nature to preserve biodiversity and the ecosystem, enhancing individual and group efficiency within the traditional cultivation system, and producing the best possible quality under the traditional manufacturing system. Additionally, tea estates are instructed to follow the single set of agricultural practices (laid out in the standard operating procedures) that has been developed and used for more than 150 years in order to sustain the growth of shoots and maintain the bush heights required for traditional picking by hand. The tea leaves must be processed by the traditional rolling method, in which human effort and traditional knowledge are involved at every stage. Stakeholders are also instructed to understand how a smallholder model could work successfully in different contexts, how it needs to be supported, and also what constitutes sustainable livelihoods on estates. This includes advancing the work on living wages begun by Oxfam and the Ethical Tea Partnership, in addition to considering the future role for estates in the provision of in-kind benefits. Training also includes instructions on how collaboration can work to ensure that human rights, including gender equality, are delivered throughout the tea value chain.

As part of the sustainable practices, the participants are trained to understand the potential impact of mechanisation on tea workers and the wider community, and whether collaborative action could be taken to reduce the impact on vulnerable workers and make the profession more attractive. They are encouraged to improve research and mapping of tea-growing areas likely to be affected by climate change, and to learn how other agricultural sectors are tackling climate change. The training includes scaling-up existing low-carbon processing practices, including the use of renewable energy in production and processing. Participants are taught to evaluate and utilise the genetic diversity of tea to improve the sustainability and quality of the crop as well as to improve composting methods and reduce waste. Tea leaves and bags

frequently end up in landfills although they can generally be composted. The tea sector needs to ensure that all teabags are compostable and that they are not disposed of in landfills, as well as explore the potential of new innovations and sustainable ways to serve tea to consumers.

## 8. Conclusion

### 8.1 An overview of the profile of this sub-region and its tea landscapes

While tea is grown in 16 states in India, the states of Assam, West Bengal, Tamil Nadu and Kerala account for approximately 95% of total tea production.

India's major tea-producing districts/areas are as follows:

- Assam: Darrang, Goalpara, Kamrup, Lakhimpur, Dibrugarh, Nowgong, Sibsagar, Cachar, Karbi Anlong, North Cachar;
- West Bengal: Darjeeling, Terai (west Dinajpur), Doors (Cooch Bihar);
- Tamil Nadu: Kanyakumari, Tirunelveli, Madurai, Coimbatore, Nilgiris;
- Kerala: Cannanore, Palghat, Kozhikode, Malapuram, Trichur, Trivandrum, Quilon, Kottayam, Ernakulam, Idukki, Wynaad;
- Karnataka: Chikmagalur, Coorg, Hassan.

The state with the largest area under tea plantation in India is Assam.

### 8.2 Whether the lack of documentation and research hinders full analysis of the tea landscapes

While the history and methods of tea cultivation are well documented, lack of information on communities, of socio-economic data and of a systematic inventory of all the tea landscapes hinders a comprehensive analysis of the subject.

### 8.3 The distinctiveness of these tea landscapes in relation to other sub-regions

The tea landscapes in India, unlike many other sub-regions, are a colonial construct. The continuity of these tea landscapes in their location and practices makes them distinct.

### 8.4 Which landscape might be said to best reflect the particular characteristics of this region and which, if any, might have the potential to demonstrate OUV, either on their own or in a series?

The tea landscapes of Assam and the Nilgiris are very distinctive. They both deserve research and study so as to determine whether they demonstrate Outstanding Universal Value as possible World Heritage properties.

The tea landscapes of India are an important example of extensive agricultural and cultivation systems that are supplemented by integrated social and cultural systems and practices.

The built heritage of the tea industry in Assam, from the manager's bungalows, offices, the plantations, the factories and factory machinery, to clubs, churches and cemeteries, has been an integral part of the history and heritage of tea industry for more than two centuries.

The tea industry is based on traditional practices that also underpin social and economic systems. Communities, their knowledge systems, the practices of tea processing and the landscapes created are all linked and have sustained and evolved over a period of almost two centuries.



*Image 9. Image showing a Built Resource associated with a Tea Estate in Darjeeling, North East Region. Source: Rohit Jigyasu.*

### **8.5 What are the main vulnerabilities of the tea landscapes of this sub-region?**

The decline in the tea industry due to international competition has had an impact on the tea landscapes, with many estates closing down. Small tea planters attribute this to the failure of co-operatives to give timely payments to all suppliers, poor management skills, increasing political interference and non-adoption of appropriate market strategy. Middle level tea planters cite poor management, overdependence of co-operatives on loans, a poor grading system and outdated technology, while large tea planters consider the main issues to be the failure of tea factories to sell the product at appropriate rates, poor quality production, outdated rules and regulations, a lack of skilled labour and tea experts, a lack of coordination between different factories of the region and a lack of interest of the small planters in quality enhancement. The

closure of plantations, supplemented by growing urbanisation around the estates, are a major threat to the tea landscapes.

### **8.6 How are these impacting on conservation, authenticity and integrity?**

The forms and the settings of tea landscapes are impacted by the rapid growth of urbanisation and use of modern materials for construction, which are changing the form of the architecture within and around the tea landscapes. While the usage of the tea gardens is intact, the negative visual and spatial impacts on their integrity is due to the development around the railway tracks. However, many of the estates that are distant from urban development and have demarcated boundaries continue to be in a pristine state with the terraces, the vegetation, the communities and the built heritage existing as one coherent whole.

### **8.7 How effective is current protection and management and in what ways might these be improved?**

The current protection and management could be improved by introducing restrictions on selling tea garden land, as well as increasing subsidies and loans, making proper arrangements for purchasing the produce, strengthening small-scale tea industry, and providing special financial assistance for establishing cottage tea processing units, along with increasing the role of small tea planters in the management of co-operative tea units. Above all, there needs to be an improvement in the living conditions of the tea plantation workers, without which the tea plantations and the tea industry will not survive.

### **8.8 Possible recommendations for the future**

The old plantations need to be rejuvenated. The neglected and abandoned tea garden owners should be assisted to make tea gardens economical. Quality improving measures should be adopted by all the tea planters and the tea industry. The plight of the tea plantation workers also needs to be addressed to ensure that they continue to work on tea gardens and employ their skills that they have honed over generations.

Indian tea plantations that have their origins mainly in the 19<sup>th</sup> century are more considered by industrial and productive aspects. The different institutions (Tea Board, etc.) focus mainly on productivity and have not had much interest in cultural heritage. However, it is very important to protect and recognise cultural heritage from this period as it illustrates not only the interaction of humankind and nature, but is a wonderful example of early industrial heritage and shared heritage that demonstrates the links between different regions of the world.

## Bibliography

Fielder, Ch. H., "On the Rise, Progress, and Future Prospects of Tea Cultivation in British India", *Journal of the Statistical Society of London*, Wiley for the Royal Statistical Society, Vol. 32, No. 1, Mar. 1869, pp. 29-37.

Garhwal University, "Tea cultivation and sustainable development: a case study of Kangra valley", Srinagar, Garhwal.

Prosenjit Das Gupta, *Burra Bungalows and All That*, INTACH, April 2012.

Marshman, J.C., "Notes on the Production of Tea in Assam, and in India Generally", *The Journal of the Royal Asiatic Society of Great Britain and Ireland*, Cambridge University Press, Vol. 19, 1862, pp. 315-320.

Neelanjana Mitra, "Indian Tea Industry: Problems and Policies", *Economic and Political Weekly*, Vol. 26, No. 48, Nov. 30 1991, pp. M153-M156.

Rajya Sabha, *Report on the Tea Industry by the Parliamentary Committee on Tea*, 2003.

Ramendra Kumar Kar, "A Tribe in the Context of a Tea Industry in India: Some Preliminary Considerations and Observations", *Anthropos Institute*, 1976, pp. 868-877.

Royal Society for the Encouragement of Arts, Manufactures and Commerce, "Tea cultivation in India", *Journal of the Royal Society of Arts*, Vol. 57, No. 2934, February 12, 1909, pp. 265.

Tharian George K., "Historical Roots of the Crisis in the South Indian Tea Industry", *Social Scientist*, Vol. 12, No. 4, Apr. 1984, pp. 34-50.

Tarit Kumar Datta, "V.Darjeeling tea, India", Indian Institute of Management, Calcutta.

Whittaker, A., "The development of the tea industry in India and Pakistan", *Journal of the Royal Society of Arts*, Royal Society for the Encouragement of Arts, Manufactures and Commerce, Vol. 97, No. 4800, 29th July 1949.

Yujiro H. and A. Damodaran, "Towards an Alternative Agrarian Reform: Tea Plantations in South India", *Economic and Political Weekly*, Vol. 39, No. 36, Sep. 4-10, 2004, pp. 3992-3997.

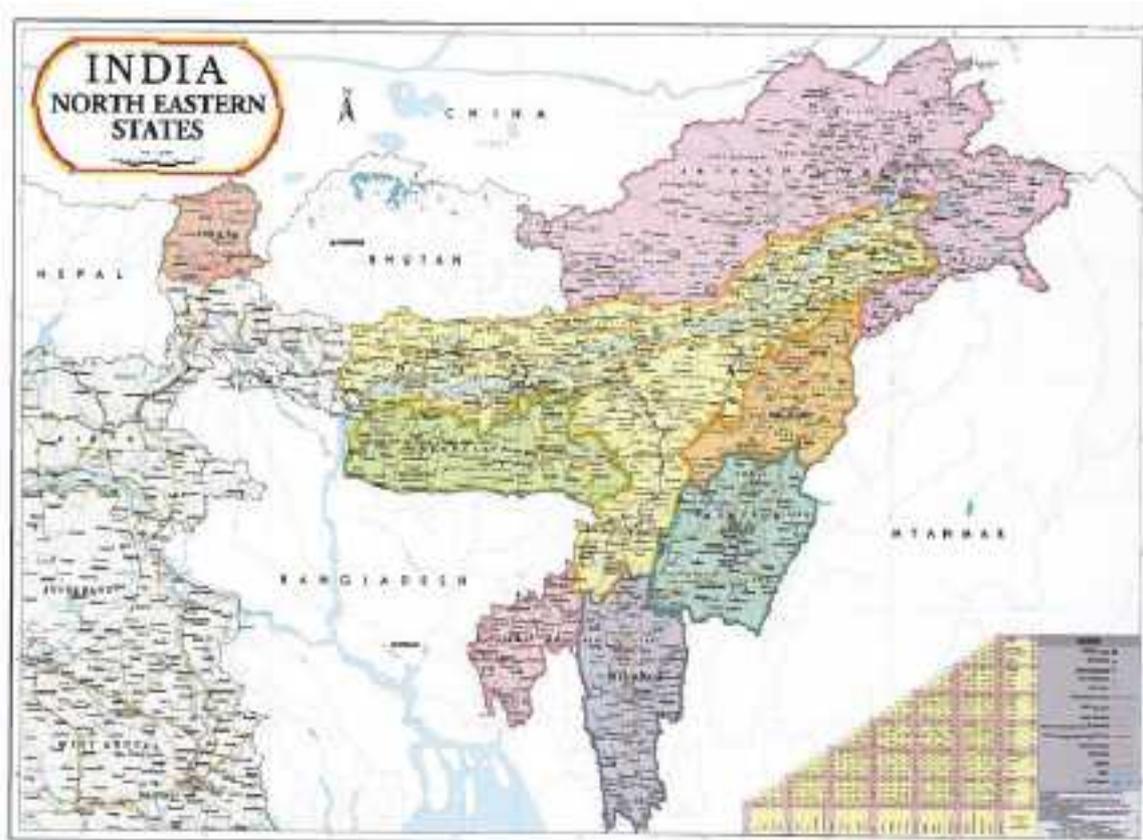
# A Study of Assam and Darjeeling

*Dr Aditi Chatterji*

*Centre for Urban Economic Studies, University  
of Calcutta, Kolkata, India*

## Introduction

The cultivation and drinking of tea have been widely known in China for centuries, but tea cultivation and manufacture on a commercial basis in India were introduced by the British after they found the plant growing wild in Assam. The following paper proceeds to study the evolution of tea landscapes in Darjeeling, West Bengal and Assam, in east and north-east India, from the viewpoint of physical and social landscapes.



*Map 1. India Northeastern States. Source: author.*

## 1. General characteristics of Assam and Darjeeling

### 1.1 1.1 General geographical/ecological/geological data

Both Assam and Darjeeling are located in or near the Eastern Himalaya. The Himalaya dwarf all other mountain ranges. The 2,400 kilometre-long and 250 to 300 kilometre-wide mountain barrier, rising 500 to 8,000 metres above sea level, is relatively young and still prone to spells of tectonic restlessness or crustal disturbances, indicating the accumulation of inner tectonic crustal stress. The mountain body is still growing, and its framework is being deformed, the landscape being continuously reshaped. The titanic force of compression due to the collision of the landmasses of India and Asia transformed the once-massive pile of layered rocks on the northern margin of the Indian shield into the majestic Himalaya. The Indian landmass continues to move and press against Asia, leading to stresses and strain on the Himalaya and to natural hazards. The long mountain chain bordering the sub-continent isolates it from the rest of Eurasia. In the east, the chain assumes a long convex curve along the Patkai Hills-Arakan Yoma, forming the Indo-Myanmar border ranges, with knee-bends in the north-western and north-eastern ends of the main Himalaya. The mountains bordering the subcontinent constitute a geological province characterised by similar structural architecture and evolutionary history. The Himalayan province ceases against the zone of collision of India with Asia, which is now occupied by the major rivers Indus and Brahmaputra, the terrain of which displays a gentle topography of river flood-ways, although located 3,600 to 5,000 metres above sea level. The Himalaya were conceived and evolved over 2,000 million years ago. The Indian landmass was welded to mainland Asia about 55 million years ago. Increasing pressure due to continental convergence over time caused the buckled-up mass and wrinkled pile of layered rocks to be sheared of their roots, pushed great distances south and thrown upon comparatively younger sedimentary rocks. Towns such as Simla and Darjeeling are located on such uprooted, far-travelled rock sheets. 1.6 million years ago, the Himalaya were subjected to severe deformation, which raised the mountains to tremendous heights, triggered landslides and caused severe erosion. A basin formed due to subsidence of the foreland has been and is being filled with sediments brought by the Indus, Ganga and Brahmaputra river systems (Valdiya, 1998: 1-14).

Characteristic features of the Himalaya include fragile ecosystems. The southern slopes are steep with precipitous scarps. Apart from fan-like and conical accumulation of talus, consisting of multifaceted fragments, the southern slopes have little soil cover or vegetation. The debris fans and cones have a very sparse vegetation cover. The northern slopes are gentler and enjoy abundant rain and shade: they are marked by a thick soil cover and forests of deciduous trees, shrubs and grasses. The snowline is gradually moving higher, and glaciers are receding due to global warming. Minor developmental activities lead to landslides, soil erosion, the drying up of springs and desertification of slopes (Valdiya, 1998: 20).

2,000 million years ago, sea water from the ancient Purana Sea flooded the northern margin of the Indian shield. The sea deposits have an aggregate thickness of over 13,000 metres and were laid down from the Late Paleoproterozoic (>1,600 million years ago) to the Early Cambrian periods (until about 525 million years ago). The nature of the basement forming the sea floor is most likely characterised by large occurrences of porphyritic granite associated with metamorphosed flysch. These rocks form thick sheets ("nappes") all over the area, covering large extents of the Purana sedimentary succession in three successions. The uppermost nappe consists of medium-grade metamorphic rocks, mostly mica-schists with garnet, granodiorite and granite rich in biotite and quartz. Volcanic rocks appear all over the Himalaya (Valdiya, 1998: 26-28, 48).

The warm, humid, tropical conditions about 18 to 16 million years ago fostered the growth of thick rainforests in the floodplains, and abundant food and water led to flourishing forms of life, such as reptiles (crocodiles and "gharials"), rhinoceros and hippopotamus, elephants, tigers, buffaloes, cows, deer, goats and tree-climbing primates. By 5.1 to 1.6 million years ago, the environmental conditions had changed, and the tropical forests were mainly replaced by savannah-type wide grassy plains dotted sparsely with trees. Grazing and browsing animals, primates, carnivores and elephants flourished. Human-like primates appeared (Valdiya, 1998: 38-39).

Mountain (skeletal) soils vary greatly between the local rocks, ranging from the stony, sandy hill foot fans and slope colluvium of the north-western Hills and the Aravallis to a more clayey product of mass-movement in the humid south and east of the Himalaya and in Assam. The alluvium-based soils of the Indus-Ganga-Brahmaputra plains vary greatly in depth and composition with grades of alluvium. In the Ganga-Brahmaputra plains, in more humid atmospheric and soil climates, textural sequences are finer throughout from loams to very fine, silty clays. Montane temperate vegetation, including wet temperate and Himalayan moist temperate as well as Alpine types and subalpine grasslands, occur in the Himalaya. The tropical wet evergreen and semi-evergreen types were typical rainforests and the true evergreen occurred up to 1,070 metres in Assam. In areas where the progression was towards semi-evergreen forests, as in alluvial tracts of Assam, canes trailing horizontally up to 61 metres form dense brakes, a thorny thicket with a few tall trees like palms. The sub-tropical pine forest occurs on the higher Khasi and Assam-Myanmar Hills (Spate and Learmonth, 1967, reprint 1972: 73-83, 87-89, 95-99).

Assam state, the largest tea growing area in the world, is situated in the extreme north-east of India (the coordinates of Dispur, the capital of Assam state, are: 26.14°N, 91.78°E). In ancient times, it was known as Pragjyotishpur. The state has an area of 78,438 square kilometres and the elevation varies from 25 to 1,960 metres. The boundaries of Assam have varied over time. Before the British arrived, the northern boundary was constituted of hills inhabited by hill tribes, including the Bhutanese, Akas, Daflas, Miris and Abars, while the Mismis inhabited the north-eastern Mismi Hills. The eastern hills were home to the Singphos and Khamtis, while the Patkai

Hills separated Assam from Myanmar. The Assam Range trends from west to east in the south: the Garo, Khasia and Jaintia, North Cachar and Naga Hills. Assam proper is the Brahmaputra Valley located between the northern and southern ranges. The Assam boundary was changed by the British. New regions were included in Assam, encompassing the whole Assam Range, the Barak Valley, the Surma Valley and the Lushai Hills. After 1947, the boundary changed several times due to the secession of the following areas: Sylhet district, except five thanas, Khasi and Jaintia Hills and Garo Hills (Meghalaya), Naga Hills (Nagaland) and Lushai Hills (Mizoram). The Brahmaputra enters Assam from the north-east frontier and flows through from east to west (Chakravorty, 1997: 88-89).

A major feature of Assam is that it contains three out of six physiographic divisions of India: the northern Himalaya (Eastern Hills), the northern plains (Brahmaputra Plain) and the Deccan Plateau (Karbi Anglong). Studies indicate that the Brahmaputra, the lifeline of Assam, is an antecedent river, older than the Himalaya. The river has steep gorges and rapids in Arunachal Pradesh, but upon entering Assam it becomes a braided river (sometimes 16 kilometres wide) and with its tributaries it creates a floodplain (Brahmaputra Valley: 80-100 kilometres wide, 1,000 kilometres long). The hills of Karbi Anglong and North Cachar, those close to Guwahati, and the Khasi-Garo Hills, now eroded and dissected, were originally part of the Indian Plateau. In the south, the Barak, originating in the Barail Range (Assam-Nagaland border), flows through Cachar district with a 40-50 kilometre-wide valley and enters Bangladesh as the Surma River.

With the tropical monsoon rainfall climate, summer temperatures reach a maximum of 35-38°C, while the winter minimum is 6-8°C. There are heavy monsoon downpours, reducing summer temperatures and leading to foggy weather in winter, often during afternoons. Spring (March-April) and autumn (September-October) are usually pleasant, with moderate temperatures and rainfall. Agriculture depends on the south-west monsoon rains.

Assam is one of the richest international biodiversity zones, with tropical rainforests, deciduous forests, riverine grasslands, bamboo orchards and many wetland ecosystems, many of which are protected as natural parks and reserved forests. The chief wildlife sanctuaries are two UNESCO World Heritage properties: the Kaziranga National Park on the bank of the Brahmaputra, and the Manas Wildlife Sanctuary, near the Bhutan border. Kaziranga is a refuge for the Indian one-horned rhinoceros and the state is the last refuge for many threatened and endangered species. There are three other National Parks: Dibru Saikhowa, Nameri and Orang. Assam has around 946 types of birds and 190 types of mammals.

Assam's geological wealth includes petroleum, natural gas, coal, limestone, magnetic quartzite, kaolin, sillimanite, clay, feldspar and some iron-ore.

Darjeeling (coordinates 27°3'N, 88°16'E) is a town in the Indian state of West Bengal, located in the Himalaya at an elevation of 2,042.2 metres. It is the headquarters of Darjeeling district in West Bengal. The hills of Darjeeling are part of the Lesser Himalaya. The soil chiefly consists of sandstone and conglomerate formations, which are the solidified and upheaved

detritus of the mountain range. The soil is often poorly consolidated as the permeable sediments do not retain water between rains. The area has steep slopes and loose topsoil, leading to frequent landslides during the monsoons. The town falls under seismic zone IV on a scale of I-V near the convergent boundary of the Indian and Eurasian tectonic plates and is subject to frequent earthquakes. The district of Darjeeling lies between 26°31' and 27°13'N and 87°59' and 88°53'E.

The district resembles an irregular triangle: the apex projected into British territory while the base rests on Sikkim. It is a frontier district, between Nepal and Bhutan, stretching from the Bengal plains to the south to Sikkim to the north. In British times, the frontier was demarcated from Sikkim by rivers and mountain torrents, from Nepal on the west by the Singalila Mountains, and from Bhutan to the east by the Jaldhaka River, while the south-eastern and southern boundaries adjoined the British districts of Jalpaiguri and Purnea. The Terai stretches along the base of the hills, a low-lying strip shut in on the north by the giant outliers of the Himalaya.

The remainder of the district consists of mountain spurs and ranges with no flat valleys, plains or lakes and few bare slopes except where virgin forest has been replaced by the tea gardens or cultivated fields. The district falls into two distinct tracts: the Terai beneath the hills, and the ridges and deep valleys of the Himalaya. The Terai is unhealthy and marshy, and was mostly covered by dense forests most of which have been cleared for tea gardens and settled agriculture. An 1830 traveller wrote that the mountains were then completely covered with forests, forming a sombre feature in the landscape, while by 1907, the slopes were dotted with trim tea gardens interspersed with small plots of cultivated land. At the higher levels of the Singalila Range, there were wide grassy slopes interspersed with pine forests and rhododendrons. The valleys on the south-eastern side of the Singalila Ridge are drained by the Mechi, Balasan and Mahanadi Rivers, while the rest of the Darjeeling Hills is drained by the Tista and its tributaries, except the extreme east, which is drained by the Jaldhaka (O'Malley, 1907: 1-3, 6).

Darjeeling has a temperate climate, with wet summers caused by monsoon rains. The annual mean maximum temperature is 14.9°C while the mean minimum temperature is 8.9°C. The average annual precipitation is 309.2 centimetres and the highest rainfall occurs in July.

Darjeeling is a part of the Eastern Himalaya zoo-geographic zone. Vegetation includes sal, oak, semi-evergreen, temperate and alpine forests. Dense evergreen forests of sal and oak occur around the town with many varieties of rare orchids. The Lloyd Botanical Garden preserves rare and common species of plants while the Padmaja Naidu Himalayan Zoological Park conserves and breeds endangered Himalayan species. There is much deforestation in the immediate vicinity of the town, mostly due to the demand for fuel and timber, and air pollution nowadays. The wildlife wing of the West Bengal Forest Department protects the district's wildlife. Several species of ducks, teals, plovers and gulls pass through Darjeeling while migrating to and from Tibet. Civets, mongooses and badgers are small mammals found here.

The rocks of the district have been subdivided into five series: gneiss, the Daling series, the Buxa series, Gondwanas and the Tertiary system. Their outcrops form a series of bands, running generally parallel to the trend of the Himalaya and dipping one beneath the other into the hills. The interesting feature of these subdivisions is that the younger formations always seem to underlie the older ones: the Tertiary beds under the Gondwanas, the Gondwanas under the Buxa and Daling series, and these under the gneiss, the original order of superimposition being completely reversed by folding and faulting. The gneiss varies from a foliated granitoid rock, consisting of quartz, feldspar and biotite, to a generally pure mica-schist, and includes partly intrusive granite and partly metamorphosed rocks of sedimentary origin. The Daling series consists of phyllite, slate and quartzite with some hornblende-schist, dolomite and limestone. Copper ore occurs. The Buxa series consists of slate, quartzite and dolomite. The Gondwanas are mostly formed of sandstone, shale and coal, crushed and faulted. The Tertiary beds are mostly composed of soft, massive 'salt and pepper' sandstone containing mica, feldspar, limestone and lignite in small quantities (O'Malley, 1907: 9-10).

The natural landscape outlined above has been significantly moulded by human impact.

## 1.2 1.2 The historical context

The following section studies the opening up of the two tea zones of Assam and Darjeeling, mostly by the British in the nineteenth century.

The history of the tea industry in Assam begins in the 1830s on the southern banks of the Brahmaputra River near Sadiya. However, the story began about 150 years earlier in China and Great Britain. The practice of growing and drinking tea originated in China. The Portuguese encountered the beverage in their journeys to the East Indies and introduced it to Europe in the 16<sup>th</sup> century. By around 1665, tea was discovered and imbibed by the British aristocracy, chiefly the Portuguese Queen Catherine of Braganza, wife of Charles II. By then, tea commanded a price of 50 shillings a pound at times, despite government duties. The major agent in the business was the English East India Company, which in 1600 was granted the monopoly of trade with the East Indies (Orient) by Queen Elizabeth I. The English developed a taste for the beverage, and by 1785, the import of tea from China to Britain rose to about 11 million pounds.

In 1788, Sir Joseph Banks, an eminent botanist, suggested to the Company that they should look for tea in India, possibly in Cooch Behar and Rangpur in East Bengal adjoining Assam. At that time, the Company was content with its monopoly of the tea trade with China; 26 million pounds were imported into England by 1816. However, by the turn of the 19<sup>th</sup> century, there was friction between Britain and China over trade terms, with uncertainty regarding the regularity and adequacy of tea supplies from China. The British Government was increasingly anxious about the rising price of tea and attributed it to the Company monopoly. In 1819, David Scott, an agent in Assam for the Governor-General, approached Dr Nathaniel Wallich,

associated with the Calcutta Botanical Gardens, for a supply of tea seeds for experimental cultivation in Assam. In 1823, Robert Bruce encountered Beesa (Bissa) Gawm, the Singpho tribal chief, near Sadiya at the foothills of present-day eastern Arunachal Pradesh, for the possible supply of tea plants and seeds from local sources. Maniram Dutta Dewan advised Bruce that the tea plant grew wild in that area. The Singpho drank tea, which they called “phanap”, as a regular beverage. In 1824, Robert Bruce’s brother, Charles Bruce, obtained tea plants from the Singpho chief of Sadiya, sent some to Wallich for regeneration and planted some in his back-garden in upper Assam. In 1833, the Chinese authorities refused to allow a monopoly trade in tea to the Company anymore, and in 1834, the British Government withdrew the rights to tea trade monopoly chiefly due to very high prices. The Company could not afford to lose out on the rising demand for tea in Britain and simultaneously had no further access to Chinese tea. An effort was therefore made to grow tea in India. Lord William Bentinck, Governor-General, set up a Tea Committee in 1834. The Committee concluded that tea was found in upper Assam from the research of Captain Jenkins and Lieutenant Charlton. Simultaneously, George Gordon, the Committee secretary, was sent to China to buy plants and seeds and to hire some Chinese planters to assist in the opening up of tea plantations in India. Dr Wallich and others organised expeditions to locate plants in upper Assam.

Charles Bruce, aided by his good relations with tribal chiefs, also found tea growing wild in the hills skirting the Burhi Dihing River and Tingri. By 1837, plants were cultivated from Chinese seeds at Koondilmukh, Jaipur and Chabua near Dibrugarh in upper Assam. Later that year, Assam tea was sent to London. By 1839, tea from Chinese seeds was being grown in upper Assam. In order to ensure the quality of Indian plantations and tea, Chinese planters were imported, but Charles Bruce pleaded for the hiring and training of ‘native’ labour. By 1839, the Company found the running of tea gardens a liability and began to transfer them to private entrepreneurs. In February 1839, the Assam Company was established, with Charles Bruce as a director, to take over some gardens, and by November 1839, it merged with a joint stock company named the Bengal Tea Association to form the first limited liability company for the production of tea in India. The Bengal Tea Association included some of the richest and renowned merchants of Calcutta, namely Dwarka Nath Tagore, Prasanna Kumar Tagore, Rustomji Cowasji and Motilal Seal (Dasgupta, 2012: 10-13. in Kapur, ed., 2012; Moxham, 2009).

Early planters required money, an intrepid spirit, the fortitude to face natural and human adversities, and faith in the industry. J. Masters was sent to Assam, and after visiting Jaipur, he established the headquarters of the Assam Company near Nazira and subsequently plantations at Sathseyah, Gabru-Parbut and China-doe. The company established its chief factory at the junction of the Barhi-Dihung and Tingri Rivers. Captain Vetch, Political Agent of the eastern Assam districts, convinced the powerful Singpho chief Ningroola to become a tea cultivator.

Early British planters leased land near and around modern Tinsukia and Jorhat, including Nazira and Sonari, and set up small gardens run personally, which were sold and amalgamated

in the Assam Company and the Jorehaut Tea Company (established 1856). British planters joined companies as directors and served with tenacity and distinction, building the foundations of the industry.

The pioneers of the tea industry in the Surma Valley, near Sylhet, were of the same calibre. "Native" varieties of tea were also found in Cachar in 1855 and plantations were encouraged. By 1868, several tea gardens had opened and were in operation, including Ballacherra, Doodputtee, Rampore, Arcuttipore and Doloo. By 1860, tea was grown in Assam, Cachar, Chittagong, Hazaribagh, Oudh, Darjeeling, Kumaon, the Punjab and the Nilgiris.

In those days, starting tea plantations required courage and drive, since it implied clearing the matted jungle with the help of elephants, dealing with some of the less friendly tribals, employing labour from contemporary tribal Jharkhand, Orissa and Andhra Pradesh, making plantations and tending to tea bushes, controlling diseases like cholera, malaria and kalazar, fending off wild animals like elephants and tigers, and dealing with torrential monsoon rain, tropical storms, floods, earthquakes and other hazards (Dasgupta, 2012: 13-15. in Kapur ed., 2012). By 1859, in addition to the Assam Company and the Jorehaut Tea Company, there were 50 other tea estates in Assam (Moxham 2009: 98).

After the terrain was cleared of jungle, the lease area was surveyed to mark out water courses, the hillocks or high grounds, and areas for the plantation, factory, bungalow, labour-lines and other constructions in the landscape. The managers did surveys themselves until "native" surveyors (amins) were trained. Standard 12-acre sections were prepared for transplanting tea saplings, and garden roads were created to reach different garden sections, after which planters had to wait four years before the tea bushes yielded sufficient leaves. Tea production in the Assam Valley areas rose from 49.5 million pounds in 1891 to 75.3 million pounds by 1900, while the output from Cachar and Sylhet increased from 37 million pounds to 65.8 million pounds in the same period (Dasgupta, 2012. In Kapur ed., 2012).

Darjeeling is another area of India where tea was planted by the mid-19<sup>th</sup> century. The quality was seen to be excellent and Darjeeling tea became the benchmark against which all other fine black teas were measured (Moxham, 2009: 98). The establishment of the tea industry in Darjeeling was due to the enterprise of Dr Campbell, who was appointed Superintendent of Darjeeling when the possibility of initiating and developing the cultivation and manufacture of tea in the territories of the East India Company became attractive. In 1840, Dr Campbell was transferred from Kathmandu to Darjeeling and started the experimental growth of tea there. It was soon seen that the plant flourished at this altitude and other planters followed, seeds being distributed by the government to those wishing to cultivate the plant. The early plantations were experimental plots, but by 1856, the industry began to be developed on an extensive scale, especially on the lower slopes. By the end of 1856, tea plants were sown and raised at Takvar by Captain Masson, at Kurseong by Mr Smith and Mr Martin, at the Canning and Hope Town plantations by companies, and between Kurseong and Pankhabari by Captain Samler, the Agent of the Darjeeling Tea Concern.

1856 may be recorded as the year in which the tea industry in Darjeeling was established as a commercial enterprise. That year, the Alubari tea garden was opened by the Kurseong and Darjeeling Tea Company, and one on the Lebong spur was opened by the Darjeeling Land Mortgage Bank. In 1859, Dr Brougham started the Dhutaria garden, while between 1860 and 1864, four gardens were started at Ging, Ambutia, Takdah and Phubsering by the Darjeeling Tea Company, and at Takvar and Badamtam by the Lebong Tea Company, while other gardens initiated in the early period were Makaibari, Pandam and Steinthal tea estates. All these estates were situated in the hills and, by 1862, cultivation began in the Terai. In 1874, there were 113 gardens with 18,888 acres under cultivation, producing 8,927,911 pounds; by 1905, there were 148 gardens with 50,618 acres under cultivation, producing 12,447,471 pounds (O'Malley, 1907: 72-74).



*Image 1. Glenburn, Darjeeling. Source: Nikhil Kapur.*

The Wernicke family were pioneers who introduced tea on a commercial basis to the Darjeeling district. They were originally Moravian missionaries. Arthur Jules Dash mentions a missionary named Reverend W. Start, who came to Darjeeling in 1850 and was followed by a group of German missionaries. The Wernickes were initially associated with the Bannockburn Tea Estate, which they ran for three generations, and also Soom and Tukvar Tea Estates. Tea planting then was an arduous job, involving long hours in the field from dawn to dusk. It was men like Andrew and Frederick Wernicke and George Watt Christison who learnt the hard way and set the standards and duties of future generations of Darjeeling planters.

The early planters had to manage all their problems without the help of technical experts and scientists. They had to acquire knowledge regarding machinery and building, making tools and

equipment, plumbing and sanitation, engineering, building, surveying (to cope with roads inclined to follow goat tracks and woodcutter paths) and transporting crops, and had to serve as accountants, lawyers and judges to settle disputes. In the early days, race relations were peaceful, and the hill people recognised colonial justice and the ability to organise. The Wernickes and Christison were good friends and renowned tea planters in Darjeeling from the 1860s onwards (Banerjee and Banerjee, 2007).

### 1.3 Scale of landscapes

The Assam gardens were located mostly in the lowland areas of the Brahmaputra Valley and foothills, while Darjeeling gardens were high elevation enterprises. The number of gardens in Assam rose to 802 in 1983 and the state contributed to over 55% of the Indian output. 51% of the tea garden workers in India were employed in Assam (Chakravorty, 1997: 32). By 1856, development in Darjeeling had advanced from the experimental to a more extensive and commercial stage. The *Himalayan Gazette* of 1936 wrote that tea planting in the Himalaya was started with Chinese varieties, but this was soon replaced with the Assam hybrid. By 1866, the area hosted 40 gardens and nearly 300 acres of tea cultivation. By 1936, there were over 1,150 gardens in the district covering 54,000 acres and yielding 17 million pounds of tea from Darjeeling (Banerjee and Banerjee, 2007: 18).

### 1.4 Distribution and characteristics of tea landscapes

The characteristic tea landscapes of cleared forests, with undulating expanses of tea bushes and women tea pluckers patiently plucking “two leaves and a bud”, were developed over the course of over a hundred years. The planter or manager’s bungalow was generally at a high elevation as was the factory, while the coolie lines or workers’ housing was located separately and generally lower down.

#### (a) Cultivation

The first objective of cultivation is to remove vegetation, as its presence harms the tea bush, and so that the tea crop can have its maximum supply of water and plant food. The soil should be kept free of weeds throughout the year to prevent waterlogging and the rapid decomposition of organic matter in the soil. Tea is well cultivated under shade trees. Soil



*Image 2. Tea Landscape, Darjeeling.  
Source: Nikhil Kapur.*



*Image 3 . Tea Landscape, Darjeeling.*

*Source: Nikhil Kapur.*

stirring is done by cultivation, and soil from lower layers is mixed with that of the upper layer thereby increasing aeration. Soil stirring was earlier considered necessary after the application of large quantities of bulk organic manures like green crops, but more recent experiments showed that there was nothing to be gained by hoeing bulk manures into the soil. When the soil suffers from drought, cultivating the upper layer of 3-4 inches produces a mulch which prevents the drying out of soil at lower levels. “Cheeling” or surface scraping is an efficient method of suppressing weeds during rains by the operation of scraping weeds from surfaces with minimum soil with a special “cheeling” hoe that is broader and shallower than the ordinary “kodali”. The damage to the tea bush roots by deep cold weather cultivation and trenching is internationally recognised.

Deep cultivation may be employed at intervals to prevent the incursion of thatch grass and other deep-rooted weeds. The time for deep cultivation is when the soil is not too wet but not so dry that it is difficult to break up and pulverise clods. It is best done in winter. Earlier, trenching was recommended to break a stratum or pan of hard soil. Between the implements used, the flat blade hoe or “kodali” is common in Assam, Cachar and Sylhet for light and deep hoeing; in Darjeeling, the Duars and Terai, the fork hoe prevails, especially on stony areas. There is less risk of cutting tea roots with the fork hoe; however, on sandier soils, the blade hoe is more efficient for burying weeds.

On young, replanted tea, cultivation to maintain clean soil is essential as the jungle should not be allowed to grow around the young plants. On level areas, where the position of drains and shade trees makes it practical, the cultivation of young tea may be performed effectively and cheaply using a “spring-time harrow” pattern machine, drawn by a buffalo.

On steep slopes, terracing is essential to avoid the rapid loss of surface soil. Terraces should follow the slope contours and not be too prominent. The upper surface of the terrace may slope very slightly into the hillside to prevent wash from one terrace to the one below. Bushes should be planted in the middle or back of the terrace, but never near the edge, or they may suffer from drought. Grass may be grown along terrace edges and sides to prevent wash and damage, while stones may be used to face the sloping terrace sides; one really good digging annually is enough for steep land. Floods are hazardous and gardens flow away with a loss of soil nutrients. On well-terraced steep slopes, or gentler slopes, contour planted and banded, clean or selective

weeding is a more effective treatment for soil. Selective weeding retains nourishing leguminous weeds. Ferns are problematic in Chinese bushes. In slack seasons, spare labour may build revetments to support roads or terraces in tea areas.

#### (b) Drainage

Tea cannot thrive in waterlogged soil, soil subject to frequent, lengthy flooding, and prolonged dry spells. Sandy, loamy and clay soils require 15%, 18-20% and 25% optimum moisture content, respectively. The main objective of drainage operations is to maintain the soil at its optimum water content for as long as possible. Former drainage concepts followed the belief that all rainfall must pass through the soil, which was a gigantic filter. The main reason why land does not get dried up by drainage is its “capillary attraction”, such as evaporation leading to replenishment of water from the soil: sandy and clay soils demonstrate the most active “capillarity”. The water table is the level below the soil surface at which the soil is completely saturated with water. It is highest and lowest in rainy and dry weather, respectively. Transpiration also leads to a loss of moisture content. Dry weather, over-draining, trenching and other forms of deep cultivation, jungles, leafy green crops and evergreen shade trees all reduce soil moisture, causing serious harm to tea. Drainage systems were laid out with dumpy levels, clinometers, ranging rods pegs and measuring stakes and gauge rods. For hill plantations, drainage is simple as hill streams exist. Special drains are contoured.

#### (c) Pruning

In its natural forest state, the tea shrub grows to 15-30 feet (4.5-9 m) or more, reaching a height and extent of foliage unfit for the rapid production of leaves in successive flushes, making leaf gathering difficult and expensive. Pruning trims the form into a low bush, hence it is much better to prune when the plantation is quite young, a year or 18 months after planting. On most Darjeeling gardens, one-third of the whole area is annually pruned. The largest crop is obtained in the third year after pruning, and the average crop per acre for whole estates currently compares very favourably with earlier systems. In the plains, unpruned bushes produce poorer tea throughout the season than annually pruned bushes. Pruned tea suffers from blister blight and thrips. In the case of good quality or “jaat” Assam tea bushes of the light-leaf Assam type, clean pruning gives stronger and better quality liquor tea. Assam tea is best pruned in the winter.

The tea plant belongs to the genus *Camellia*, one of 14 genera comprising the order *Theaceae*. It was originally classified as *Thea* and named *Thea sinensis* in 1753 by Linnaeus. In 1935, a Conference of Botanists in the Netherlands classed it as a *Camellia*, and a satisfactory botanical name for the plant is *Camellia Sinensis*. Assam tea is manufactured from the plant *Camellia Sinensis* var. *assamica* while Darjeeling tea is manufactured from *Camellia Sinensis* var. *sinensis* (Bald, 1905, sixth ed. Harrison ed., 1957; reprint, 2013; for types of tea: Wikipedia 2017).

## 1.5 Social and cultural systems

In tea garden areas in Assam and Darjeeling, white planters and managers were a distinct minority, but controlled vast labour numbers or coolies from Jharkhand, Orissa and Andhra in addition to locals in Assam and imported Nepali labour in Darjeeling. The servants, drivers and other necessary adjuncts were all “natives”, while the small colonial community went hunting, shooting and fishing, fraternised at clubs and churches and ran hospitals, and wives organised fetes and flower shows. Mortality rates were high and many young colonial and “native” lives were lost, as recorded in numerous cemetery tombstones and registers. Plantation labourers were frequently ill-treated, flogged, beaten and virtually enslaved, while women tea pluckers were used for sexual unions by British and Indian planters and managers, as portrayed in films such as those on Sagina Mahato and Dhanraj Tamang (Moxham, 2009; Dasgupta, 2012. in Kapur, ed., 2012; Chatterji, 2007; Sen, 2016).



*Image 4. Tea Garden Hospital, Assam, 2012. Korangani Tea Estate. Source: Debajit Chaliha.*

## 1.6 Associated communities and settlements

Tea planting communities were very closely associated with priests, educators, communities of missionaries and schoolteachers, as seen in the case of the Wernickes and Christison. Small settlements developed in Assam, such as Dibrugarh and Jorhat, while the hill station of Darjeeling became an Anglicised social enclave, defence cantonment, holiday resort and social, educational and recreational centre. Planters used to spend time there to relax, in renowned places such as the Darjeeling Planters’ Club, the Darjeeling Gymkhana Club, the Windamere Hotel, restaurants such as Glenary’s and cafés like Keventer’s and Nathmull’s tea rooms. The

Indian aristocracy, such as the Cooch Behar and Burdwan royalty, visited the town for pleasure pursuits. The gap between the highest echelons of society and the lowliest coolies was great indeed (Chatterji, 2007).



*Image 5. Tea Garden Bungalow, Assam, 2012. Korangani tea estate. Source: Debajit Chaliha.*

## **1.6 Links to trade, trade routes and economic opportunities**

Tea has been an important commodity for world trade since the days of the Renaissance in Europe. While India was the top-ranking tea trading country for much of the 20<sup>th</sup> and 21<sup>st</sup> centuries, it has recently been overtaken again by China. The UK, USA, Russian Federation, Germany, Poland and Pakistan all import Indian tea. The Indian Tea Board was established in 1949. Nowadays, most British planters and companies have been replaced with Indian ownership and entrepreneurship (Chakravorty, 1997; Banerjee and Banerjee, 2007; see Section 2).

## **1.7 Landscape relationships to others and the national context**

Assam and Darjeeling tea landscapes are geosymbols of the two geographic zones and known in national and international contexts as cultural landscapes and sites for literary, media, film locations and national and international tourism.

## 2. Known and important tea landscapes

### 2.1 Location and size

The number of tea estates in Assam increased from 785 in 1951 to 43,850 in 2005, while the area under tea cultivation in Assam increased from 155,674 hectares in 1951 to 277,880 hectares in 2005, and Assam tea yields increased from 966 kilograms/hectare in 1951 to 1569 kilograms/hectare in 2005. The number of Darjeeling tea estates decreased from 99 in 1951 to 85 in 2005, while the area under tea in Darjeeling district increased from 16,569 hectares in 1951 to 17,518 hectares in 2005 and Darjeeling yields increased from 473 kilograms/hectare in 1951 to 563 kilograms/hectare in 2005 (Banerjee and Banerjee, 2007: 525, 527, 531).

Tea estates are distributed according to various size groups. 98% of the total number of tea estates belong to the size group of up to 10.12 hectares, while the remaining 2% is in the size group of above 10.12 hectares. As many as 200 tea estates have average size holdings between 50 to 100 hectares, while about 300 tea estates have holdings between 100 to 200 hectares, 400 tea estates are in the size group of 200 to 400 hectares, and almost 400 tea estates have size holdings above 400 hectares. Tea is mainly produced in Assam, West Bengal, Tamil Nadu and Kerala, and to a small extent in Tripura, Karnataka, Himachal Pradesh and Uttar Pradesh. The total area under tea cultivation in 1961 was 331,000 hectares, to which north-east and eastern India contributed 77.6% and south India 22.4%. It increased to 518,000 hectares in 2005. Production improved from 354 million kilograms to 850 million kilograms between 1961 and 2005. Tea is also cultivated in Mizoram, Manipur, Orissa, Arunachal Pradesh, Meghalaya and Uttaranchal. In India, tea growing zones are located in the monsoon belt comprising Assam, West Bengal and the foothills of the Himalaya in the north, and on the moist slopes and plateaus of the Western Ghats in the south (Banerjee and Banerjee, 2007: 312-313).

### 2.2 Key characteristics of each landscape and harvesting

Assam tea landscapes are mostly located in lowland areas in the Brahmaputra Valley and the foothills while Darjeeling tea landscapes are mostly at high elevations in the Himalaya. Labour characteristics also vary: while Assam gardens employ local tribes and people coming from other parts of India, Darjeeling gardens mostly employ labourers from Nepal. Assam tea is a black tea, grown at or near sea level, known for its body, briskness, malty flavour and strong, bright colour. Assam tea or the blends containing it are often sold as breakfast tea. The zone also produces smaller quantities of green and white tea with distinctive characteristics. Southern China and Assam are the only two areas in the world with native tea plants. The Assam tea bush grows in an area of clay soil enriched by the nutrients of the Brahmaputra

floodplain. The climate varies between a cool, arid winter and a hot, humid rainy season: ideal conditions for growing tea. Due to its lengthy growing season and generous rainfall, Assam is one of the most prolific tea production areas in the world. Assam tea is generally harvested twice: a first and second flush. The first flush is usually harvested in late March, while the second flush, prized as ‘tippy tea’ due to the golden tips on the leaves, is harvested later: it is sweeter, more full-bodied and superior to the first flush. Assam tea leaves are dark green, glossy and quite wide, while the bush produces delicate white blossoms (Wikipedia, 2017).



*Image 6. Tea Garden Plucker, Assam 2012, Korangani Tea Estate. Source: Debajit Chaliha.*

Darjeeling tea from the Darjeeling district of West Bengal is available as black, green, white and oolong. It yields a thin-bodied, light-coloured infusion with a floral aroma. The flavour can include a tinge of astringent tannic characteristics and a musky spiciness often called “muscatel”. It is usually made of the small-leaved China variety, unlike other Indian tea such as Assam. While black tea is produced traditionally, green, oolong and white tea are now more easily found, and several estates like Makaibari specialise in organic tea. After the enactment of the Geographical Indications of Goods (*Registration & Protection Act, 1999*) in 2003, Darjeeling tea was the first Indian product to receive a GI tag in 2004-2005. A crop is harvested between two flushes. The first flush is harvested in mid-March following spring rains: it has a gentle, very light colour, aroma and mild astringency. The second flush is harvested in June and yields an amber, full-bodied muscatel-flavoured cup. Monsoon or rains tea, harvested in the rains, is less withered, more oxidised and sold at lower prices. Much is consumed in India as “masala chai”. The autumnal flush is harvested after the rains and is more full-bodied and darker (Wikipedia, 2017). It may be inferred that Assam produces quantity and Darjeeling produces quality.

### 2.3 Planting traditions

The first step in the preparation of land for tea is to clear trees and shrubs, best done by grubbing them out from the roots. Trees, stumps and bamboo roots are then rolled down into ravines where they may be chopped up for fuel. Some planters dig to about 40 centimetres all over, grubbing out stumps and roots; many planters form the land into terraces at this stage, while others prefer to form them after planting is done. This is one of the most important forms of work in tea gardens, as its prosperity and very existence depends on soil stability, as loose soil is washed away by torrential rain.

The land having been prepared, germinating beds are formed for seeds, and nurseries made at different points where water is available and the land to be planted is quite near. The soil in nurseries should be thoroughly pulverised and all jungle, roots and stones removed. Beds 1.5 metres wide are assembled on fairly level land with shallow drains in between. Sometimes the seed is sown directly into the nursery beds, but if the quality is at all doubtful, it should be germinated in a hot-bed. A good seed is sown 2.5 centimetres deep and 1.5 metres apart. As soon as the plants have sprung up and their individual character indicated, unsatisfactory, weak or blighted seedlings are rejected. After the land is dug all over and the soil thoroughly pulverised, stakes are put into the ground to demarcate planting sites. The task requires ingenuity and care, as it is necessary to arrange the plants in straight lines up and down hillsides, slopes and ridges, and simultaneously plant them out in the terraces without loss of space or overcrowding. The distance between plants in terraces is 1.5 by 1.5 square metres, that is 2,722 plants to the acre. In some estates the plants are much closer, but this crowding is a drawback. The pure Assam indigenous requires some distance, while the early planting at Darjeeling was done in the system called "seed at stake": the seed is taken from the germinating beds upon sprouting and placed in the ground, one or two at each stake.

Planting out seedlings is done during the first monsoon months with great care. The most successful work is done in winter when the plants are taken up very carefully, each with the soil around its roots adhering in a hard, unbroken ball. Many older estates have deteriorated due to destructive methods of culture, especially persistent digging during the monsoons. Later, better methods were followed, such as carrying out digging only in the dry season and hand-weeding during the rains while keeping terrace faces and spaces between lines free of weeds by sickling. Manure from stables and byres and the old thatch from the coolie lines is required. As artificial manure is too expensive, top dressing with new soil from forests is the best way of improving the land. Mulching with leaves is of great value as are leguminous plants, trees and crops. Pruning is usually carried out a year after planting, extending the life of tea bushes to 100 years. The plucking of young leaves or "two leaves and a bud" is done after spring: the bud makes "orange pekoe" and "broken orange pekoe", the young leaf is "pekoe" while the coarser leaf is "pekoe souchong". A growth of shoots is a "flush". Plucking begins at the end of March and closes in November. The pluckers are so quick and skilful that it is impossible to follow the motion of their hands as they work (O'Malley, 1907: 78-82).

## 2.4 Types of tea

From data collected from the estates surveyed, it may be seen that various areas of field operations are necessary like the standards of plucking, spacing, irrigation, fertiliser applications, weeds, pest and disease management, pruning cycles and plucking operations. Factory operations are one of the key areas of the tea industry. In Darjeeling, 82% of tea is manufactured by the Orthodox method, followed by 17% by the CTC (Crush, Tear, Curl)

method, and 1% is green tea. Green tea, white tea and oolong are the other main types produced (Banerjee and Banerjee, 2007).

## 2.5 Tea processing and manufacture

There are between two and seven procedures involved in the processing of fresh tea leaves, and the addition or exclusion of any of these stages results in a different type of tea. Each procedure is carried out in a climate-controlled facility to avoid spoilage due to excess moisture and fluctuating temperatures.

- (a) *Withering* refers to the wilting of fresh green tea leaves. The purpose of withering is to reduce the moisture content in the leaves and allow the flavour compounds to develop. While it can be done outdoors, controlled withering usually takes place indoors. Freshly plucked leaves are laid out in a series of troughs and subjected to hot air forced from underneath the troughs. During the course of withering, the moisture content in the leaf goes down by about 30%, making the leaf limp and sufficiently soft for rolling. Additionally, the volatile compounds in the leaf, including the level of caffeine and the flavours, start intensifying. A short wither allows the leaves to retain a green appearance and grassy flavours while longer withering darkens the leaf and intensifies aromatic compounds.
- (b) *Fixing* or “*kill-green*” refers to the process by which the enzymatic browning of the wilted leaves is controlled through heat application. It appears that the longer it takes to fix the leaves, the more aromatic will be the tea. Fixing is done via steaming, pan firing, baking or using heated tumblers. Steam application heats the leaves more quickly than pan firing, and resultant steam teas taste “green” and vegetal while pan-fired teas taste toasty. The process is carried out for green and yellow teas.
- (c) *Oxidation* leads to the browning of the leaves and intensification of flavour compounds. Immediately after plucking, cells within tea leaves are exposed to oxygen, and internal volatile compounds start undergoing chemical reactions. At this stage, polyphenolic oxidase, including theaflavin and thearubigin, begin to develop in the leaves. Theaflavins impart briskness and brightness to the tea while thearubigins offer depth and fullness to the liquor. In order to instil specific intensities in flavours, tea manufacturers control the amount of oxidation the leaves undergo. Controlled oxidation is usually done in a large room where the temperature is maintained at 25-30°C and humidity stands at 60-70%. Withered and rolled leaves are spread out on long shelves and left to ferment for a fixed time period, depending on the type of tea being made. In order to stop or slow down oxidation, fermented leaves are moved to a panning trough to be heated and dried. The leaves are completely transformed due to oxidation and exhibit an aroma and taste profile that is completely different from that of leaves that do not undergo the process. Less oxidised teas tend to retain their green colour and vegetal characteristics due to a lower production of

polyphenols. Semi-oxidised leaves are brown and produce yellow-amber liquor. In fully oxidised tea, amino acids and lipids break down completely, turning the leaves blackish-brown with brisk, imposing flavours.

- (d) *Rolling* involves shaping processed leaves into a tight form. Wilted or fixed leaves are gently rolled and, depending on the style, they are shaped to look wiry, kneaded, or as tightly rolled pellets. During rolling, essential oils and saps ooze out of the leaves, intensifying flavours. The more tightly rolled the leaves, the longer they retain their freshness.
- (e) *Drying* tea is a way of reducing its moisture content to below 1%. Drying enhances flavours and ensures a long shelf-life; it is done at various stages of production. In order to dry the leaves, they are fired and roasted at a low temperature for a controlled time period, usually inside an industrial scale oven. Leaves that are dried too quickly turn abrasive and taste harsh.
- (f) *Aging and fermentation* are sometimes used to make the tea more palatable, like wine (Wikipedia, 2017).

Between 1870 and 1880, several changes occurred in the manufacturing process, particularly in Darjeeling. Engineers raised it from a hotchpotch of “native” practices to a streamlined industrial organisation of contemporary times. The modern tea roller is essentially the same as its hand-operated parent of 1870. The first steam boiler plant reached the Tukvar Tea Company in 1872 from the Bengal plains due to the initiative of Colonel Ansell. By 1880, power-driven rolling machines were more widely used. The hand roller consisted of parts to give a “rotary” movement to a flat table: the leaves were thrown on the table and hand manipulated by men around the table.

Around 1870, Jackson’s rolling machine was introduced, while by 1880, Jackson’s cross action and hand rod roller were developed. The movement was not circular but backward and forward for the table and right to left and reverse for the box. Pressure was applied by spiral springs under the four corners of the table which supported it and kept it against the box, taking about 130 pounds of withered leaves working at 83 revolutions per minute. Next, Kinmod’s double-action “Excelsior” roller machine was marketed. This roller gave good results and was much used in early factories, taking 2-3 maunds of withered leaves. It was followed by Jackson’s little giant single action roller machine, which took about 60 pounds of withered leaves and had a cap, pressure screw and handwheel. After the “chulas”, the first comprehensive drying apparatus was Davidson’s box pattern, with 4-5 superimposed trays working in angle iron slides (Banerjee and Banerjee, 2007).

After firing, the tea is sifted by machinery into various grades according to the size of the leaf and the manufacture is complete. It is then packed in the famous chests of commerce. This is done on most large estates by machinery. Tea is mostly packed in close-fitting chests lined with lead which have to be carefully soldered up, as tea is very susceptible to moisture, and hermetically sealed in order to retain its flavour and aroma. Several tea factories were built in

locations where advantage could be taken of the water-power available in the mountain streams on estates (O'Malley, 1907: 83). In modern times, the manufacture of tea bags, instant tea, loose tea and tea powder have assumed importance (Banerjee and Banerjee, 2007).

## 2.6 Social structures and cultural systems

Besides the trials and tribulations of opening up forested lands, planting tea and nurturing bushes, early planters in Assam also faced the reverberations of the 1857 War/Mutiny. "Native" infantry stationed at Chittagong rebelled and volunteer forces were raised from amongst planters such as the Sibsagar Mounted Rifles, the Darrang Mounted Rifles and others, collectively named the Assam Valley Light Horse, in 1900. Tribal uprisings also meant measures had to be taken to protect the white planting community. Several British army officers became planters and bought tea gardens.

Another major preoccupation of planters was the collection and retention of the labour force. Assam was very sparsely populated, and local, settled agricultural families were loath to leave their homesteads to work in gardens. The 1820s Burmese incursions still troubled the local people. Planters turned to labour from Bengal (Bankura and Purulia), Ranchi and Hazaribagh in modern Jharkhand, Ganjam in Orissa, and Telengana, formerly Andhra Pradesh. These areas were poor, hilly and stony, and suffered from drought as well as the depredations of the oppressive landed gentry, and little effort was required to attract poor and backward people, often tribals, to migrate to Assam and work on plantations. A recruitment system and transport had to be provided, and a Superintendent of Emigrations was constituted with regulations and licenses for recruitment issued by provincial authorities and district administration. Standards for ventilation, the provision of drinking water and health check-ups were set down.

A "Way Bid" proforma was initiated to keep track of the numbers recruited, the numbers actually reaching the gardens and any deaths or desertions along the way; these were kept with the master of the steamer and train guards. The actual recruitment was first done by European assistants, unsatisfactorily, in early 1840-1850, and later by tea gardens directly through the "sirdar" system: one senior labourer was deputed to the tribal areas of eastern India to meet village or tribal heads and persuade people to migrate to Assam. The "arcutty", or labour contractors or agencies, were also used for this purpose – they were adept at convincing prospective labourers to move from their impoverished small farms to the wetter and cooler Assam. The "sirdars" were instructed to recruit married couples. Most gardens allowed the immigrant labourers to cultivate rice and vegetables on small plots within garden areas; this continues today. However, it was not an easy life and most workers endured serious privations, ill-health and flogging for absenteeism or missing out on work without leave (Dasgupta, 2012: in Kapur ed., 2012).

The gap between the white sahib minority, local gentry planters, and the coolies at the lowest echelons of the social system was indeed vast. Women tea pluckers were often exploited and used for illicit sexual unions by white and Indian planters, managers or assistants. Meetings of the workers in gardens were prohibited except for religious and social purposes. Planters justified their action of preventing outsiders from entering labour lines with the exercise of their right to private property. Therefore, planters segregated workers, who were unorganised and unable to protect themselves, while the planters' interests were protected by the most powerful and well-organised organisation in the country (Chatterji, 2007; Chakravorty, 1997). In the Assam tea plantations, success was built upon a highly exploitative and draconian labour regime. No other "modern" Indian industry operated for so long with labourers tied down by penal contracts in the harshest of physical conditions. The Assam labour system was like "slavery" and later "serfdom" (Sen, 2016: xvi).

Darjeeling tea gardens mostly employed Nepali labour. The *Census of 1901* stated that tea garden labourers and their dependents accounted for over two-thirds of the total district population. General agriculture also attracted immigrants. The Nepalis, among other immigrants, came to this area, partly enticed by the British to work on tea plantations and road or building construction, and partly due to the poverty of their birth places in Nepal. Those Nepalis who could not work in tea gardens pursued agriculture, and many were engaged in the trans-Himalayan trade between Tibet and the East India Company. From the mid-19<sup>th</sup> century, the zone became a great recruiting ground for the British Army, and the Nepali social groups or Gorkhas were found highly suitable for military careers as "martial races".

The growth of the Nepali population in this area meant employment opened up in the tertiary sector by the first decade of the 20<sup>th</sup> century.

Subsequently, the increased number of government offices and tourism, commerce and educational institutions led to the growth of Darjeeling town's population. It became the "summer capital" of the Bengal Government from the 1870s and a leading hill station. Since the inception of immigration in the district, people belonging to many castes and tribes, speaking over a dozen Indo-Aryan and Tibeto-Burman tongues and hailing from Nepal, have always been in a majority. An 1891 census indicated that of the district population of 223,314 persons, 88,000 were born in Nepal, excluding those whose parents and grandparents were



*Image 7. Nepali Tea Garden Coolie. Darjeeling, 2012. Source: Aditi Chatterji.*

born in Nepal. In 1901, 61% of the district population was of Nepali origin, including the following castes and tribes irrespective of religion: Nepali Brahmins, Chhetris or Khasas, Newars, Thakuris, Sanyasis, Gurungs, Mangars, Sunwars, Rais or Jimdars, Khambas, Yakhas, Ghartis, Murmis or Tamangs, Kamis, Sarkis, Damais and Limbus. 27% were Tribes and Scheduled Castes from the Indian plains, including the Rajbansis, Koches, Oraons, Mundas and Santals among others. Lepchas, the original inhabitants of the area, constituted 4% while the Bhutias (including the Sikkimese-Tibetans or Sikkimese Khampas, the Nepalese-Tibetans or Sherpas and the Bhutanese Bhutias or Dukpa or Drukpa, Kagatey and Yolmo Bhutias) formed 3% and the Tibetans 1% of the population. The remaining 4% consisted of people belonging to Hindu upper castes, Muslims and non-tribal Christians from the plains and Europeans. In 1931, people of Nepali extraction, including Sherpas and Limbus, formed about 52%; the Tribes and Scheduled Castes from the plains about 21%; the Lepchas and Sikkimese Tibetans about 4%; the Bhutanese and Tibetans about 1% each; while the remainder were Hindu upper castes, Muslims, non-tribal Christians from the plains and Europeans. Bengalis together accounted for 11.5% of the 1941 district population; tribes from the Indian plains 7.2%; while other plains people such as Hindus and Muslims from Bihar and Uttar Pradesh and Jains and Hindus from Rajasthan accounted for 7.4%. The remaining 6.7% were Anglo-Indians, other Asians and Europeans.

A large number of Tibetans came over after the Chinese occupation of Tibet. The exodus of Tibetans to India began in mid-1951, while most Tibetan refugees arrived from 1959. Bengali-speakers accounted for 18.43% of the district population, and Nepali-speakers 59.09%, after 1947. The 1971 census recorded 81.44% Hindus, 11.68% Buddhists, 3.71% Christians and 3% Muslims in the district population (Chatterji, 2007).

The white minority were mostly tea planters, called “sahibs” or “ma-baap”

by Nepali tea garden labour, and treated with devotion. They were located in tea garden bungalows and fraternised at clubs, churches and sporting events in Darjeeling town as well as in remote plantation areas. Anthony D. King (1976, 1984) has studied bungalows and clubs as distinctive features of British colonial cultures. The Darjeeling Planters Club and Darjeeling Gymkhana Club were favourite recreation spaces, as was the Lebung racecourse. Schools like the Loreto Convent (1846), North Point College, Mount Hermon, St Paul’s and others were established for British and Anglo-Indian children to have a healthy English education in



*Image 8. Interior, Darjeeling Planter's Club, 2012.*

*Source: Aditi Chatterji.*

invigorating environments, while Darjeeling also served as a summer health resort and tuberculosis sanatorium (Chatterji, 2007).

## 2.7 Associated communities and settlement landscapes

The power structure of the three major ethnic groups in Assam and Darjeeling lay within three communities: the white British, the Indian elite, namely Assamese and Bengalis, and the immigrant labour dominance, namely Assamese in general and the Nepalis in Darjeeling. While the white British minority controlled the cultural landscape of the Brahmaputra Valley, Assam and the Darjeeling hills, necessary adjuncts were the Anglo-Indian community, often the result of British/Indian sexual unions and either sent to school in Britain or to the missionary schools and colleges in the towns of Darjeeling, Kurseong and Kalimpong, run by Christian missionaries, or to Dr Graham's Colonial Homes in Kalimpong.

In Assam, Maniram Dutta Borbhandar Barua Dewan (1806-1858), dewan or minister to the Ahom prince, Raja Purandar Singh, dewan or land agent of the Assam Company and a successful tea planter in the 1840s, was hanged for sedition and rebellion by the British after the 1857 War/Mutiny. He was followed by several of the Assam "native" gentry, including Rosheswar Barua, who established six tea estates; Rai Bahadur Bisturam Barua and Rai Bahadur Sib Prasad Barua, both of the renowned Khongiya Barua family; Rai Bahadur Jagannath Barua; Rai Bahadur Krishnakant Barua; Kaliprasad Chaliha; Hemadhar Barua; and the Rajasthani Navrangrai Agarwalla. In Cachar, two Bengali gentlemen, Baikuntha Chandra Gupta and Dinanath Datta, established tea gardens and constituted the Cachar Native Joint Stock Company Limited in 1878 to finance them (Dasgupta, 2012: 14-15. in Kapur, ed., 2012).

The Banerjee family had huge plantations at Happy Valley garden in Darjeeling and Makaibari garden in Kurseong. Bipra Das Palchaudhuri was a pioneer Brahma Samajist England-educated planter and an engineer of wealth and social standing, who was zamindar of Maheshganj and opened up Terai gardens (Gayabari, Tindharia and Mohurgong) with Assam seed obtained from his friend Ananda Mohan Bose (Banerjee and Banerjee, 2007).

Settlements were mostly small and remote in the widespread Assam Valley, where tea garden bungalows, clubs, golf courses, hospitals, churches and cemeteries formed little clusters in locations like Dibrugarh, Jorhat, Darrang and other scattered locations (see plates). Darjeeling town developed as a high elevation urban settlement replicating British landscapes. O'Malley (1907) describes Darjeeling landscapes: the town of Darjeeling was situated on a long spur, projecting to the north from the Senchal-Singalila Mountains. The spur rose abruptly from Ghoom to 2,403 metres at Katapahar, and gradually declined to 2,292 metres at Jalapahar and to 2,134 metres at the Chaurasta, after which it divided into two: the Lebong Spur and the Takvar Spur, which sank down into the Rangit Valley. Darjeeling town is situated on a range that resembles a Y, the base being located at Ghoom, the ridge then stretching from Katapahar

to the Chaurasta before arms on the right and left are formed by the spurs on which stood Lebong (1,811.9 metres) and Birch Hill, the highest point of which was 2,095 metres above sea-level. The total station area was nearly 1,282 hectares, and the difference in height between the highest and lowest points was 609.6 metres. The ridge was very narrow at the top, along which some of the European houses were perched, while others occupied positions on its flanks. The eastern slope, which looked down into the Rangnu Valley, was very steep, while the western slope was much gentler, and most of the public buildings and the bazaar were built along the latter. Below the bazaar lay the jail, the Botanic Garden and the “native” town, which was chiefly occupied by the poorer classes of “natives” and consisted of huts built without method or regularity. Still further down were tea gardens, which came up to the limits of the houses (Chatterji, 2007).



*Image 9. Happy Valley Tea Garden, Darjeeling, 2012. Source: Aditi Chatterji.*

## 2.8 Links to trade and trade routes

Tea has always been a widely traded commodity, with links to the national and international markets. North Indian tea is marketed through auctions at Kolkata (Koehler, 2015), Guwahati, Siliguri, Amritsar and London. Indian exports of tea during the last five decades have fluctuated; but comprise around 200 million kilograms, exported to about 35 countries. Internal consumption rose from 31% of total production in 1947 to 78% of total production in 2004. The main countries to which India exports tea are the UK, Ireland, Germany, Poland and the Russian

Federation. Packet exports between 1981 and 2004 increased from 32 million kilograms to 125 million kilograms, a 400% increase. The instant tea sold nearly doubled from 0.78 million kilograms to 117.68 million kilograms. The total value of Indian exports in 2004 was Rs. 990.50 crores, against Rs. 55.38 crores in 1947 (Banerjee and Banerjee, 2007).

Darjeeling tea is transported by road and rail to Kolkata warehouses and then to buyers or auction houses. The Darjeeling Himalayan Railway has operated since 1881. In the early days, Assam tea was transported by boat via rivers and rail (Koehler, 2015; Dasgupta, 2012. in Kapur ed., 2012).

### **3. Existing documentation**

#### **3.1 Landscape surveys**

Some of the old plantation records and documents are available in the European manuscripts section of the Oriental and India Office Collections of the British Library, while information is also available from the British Association for Cemeteries in South Asia's (BACSA) records and publications.

#### **3.2 Photographs and photographic surveys**

Some excellent photographic collections with data captions and fascinating text have been published by the Indian National Trust for Art and Cultural Heritage (INTACH), including *Burra Bungalows and All That*, published by INTACH in 2012, and a repository of old and new photographs about tea gardens in Assam. The texts and photographs are provided by Prosenjit Dasgupta and the collections are edited by Gour Mohan Kapur. Another forthcoming book on tea bungalows in Bengal is edited by Gour Mohan Kapur, with beautiful photographs by Nikhil Kapur.

#### **3.3 Archaeological surveys**

The industrial archaeology of the scientific equipment and machinery, modes of transport and memorabilia are all included in the collections published by INTACH in 2012 (Dasgupta, 2012. in Kapur, ed., 2012).

#### **3.4 Inventories regarding recent mapping and databases**

The Indian Tea Association produced location maps in 1999 with grid spatial analysis to indicate the spatial location of tea gardens in Assam. Topographical sheets of the Survey of India of

Darjeeling are restricted as it is a frontier area, but the National Atlas and Thematic Mapping Organisation (NATMO) has created some maps. Wikipedia has well documented articles on Assam, Darjeeling, Assam Tea, Darjeeling Tea, the Darjeeling Himalayan Railway and other related aspects.

### 3.5 Archive documents, written sources, early maps and plans

The British Library in London has several detailed maps of Darjeeling town in the 1880s, which the author consulted for her doctoral thesis on Darjeeling. There is a considerable number of historical accounts, books and gazetteers of Assam and Darjeeling written by British administrators like Sir E. Gait and L.S.S. O'Malley.

### 3.6 Conclusion

While a flourishing source of data by British administrators, planters and plantation companies exists, recent efforts are largely undertaken by INTACH, while the author's doctoral thesis, *Contested Landscapes: The Story of Darjeeling*, published by INTACH in 2007, also has a considerable data collection on British and Indian landscapes of Darjeeling as well as the Gorkhaland movement.

## 4. State of historical and technical knowledge on tea landscapes

### 4.1 Period of flourishing landscapes

The development of the Indian tea industry may be grouped into two major periods: the pre-five-year plan period (1850-1950) and the five-year plans (1952-2007 onwards). The first may be sub-divided into four periods: the period of rapid growth from 1850-1890; the period of stability from 1890-1918; the inter-war period from 1918-1939; and the period of prosperity from 1939-1950.

During the period of rapid growth, the industry registered remarkable progress. The area under tea cultivation grew from 750 hectares in 1852 to 152,000 hectares in 1890, indicating an annual average growth rate of 504%. Production increased from 97,000 kilograms in 1850 to 57 million kilograms in 1890, accounting for an average annual growth rate of 14.66%. The yield increased from 138 kilograms/hectare to 373 kilograms/hectare. The factors responsible for this progress were many, including government grants with easy terms and conditions to planters; the leasing of land to planters at nominal rents; the low investment cost per acre of

land (varying between Rs. 40-70); the emergence of private entrepreneurs in tea cultivation; the availability of labour in the early years; the formation of the Indian Tea Association in May 1881; the spread of tea cultivation in government plantations; the improvement of manufacture methods (introduction of the mechanical roller in 1870, the dryer in 1877 and mechanical packaging); the formation of the Kolkata Tea Brokers Association in 1879; the operation of a daily paddle steamer service between Kolkata and Guwahati in 1883; the opening of the first railway line in Assam (Jorhat Provincial and Dibursadia) in 1885; and the establishment of the Kolkata Tea Traders Association.

During the period of stability, the tea industry witnessed an all-round development. The area increased from 152,000 hectares to 275,000 hectares (average annual growth rate 2.9%), while production increased from 57 million kilograms to 173 million kilograms (average annual growth rate 7.3%), and yields increased from 373 kilograms/hectare to 692 kilograms/hectare, showing an average annual growth rate of 2.5%. This was mostly due to the development of the industry in south India in 1895; the formation of the United Planters Association of South India (UPASI) at Coonoor in 1894 and associations in Assam and Bengal; the appointment of Dr Mann as Scientific Officer in the laboratory of the Indian Museum in Kolkata to pursue scientific research; the enactment of the *Tea Cess Act* in 1903 by the Indian Government to raise funds for the promotion of tea abroad; the imposition of a levy of 28 paise per 100 kilograms of tea; the construction of the Assam-Bengal metre gauge railway line in 1910; the establishment of a scientific department in 1909 by UPASI, undertaking tea research exclusively; the shifting of the research station to Tocklai in 1911; the development of the domestic tea market in 1918, the direction to make provisions in the India *Tea Cess Act* for team promotion in India; and the formation of the Indian Tea Planters Association in Jalpaiguri in 1918.

During the inter-war period, the tea industry experienced many fluctuations. The area increased from 275,000 hectares to 337,000 hectares, and production from 173 million kilograms to 205 million kilograms, mainly due to areal expansion. The average annual rate of areal growth was 1.1%, while production growth was 0.9%. The average annual growth rate of tea exports was 0.5%, while internal consumption stood at 2.9% and 1.2% per head annual consumption. The international depression of 1929 had an impact on tea. The tea market was so depressed that it was not remunerative to start a tea cultivation. To solve the problem, the first *International Tea Agreement* (ITA) was signed in 1933 and the *Tea Control Act* (1933) was introduced. The International Tea Committee (ITC), the Tea Cess Committee (1937) and the Indian Tea Market Expansion Board were constituted.

The outbreak of World War II, the introduction of the bulk purchase scheme, Indian Independence, the further extension of the *Tea Agreement*, the creation of the Central Tea Board and the establishment of a new auction centre at Cochin were all major events leading to the prosperity of the tea industry. There was a decline in area by 6.2%, while production increased by 36% and yield by 44%. Internal consumption increased by 92%, exports by 22% and per head consumption by 64%.

During the *First Five Year Plan* (1951-1956), the industry developed due to the participation of private entrepreneurs. The *Second Plan* (1956-61) saw the average annual growth rate of area decline by 1.7%, but production and yield grew, and though exports declined, internal consumption increased by 8.9%. The factors affecting the growth of the industry were the long-lasting Suez Canal crisis in 1956; the submission of the *Report of the Plantation Inquiry Commission* to the government; the issuance of the *Tea Distribution and Export Control Order* of 1957; the *Tea Waste Control Order* of 1959; and the formation of the Tea Association of India in 1956. During the *Third Plan* (1961-1966), exports and foreign exchange earnings declined, and the China and Indo-Pakistani Wars caused problems. From 1964 onwards, the Food and Agriculture Organisation of the United Nations (FAO) introduced regulations on exports.

The *Annual Plans* (1966-1969) saw decline, but the *Fourth Plan* (1969-1974) saw growth as the government passed the *Foreign Exchange Regulatory Act* in 1973, which quickened the Indianisation of the industry. During the *Fifth Plan*, area, production, yield and consumption increased. Positive moves included setting up the Indian Tea Industry Development Association and a new auction centre at Siliguri in 1974 and 1976, respectively, while the Committee on Tea Marketing made proposals and tea bag manufacture received a fillip. The *Sixth Plan* (1980-1985) saw overall growth primarily due to actions by the government and the Reserve Bank of India. The *Seventh Plan* (1985-1990) saw progress. Both West Bengal and Assam were advised to expand areas under tea cultivation and witnessed development programmes, new planting and rejuvenation. The *Eighth Plan* (1991-1996) saw increased growth, yield, production and sales but there was a fall in productivity during the *Ninth Plan* (1997-2002), and the *Tenth Plan* (2002-2007) saw exports decline. The government, Tea Board and various multinational and corporate companies took several initiatives to promote the industry and tea culture. Production and yield generally increased between 1950 and 2007, except for 1999, 2002 and 2005 (Banerjee and Banerjee, 2007: 325-343).

## 4.2 Evolution of landscapes

The characteristic tea garden landscapes evolved mostly due to the destruction of forests; however, the Darjeeling tea landscapes still represent the classic undulating green tea bush covered slopes with shade trees and forested hills in the background, with pluckers moving in rows and the isolated managers' bungalows, factories and coolie lines dotting separate areas. In Assam, the improvement of transport routes, roads and rail has been undertaken.

## 4.3 State of current research on tea

There are several current research publications on the scientific research undertaken on tea cultivation and manufacture and the sociological conditions of workers, which has received considerable attention.

Tea garden bungalows have been attracting publications with excellent photographs recently (Chakravorty, 1997; Banerjee and Banerjee, 2007; Sen, 2016). Tea planters like Swaraj Kumar Banerjee of Makaibari have written books about scientific tea culture, and gourmet Jeff Koehler (2015) has written a fascinating account on Darjeeling tea. Kapur's publication (ed. 2012) includes Prosenjit Dasgupta's evocative text and beautiful photographs of Assam and Darjeeling plantation landscapes.

## **5. Threats to tea landscapes**

### **5.1 Pressure from new development**

The various Assam and Darjeeling tea companies mostly belong to Assamese, Bengali and Marwari entrepreneurs, who have assumed control over the erstwhile British cultural landscapes. Tea tourism and festivals, the cultivation of organic tea and the establishment of tea homestays like the "Glenburn" estate in Darjeeling have been carried out. The separatist movements in the 1970s and 1980s caused problems for the tea gardens. (Chatterji, 2007; Koehler, 2015).

### **5.2 Abandonment of traditional cultural practices**

The glorious old days of the white plantocracy with the "native" labouring community have terminated with Indianness. Bengalis have left Darjeeling for Siliguri, Kolkata and elsewhere in large numbers.

### **5.3 Changes in social structures**

The cultural landscape of Assam and Darjeeling tea estates saw three shifts in power by ethnic groups: the white community, the Indian aristocracy and middle-class Bengalis, and the indigenes/immigrants. The Nepali dominance for almost 20 years over the Darjeeling cultural landscape has been studied by Subba (1992), Chatterji (2007) and Koehler (2015).

### **5.4 Other problems**

Scientific diseases from blights such as the dreaded red spider, climatic hazards, landslides and the 2017 floods in eastern and north-eastern India have all been threats to the tea landscapes of Assam and Darjeeling.

## 5.5 Changes to integral buildings and related settlements

In Assam, white planters initially lived under canvas or in thatched huts and later had to build their own bungalows, labour lines and factory sheds. Factories were rudimentary and large enough to house the withering, rolling, fermentation, drying, sorting and packing systems. Building materials were mostly forest timber, thatching grass and reeds. There were two bungalow types: the “mati” bungalow at ground level, generally on a high piece of ground in a clearing with good surrounding natural drainage, or the more common “chang” type, built on high posts above leeches, snakes, insects and bad air. Assam being susceptible to earthquakes, the walls were frequently made of “ikra” reed daubed with earth, or timber plankings with thatched roofs, although corrugated iron sheets were used from the 1860s. Subsequently, the 20<sup>th</sup> century saw more sturdy structures being constructed following the need for factories to house more sophisticated machinery (Dasgupta, 2012. In Kapur, ed., 2012; Moxham, 2009).

## 6. Protection

### 6.1 Legal protection

Since Independence, the *Plantation Labour Act* (1951) has been applied to tea, coffee, rubber and cinchona plantations covering 12.5 acres (5 hectares) or more on which 15 or more persons are employed or were employed on any day in the preceding 12 months. The state government could request central government approval to make the provisions of the Act applicable to any other class of plantation meeting the criteria within that state. Under the 1960 amendments to the Act, state governments were authorised to declare the Act applicable in whole or partially to similar plantations employing under 15 workers. The definition has been retained in the *Payment of Gratuity Act* (1972) which is also applicable to plantations (Chakravorty, 1997).

### 6.2 Planning and other formal protection

Since Independence, the interests of tea planters have been protected by organisations like the Assam Tea Planters’ Association, Bharatiya Cha Parishad, the Indian Tea Planters’ Association and the Tea Association of India, which are now united under the Plantations Association with headquarters in Kolkata. Although the *Trade Unions Act* was passed in 1926, tea workers were not then allowed to form associations. However, by 1957, there were 101 trade unions in the tea plantation industry. The major trade unions of Assam plantation workers are the Assam Chah Mazdoor Sangh (INTUC), the Akhil Bharatiya Chah Mazdoor Sangh (AITUC), the Assam Tea Labourer’s Association and the Assam Chah Karmachari Sangh (INTUC). The Assam Tea

Corporation was created in the public sector by the Government of Assam in the 1970s. It has 15 tea estates, employing 16,000 workers (Chakravorty, 1997; see section on development over the plans).

### **6.3 Traditional protection**

The white and Indian plantocracy invested in medical treatments, hospitals, clinics and other forms of preventive medical care for themselves and their workers in remote tea garden areas of Assam, Darjeeling and other plantation areas. The development of small tea holdings and co-operative tea cultivation is widespread in the Nilgiris and UPASI trains Scheduled Tribe communities to cultivate tea on their small holdings (Dasgupta, 2012. in Kapur, ed., 2012; Chatterji, 1997).

## **7. Conservation and management of tea landscapes**

### **7.1 Conservation of natural and cultural features**

Subba (1992) and Chatterji (2007) have studied deforestation in the Darjeeling area in detail. Deforestation began during the British regime, but the large-scale logging of timber for fuel, shipment to the plains, construction material and other uses began after 1947. Climate change due to deforestation, flash floods, landslides and other natural hazards, including soil erosion due to faulty terracing and drainage, have all occurred and now the government is undertaking conservation of natural features. Natural hazards also damage cultural landscapes, including by affecting buildings, roads and the Darjeeling Himalayan Railway.

### **7.2 Management of overall landscapes**

The Forest Departments of the various states affected usually undertake afforestation, as do organisations like the Rotary Clubs and the tea planter community, which distributes saplings and seeds and raises awareness in whole communities. Entire slopes are bare (Chatterji, 2007).

### **7.3 Sustainable development**

Tea landscapes have brought about considerable environmental changes and changes to the scenery. The need for urban and regional planning, scientific farming and population control to deal with faulty sanitation, water supply, sewerage, drainage, atmospheric pollution from cars,

trucks and buses belching smoke and creating pressure on the fragile roads, pollution from plastic and other factors all requires public, private, governmental and municipal attention and funds (Chatterji, 2007).

## 8. Conclusion

The major Indian tea landscapes are seen in Assam, the Darjeeling district of West Bengal, the Nilgiris of Tamil Nadu and parts of the Western Ghats, Uttarkhand, Himachal Pradesh and Tripura. Most tea areas were opened up by pioneer white planters in the 19<sup>th</sup> century and the leading tea companies still bear British names, like Williamson Magor and Duncans. The first tea auction was held at Mincing Lane in London in 1839. After 1947, Indianisation occurred and most gardens have north Indian (Marwari, Punjabi) and corporate ownership.

Assam and Darjeeling have distinct cultural landscapes compared to the rest of the country, but not much research has been carried out on topographic or descriptive features of the cultural landscapes of tea areas. The two zones studied here are both geosymbols and their landscapes present fascinating historical and scientific heritage to the international community. The shifts in power, place and landscape are well represented in these two natural landscape units which are excellent examples of the human impact on the natural environment and could earn foreign exchange and attract Indian visitors as well as foreign, especially British, guests, tourists and academics.

Assam is known as the Garden of India, while Darjeeling is known as having the world's best quality and flavoured tea. Darjeeling tea already has a Geographical Identification label.

Current protection and management is ineffective, therefore it would be good to have national heritage protection for the whole Darjeeling zone and Assam Valley zone as heritage precincts to pave the way for regional development and tourism. It might be possible to create heritage sites in the Assam Valley and Darjeeling and to develop museums and cultural centres encapsulating the rich history and culture of these sites, demonstrating the pioneer planters, whether British, Assamese or Bengali, as well the lives and shared heritage of indentured and Nepali workers: *The Story of Tea*. It is necessary to address climatic and physiographic hazards as well as security issues and improve transport all over the two zones which are geosymbols of outstanding natural and cultural heritage landscapes.

Better transport, safety and programmes to develop Tea Cultural Landscapes would help.

In case of a potential nomination to World Heritage List, both of these areas deserve deeper research and study so as to establish whether they demonstrate Outstanding Universal Value. The Darjeeling Himalayan Railway, Kaziranga National Park and Manas Sanctuary are already UNESCO World Heritage properties.

## Bibliography

Agnew, J.A. and Duncan, J.S., *The power of place: bringing together geographical and sociological imaginations*, Unwin Hyman, London, 1989.

Backhaus, G., "The Problem of Grounding the significance of Symbolic Landscapes" in Backhaus, G. and Murungi, J. eds., *Symbolic Landscape*, Springer Science and Business Media, 2009, pp.3-31.

Bald, C., *Indian Tea A Textbook on the Culture and Manufacture of Tea* 1905, sixth edition rewritten by Harrison, C. J., Thacker, Spink and Co, 1957 reprint N. L. Publishers, Siliguri, 2013.

Banerjee, G. and Banerjee, S., *Darjeeling Tea The Golden Brew*, International Book Distributing Co., Lucknow, 2007.

Bonnemaison, J., *Culture and Space Conceiving a new Cultural Geography*, I B Tauris, London, New York, 2005.

Chakravorty, R. N., *Socio-economic Development of Plantation Workers in North East India*, N.L. Publishers, Dibrugarh, Assam, 1997.

Chatterji, A., *The Changing Landscapes of the Indian Hill Stations – Power, Culture and Tradition*, Prabasi, Calcutta, 1997.

Chatterji, A., *Contested Landscapes: The Story of Darjeeling*, INTACH, Kolkata, 2007.

Cosgrove, D. E., *Social Formation and Symbolic Landscape*, Croom Helm, 1984; reprint University of Wisconsin Press, 1988.

Dasgupta, P., *Burra Bungalows and All That*, INTACH, 2012.

Kapur, G.M. ed, *Burra Bungalows of North Bengal*, 2021, photographs by Nikhil Kapur .

King, A. D., *Colonial Urban Development Culture, Social Power and the Environment*, Routledge and Kegan Paul, London, 1976.

King, A. D., *The Bungalow: The Product of a Global Culture*, Routledge and Kegan Paul, London, 1984.

Koehler, J., *Darjeeling A History of the world's greatest tea*, Bloomsbury, London, New Delhi, 2015.

Moxham, R., *A Brief History of Tea. The Extraordinary Story of the World's Favourite Drink*, Robinson, 2009.

Matless, D., "The Anthroposcenic", *Transactions of the Institute of British Geographers*, Vol 42, No. 3, 2017, pp. 363-376.

O'Malley, L.S.S., *Darjeeling District Gazetteer*, reprint Gyan Publishing House, New Delhi, 1907

Sen, S., ed and compiled, *Passage to Bondage Labour in the Assam Tea Plantations*, Samya, 2016.

Spate, O.H.K. and Learmonth, A.T., *India and Pakistan*, 1972.

Subba, T. B., *Ethnicity, State and Development A Case Study of Gorkhaland Movement in Darjeeling* Har-Anand Publications in association with Vikas Publishing House, New Delhi, 1992.

Valdiya, K. L., *Dynamic Himalaya*, Universities Press, Hyderabad, 1998.

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# Tea Landscapes in Sri Lanka

*Jane Lennon*  
*Honorary Professor University of Melbourne*

## 1. General characteristics

Sri Lanka is a tropical island located in the Northern Hemisphere with distinct wet and dry seasons.

### 1.1 General geographical/ecological/geological data

Sri Lanka is a small island (65,610 km<sup>2</sup>) in the Indian Ocean, 32 km off the south-eastern coast of India and 880 km north of the equator. It is shaped like a teardrop and is 435 km long north to south and 225 km east to west. Much of it is low lying but the central mountains rise to over 2,440 m.

The country experiences a variety of climatic and weather conditions throughout the year with temperatures ranging from 14-27 °C from the hill country to the lowlands, and with southwest and northeast monsoon rains from May-July and December-January, respectively. The temperatures are similar year-round, only slightly warmer in summer. The pattern of rainfall is strongly seasonal. In contrast to most of the tea-growing regions of India, which have a monsoon season in the summer, much of Sri Lanka, including the central and southern regions of the island where much of the tea is grown, experiences two distinct wet seasons and two distinct dry seasons each year. Rainfall and temperature also vary greatly based on altitude and location relative to the mountainous areas. The “wet zone” is where tea plantations flourish and these parts are also very fertile, receiving 2,500 mm rainfall and, in some places, up to 5,000 mm.

These patterns result in unique and vastly different characteristics in the teas grown at different locations within the country. Much of this variation goes unappreciated, as the bulk of the tea exported from Sri Lanka is used in blends.

## 1.2 Historical context: timespan during which the tea landscapes have been in active production and their persistence over time

Ceylon was famous for its spices; Arab and Chinese traders arrived in the first millennium AD, then the Portuguese in 1505, the Dutch in 1636, and the British in 1796, who took control of the port of Colombo and the whole island in 1815. The British transformed the landscape into a plantation economy based on coffee, but native rodents, the Golunda rat, and a fungus (*Hemileia testatrix*) wiped out the crops from 1880 when there were 110,000 ha under cultivation.

Some seeds of *Camellia sinensis* var. *assamica* had been sent from Calcutta Botanical Gardens to the Royal Botanical Gardens at Peradeniya, near Kandy, in 1839, and seedlings were sent the following year. A coffee planter, Maurice Worms, visited China in 1840 and brought back a Chinese worker and tea seedlings, which he planted out on his Rothschild Estate, and tea was made at great expense, but little more was achieved until the 1870s.

The Planters' Association sent one of its members, Arthur Morice, on a tour of Indian tea plantations in 1867, and he reported that there was every likelihood of successful tea cultivation in Ceylon, but as it took six years to produce a profit after the first planting, little action was taken. The director of the Royal Botanical Gardens, however, thought differently and ordered seeds from Calcutta, which were planted out in 1867 by James Taylor, superintendent of the Loolecondera Estate (now Lulkandura estate in the Kandy district), in a commercial planting of 8 ha. By 1875, he had 40 ha under tea cultivation on Loolecondera and a factory there with a water wheel-driven rolling machine.

## 1.3 Scale of landscapes

By 1875, there were over 20 plantations, covering about 400 ha; by 1880, 4,000 ha had been planted. Tea continued to be planted on the old coffee estates and some new land – “low grown” tea (from sea level up to 610 m) was grown on the few estates near the south-west coast; “mid grown” on the old coffee estates between 610–1,220 m above sea level around Kandy; and “high-grown” on the central peak (1250 m and above).

As had happened in India, the Assam varieties tended to perform better at lower altitudes and the Chinese varieties higher, but there was much hybridisation between the two. By 1885, there were over 4,000 ha under tea cultivation, and by 1900, there were 155,000 ha, a remarkable achievement in 20 years. These plantations produced 68 million kg of tea for export, mainly to Britain. This made the tea industry of relatively tiny Ceylon nearly as big as that of India.

#### **1.4 Distribution and characteristic of tea landscapes, including overview of type of plants and methods of cultivation and harvesting, spatial characteristics**

There are six main tea growing regions in Sri Lanka: Kandy, Matale, Matara, Nuwara Eliya, Ratnapura and Uva.

The Assam tea plant is an agrotype which, if left alone, can reach straggly heights of 9-18 m. In cultivation, it is plucked and pruned into a convenient 1 m high bush which may be reached with ease by the picker. There is a correlation in the agrotype between response to fertilizer, leaf type, cell structure morphology, and yield of raw tea per acre. Selection of plants has become intensely practical and discriminating. Ceylon with its rapid expansion was regarded as producing second rate quality tea until after World War I. However, it was realized that if the correct ecotype were planted, pruned and fertilized, and the picking matched the season, the desired result would occur.

The manufacture of tea is carried out on the estate. Mechanization happened early with the use of tea rolling machines to accelerate oxidation. Previously, this was done by hand, but one machine can do the work of up to 100 people.

Bushes are picked more frequently if a higher quality tea is required, and less frequently if quantity is desired. The first spring pick makes the best tea. Frequency of picking depends on the weather, fertilization of the soil, and pruning, etc. The tea leaves should be picked dry, but this is not always possible, and large quantities of low-grade material result from these "rain teas".

The landscape features that can be evident in tea plantations result mainly from the tea plant cultivation process. "Tea nurseries, planting and pruning are important agricultural techniques that help build the unique appearance of the landscape. In general, tea plants have a distance of 0.6 m between each other and a distance of 1.2 m between rows. There are approximately 5,500 tea plants per acre" (Wijetunga & Sung, 2015).

Black teas represent over 95% of the world trade; they are fully processed teas. Green tea is fired before any oxidization occurs (Hobhouse, 1992: 126-7).

"The main landform feature in the tea estate settlements is the extensive plantation. The tea factory, which is large in scale, is the major building component of the estate settlements with staff quarters and worker (coolie-line) houses. The landscape formation of the tea estates mainly concentrated on hill or mountain sites [...] as a tea-terraced landscape. The tea factory is adjacent to the main road constructed during the colonial era and widened or reconstructed during the postcolonial era. The labourers' houses are mostly located next to the tea factory, while some other labourers' houses are scattered throughout the plantation to enable greater estate efficiency. The staff quarters or bungalows are located at a higher elevation than the plantation terrace to enable easy observation and proper governing as well as more protection in the estate settlement" (Wijetunga and Sung, 2015: 676).

## 1.5 Social and cultural systems

Most of the population are descendants of peoples who migrated from India from the first millennium BC - Sinhalese from the north and Tamils from the south. Some small Sinhalese-owned coffee estates were transferred to tea, and a group of Indian Parsees planted tea, but most tea estates were British-owned in the 1880s. Most tea plantations were started by small-scale owners in contrast to those in India. In 1890, Sir Thomas Lipton visited Ceylon and purchased 1,215 ha, which was only about 15% of the tea acreage and provided only a fraction of his needs, the majority of which were supplied from India.

A number of agency businesses developed, arranging the warehousing, shipping and selling of the tea for a group of estates and providing management services for absentee landlords. The Visiting Agent became a power in the industry. It became fashionable for young men “of good family” to come out to Ceylon as tea planters. By 1900, they had built a very social way of life with croquet lawns and tennis courts on their estates, clubs in which to drink and to dance, and games of cricket, golf and polo. European women brought more formal standards to the plantations.

Elephants were a feature of tea plantation life. At first, they were shot by the British for sport and for ivory, although only 60% of male Ceylonese elephants had tusks; later, elephants were domesticated to clear the jungle and remove stumps to enable tea planting. They moved heavy machinery like tea machinery over difficult terrain and were used in the building of roads and bridges.

## 1.6 Associated communities and settlements

A railway link was opened in 1867 from Colombo to Kandy, which proved invaluable for moving tea and tea machinery to and from the coastal port.

## 1.7 Links to trade, trade routes and economic opportunities

British firms operated in conjunction with their northern India tea businesses, and this led to shared commercial intelligence and presumably some economies of scale especially regarding shipping.

## 1.8 How the landscapes relate to others and to their overall regional/national context

The tea landscapes are all adjoined and form a tea growing region, but local topographic variations mean that some are isolated from others.

## 2. Known tea landscapes and important tea landscapes

There are six main tea growing areas shown below (source: Tea-Producing Regions of Sri Lanka / Ceylon, <https://ratetea.com/region/sri-lanka/3/>).

### 2.1 Location and size



Map 1. Kandy District. Map of Sri Lanka. Source: author.

**Kandy** is a district in Sri Lanka that is important in tea production. It is the middle of the three districts in the Central Province, and is located north of Nuwara Eliya, and south of Matale.



Map 2. Matale District. Map of Sri Lanka. Source: author.

**Matale District** is a district in Sri Lanka, one of the three districts in the Central Province, north of Kandy. Matale is home to the Dimbula region of tea production. Although this town is more often spelled Dambulla, and sometimes Dimbulla, in the tea world it tends to be spelled Dimbula.



Map 3. Matara District. Map of Sri Lanka. Source: author.

**Matara district** is a district of Sri Lanka, located on the southern coast of the island. Matara district also contains a small city named Matara, located on the coast, which is the largest city in the district.



Map 4. Nuwara Eliya District. Map of Sri Lanka. Source: author.

**Nuwara Eliya** is a district in central Sri Lanka, and an important tea-growing region. Nuwara Eliya is the southernmost of the three districts in the Central Province of Sri Lanka, just south of Kandy.



Map 5. Ratnapura District. Map of Sri Lanka. Source: author.

**Ratnapura** is a district towards the southwest of the island, but in the interior. Ratnapura is one of the two districts in Sabaragamuwa Province, the other being Kegalle district. It is best-known for its gem mining industry.



Map 6. Uva province. Map of Sri Lanka. Source: author.

**Uva Province** is a province located in the interior of the island to the southeast, placing it on the eastern slopes of the central mountains.

## 2.2 Key characteristics of each landscape

### Kandy

The climate in Kandy is warm and wet all year round. There is substantial seasonal variability in precipitation in this region, but the pattern is quite different from that on the mainland in India and China. February is the driest month, and January and March are still relatively dry. October and November are the wettest months. Due to Kandy's location in the tropics, there is only very slight variation in temperature throughout the year.

Compared to Nuwara Eliya, Kandy is at a lower altitude and has a warmer climate, and, like Uva province, Kandy is subject to drying winds during the dry season. Unlike Uva, however, the prime harvest time here for high-quality teas is during the driest season, from December through to March. The top-rated Kandy tea is from Kenilworth Orange Pekoe (Ceylon black tea).

### Matale

This region is located to the west of the central mountains, and, along with Nuwara Eliya and Uva, is one of the three most well-known tea-growing regions of the country. Dimbula was originally covered by a dense jungle of tropical forests, adapted to the area's strongly seasonal rainfall patterns.

The elevation of tea gardens in this area ranges from 1,000 to 1,700 m, spanning both "mid-grown" and "high-grown" teas. The most desirable teas from Dimbula are picked during the dry season before the monsoon rains start, from January to March (Gascoyne et al, 2011). Teas from Dimbula are often described as having qualities typical or characteristic of Ceylon teas. Twinings and Taylors of Harrogate use Dimbula teas exclusively in their Ceylon tea. Tea gardens in Dimbula include Bogahawatte, a certified Fairtrade tea plantation, Bogawantalawa and Kirkoswald.

### Matara

This district is in the region of Sri Lanka that receives a high amount of rainfall, which is suitable for growing tea plants, in contrast to the area farther east along the coast which is much drier. Matara district is home to Lumbini Estate, a tea garden which has engaged in some sustainability-promoting activities.

### Ratnapura

This district, not very well-known in the world of tea, is partially bordered by Nuwara Eliya to the north, a region well-known for its high-grown teas. Ratnapura has a lower elevation, and its geography is a transition between hills and plains. It is home to the New Vithanakande Tea Factory.



*Image 1. Tea Small Holding, near Palabadalla. Sept 2009. Source: J. Lennon.*



*Image 2. Tea Small Holding, near Palabadalla. Sept 2009. Source: J. Lennon.*

### Nuwara Eliya

This region has the highest altitude of the tea-growing regions of Sri Lanka. The climate is rainy and cooler than most of the other tea-growing regions; frosts can occur in the area at higher elevations. Nuwara Eliya is a relatively small contributor to the total volume of tea production, but it is well-known for the unique high-grown character of its teas. Its central location also places it near many of the other tea-growing areas such as Uva and Dimbula. This area has a consistent humidity throughout the year, and tea is harvested here year-round. The most desirable harvests tend to be from January to March.

In addition to black teas, which make up the bulk of the production here, this region also produces white tea, including Adam's Peak white tea, named for the English name of Sri Pada, a local mountain that is a distinctive landmark and holds importance in many world religions.

### Uva

This is the second least-populated province, divided into two districts, Badulla and Moneragala. Tea grown in Uva is usually identified with Uva rather than one of the smaller districts. The tea plantations are located at a range of altitudes, from about 1,000 to 1,700 m, making some "high-grown" and others "mid-grown" teas.

Uva is important in tea production because its unique climate leads to a unique flavour of its teas. Uva is located in the rain shadow of the central mountains in Sri Lanka; the region receives ample rainfall in winter but is subject to strong, dry winds in late summer. The most desirable harvests are usually those from August to October, when the tea is influenced by the drying winds. This contrasts with the rest of the island, where harvests from this time of year are less desirable than other harvests.

### 2.3 Planting traditions

Deforestation, or cutting down the tropical rainforest, and establishing a drainage system are prerequisites for setting up the tea gardens. Drainage systems are prominent features in the terraced landscape and the building and maintenance technology is unchanged to date as traditional knowledge is used for landscape sustainability. Tea plants - *Camellia sinensis* var. *assamica* - were transplanted from nurseries where cuttings had been taken from bushes. Pruning tea bushes is a valued skill. In general, tea plants have a distance of 0.6 m between each other and a distance of 1.2 m between rows, resulting in “approximately 5,500 tea plants per acre” (Wijetunga & Sung, 2015).



Image 3. Tea Seedling Nursery, near Kitugala Beli-Lena. September 2009. Source: J. Lennon.

## 2.4 Type of tea trees planted and techniques of tea cultivation

Sri Lanka is best known for Ceylon black tea, although it also produces small quantities of green and white tea. Typical Ceylon tea has a middle-of-the-road character, typical of black teas consumed in the West. However, a small portion of artisan black teas are produced, which are similar in style to teas from Darjeeling, Assam or other regions. The distinctive Ceylon black teas are regarded highly because of their harvesting technique, which is skilled hand picking.

Ceylon green and white teas tend to use similar names as Chinese varieties of tea. Although these teas are usually recognizable as their varieties, their characteristics can be widely different from the originals. Ceylon green teas are more well-known in the Middle East than in Western countries.

## 2.5 Harvesting and tea processing

The routine for tea workers is hard, tedious labour. For the most part, women pick the tea — only young leaves and buds are carefully plucked from the bushes. Wages to pick tea average about 400 rupees (US \$3.07) a day, and the workers' daily quotas average from 12 to 15 kg. The hand picking technique is what gives Ceylon tea its distinctive character.

## 2.6 Social structures and cultural systems

The Sinhalese showed little desire to work on tea plantations as they had their own plots to cultivate and were repulsed by the idea of working for hire, so Tamils were recruited from southern India and shipped over the Palk Strait, after which they walked up to 250 km to the plantations, where their conditions were appalling. By 1850, there had been about 272,000 arrivals and only 133,000 departures - at least 70,000 died and approximately 50,000 stayed on (Moxham, 2009: 165). Famine drove many to risk the journey to the estates in Ceylon and the tea planters found a ready source of labour from these calamities. During the 1867 famine, 167,000 Tamils - men, women and children - moved to the Ceylon plantations. By 1900, the permanent plantation work force had reached 337,000, mostly Tamils (Moxham, 2009: 166). The native Sinhalese resented the arrival of so many Tamils in a population of under 4 million and this became a major problem later in the twentieth century.

At the beginning of the twentieth century, tea was responsible for more than half of all export earnings in Ceylon and although the acreage of tea only increased moderately during the remaining years of British rule, the improved agricultural techniques doubled the crop. When Ceylon achieved independence from Britain in 1948, there were 222,500 ha of land under tea cultivation on the island. The impact of independence was severe for the Tamils working on tea estates. The United National Party was keen to restrict their citizenship, their right of

residence and their right to vote, even though many had been settled in Ceylon for generations. The result was a civil war. Meanwhile, many Tamils left unwillingly for a more difficult life in India.

With a socialist government after 1956, the British tea estates came under pressure from increased company tax and restricted export earnings. The proportion of foreign-owned estates, mostly British, dropped from 70% to 31%. Nationalisation of tea estates happened in the early 1970s and small owners were allowed 20 ha for each member of the family, though the State acquired two-thirds of the total tea acreage. Production and quality fell.

Following land reform, there was a large increase in the proportion of tea grown on small holdings – in 1999, 200,000 small holdings, growing only an acre or two each, formed half the total acreage. In 1993, the United National Party returned to power with a platform of privatisation. Government tea estates were presented to private managers and then offered for sale. Controls over marketing and tea exports were lifted, and while British companies took advantage of the situation, Sri Lankan companies became the dominant force. By 2000, production of both estate and small holder tea was rising and reached a record 675 million lbs. Quality also improved.

Ceylon, which became Sri Lanka in 1972 (though the name Ceylon is retained by many of its brands), exports over 90% of its production. With a policy of diversified sales, Britain now only takes 3.5% of Sri Lanka's exports and much of this is packaged tea which brings a bigger profit to the sellers (Moxham, 2009: 198-201). Despite fair trade and labels such as Tea Direct, oversupply occurs and the wages of tea estate workers seem set to fall further.

“Tea plantations have a unique social structure not seen in other regions in Sri Lanka. The cultural practices of the majority of the Indian Tamil tea estate workers contributed to the creation of the cultural landscapes of Sri Lankan tea plantations” (Wijetunga and Sung, 2015: 673).

Tea planters used *kanganies* to recruit labour. These men were often from the same villages as the men they recruited and gave them advances to cover the cost of their journey to the estates, so that the labourers were in debt from the start until they had worked this amount off. Although “free” - not indentured as in India - the Ceylon coolies had to pay for the cost of their transport and recruitment. The managerial system of the *kanganies* gave scope for much abuse. In 1904, the planters established their own labour commission to supervise the system and to ensure that the labourers actually received the cash advances that they had to repay. Wages were low in the 1870s but higher than those in India, though they were cut in the 1880s when the price of tea fell, and were never restored.

The estates provided the workers with rice at a fixed price and organised their laundry and hair cutting, which was debited against their wages.

In 1900, accommodation was described as follows: “A coolie line is usually a long building of one story only, divided into a large number of compartments. Each apartment accommodates

about four coolies, and it is obvious that they do not enjoy the luxury of much space [...] lie huddled together on the mud floors of these tiny hovels” (Cave, 1900).

Sanitation was often lacking in these lines. Work in the fields was hard; from 6 am until 4 pm without a break or food, as the planters feared that if the workers stopped for a midday meal they might not return. On the higher estates, it was cold, windy and often wet. The Tamils of the hot south India plains were not well suited to these conditions and there were many deaths from bronchitis and pneumonia (Moxham, 2009: 170-2).

“Estates were separated from the urban areas and other community settlements. The workload and long working hours restricted the workers from leaving the estates. Indian immigrants became established as introverted groups of people. The language, religious practices and rituals of Indian Tamil immigrants differed from the major Sinhalese communities. The intangible values of the cultural practices of plantation workers is an integral portion of the landscape identity of the estates. Diversity of the caste system amongst the immigrants also separated them into groups for some rituals and practices. The immigrants from India belonged to 25 different castes that included Ayyar, Vellae, Kudianar, Akampadi, Kallar, Konar, Endayar, Dewar, Sannali, Marayachchi, Walayar, Udayar, Awar, Pandaram, Chetti, Ambar, Wannar, Pullar, Palayar and Melan castes. Wellalan, Kallon and Kowendan castes’ population were the most prominent in Nuwara Eliya region and the Hill country” (Wijetunga and Sung, 2015: 674).



*Image 4. Worker Housing, near Kitugala Beli-Lena, September 2009. Source: J. Lennon.*

## **2.7 Associated communities and settlements**

By 1880, the government had built hospitals, dispensaries, shelters and wells along the North Road route of the Tamil labourers walking to the plantations (Moxham, 2009: 166). The route was closed in 1900.

## 2.8 Links to trade and trade routes

British firms had links to India through business and shipping, and the sea lanes to Calcutta and Coochin provided avenues for commercial intelligence and staff to travel.

## 3. Existing documentation

This report was based on the sources detailed in the bibliography and the author's two visits to the tea growing regions in 1993 and 2009. Unfortunately, government sources were unavailable during this period of internal political and administrative instability to fill in the documentation sections, which have been compiled from industry and some academic sources.

## 4. State of historic and technical knowledge concerning water heritage in the sub-region

### 4.1 Definition of period or periods during which the tea landscapes flourished

Tea landscapes have flourished from the 1880s onwards.

### 4.2 Whether the landscapes have evolved and, if so, how

The Sri Lankan tea landscape is a product of colonialization. High mountain jungle cleared for tea estates and continuous cultivation has maintained the tea landscape as an agricultural cultural landscape type.

"The major landscape changes that usually occurred with the tea plantations were deforestation and establishing the drainage system. The drainage systems are prominent features and the technology used to build and maintain the landscapes are unchanged to date as traditional knowledge is used for landscape sustainability. To mitigate soil erosion effectively, four kinds of drainage systems are commonly used: (1) Netti Kanu (main drains collect water from the contour drains), (2) Haras Kanu (contour drains), (3) Kutti Kanu (lock and spill), (4) Deni Kanu (drain and silt pits); the soil is protected by advanced planting of alternative trees and shrubs which provided soil protection" (Wijetunga & Sung, 2015: 673).

### 4.3 State of current research on history of landscapes, plants, planting methods, harvesting and processing methods, social structures and cultural systems

The cultural routes of immigrant Indian Tamil plantation workers are yet to be explored, other than the North Road that was followed once they had arrived in Sri Lanka.

## 5. Threats to tea landscape

Sri Lanka's once-lucrative tea industry is facing a threat of collapse due to inability to increase labour productivity and declining yields in high-grown, mid-grown and Uva tea sectors, generating losses for several years. Sri Lanka is competing with Kenya, China, India and Indonesia and new producers like Malawi, Turkey and Vietnam. In Kenya, some estates have reached a target of 3,500 kg of tea produced per hectare, whereas in Sri Lanka the highest achieved is 2,500 kg per hectare. The plantation industry is Sri Lanka's biggest employer, with over 250,000 workers involving one million residents (Sirimanna, 2011).

“Sri Lanka, which enjoyed a 23% of the Global tea export trade 15 years ago, has seen a gradual decrease year on year and currently accounts for about 17% [...] The plantation sector is highly politicised and around 70% of the tea production is controlled by the smallholder farmers who depend on heavy subsidies in replanting, fertilizer and price guarantees [...]

Years of non-productive agricultural policies coupled with government red tape has resulted in negativity in operating large plantations which were privatised with the state retaining the decision- making powers. This has made the tea plantations a “single crop business model” when there are so many diversification options available.

Plantation companies too have not been proactive in diversifying into tea tourism, animal husbandry, large scale fruit and vegetable cultivation, other tree crops with commercial values and cultivated timber industries, new technologies in water management, water harvesting, irrigation, alternate power generation and so many other projects too numerous to mention [...]

The Sri Lankan tea plantation industry is the most expensive in terms of labour input, representing an unprecedented 70% of the cost of production [...] Due to the comfort of the protection net offered by the state to the tea smallholders, the quality of tea produced has fallen far below desired levels. The quality standard applied by the Tea Board to qualify for the Lion logo is the accepted norm for Pure Ceylon Tea of superior standard. It is unfortunate that no



*Image 5. Poorer Tea Estate near Deanstone, Sept 2009, Source: J. Lennon*

more than 30% of the manufactured teas qualify for the Lion logo in the current context” (“Some thoughts on what ails Sri Lanka’s tea industry”, 13 October 2016 - 01:00 <http://dailynews.lk/2016/10/13/business/95742>).

### **5.1 Pressure from new development**

Losing areas for urbanisation projects.

### **5.2 Abandonment of traditional cultural practices**

Traditional technology used in drainage and manual picking could be replaced by machinery in an effort to modernise, which would result in a loss of traditional knowledge.

### **5.3 Changes in social structures**

“Rural workers are moving *en masse* to cities in search of higher wages and a better life. Traditionally, wages have been low in the tea industry, with many workers struggling to survive on less than a realistic living wage. The attraction of service-sector jobs in the city can be hard to resist” (Anderson, 2014, <https://www.bbc.com/news/business-26123944>).

### **5.4 Impact of modern techniques of tea cultivation, processing and management**

“Introducing new technology to plantations [could lead to increased yields]. Tea plantations need to re-look at the way they plant, nurture, harvest and manufacture tea. There are several models available in developed tea countries such as Japan” (“What ails Sri Lanka’s tea industry?” 13 October 2016, <http://www.ft.lk/article/573481/Www.aquavista.lk>).

### **5.5 Lack of maintenance**

Variable rainfall, tea plantations on marginal lands with weed infestations, and ethnic disputes among workers have led to lack of maintenance in some areas like Deanstone.

### **5.6 Inappropriate or only partially appropriate reuses**

Some districts have switched to cashew nut growing.

### **5.7 Specific threats**

“The Sri Lankan tea industry faces an uncertain future due to climate change. Pests and volatile weather patterns threaten an industry already beset by increased competition and rising labour costs [...] Dilmah Teas, a 40-year-old Sri Lankan-owned enterprise, is launching a climate change research station to study the potential impacts of climate change and develop future

mitigation strategies. Other companies such as Unilever, which runs an instant tea factory in Sri Lanka, have held events to educate employees on environmental issues such as water conservation. With data suggesting Sri Lanka's overall temperatures have risen 1 Celsius degree the past century, the possibility of climate change wreaking havoc on this lucrative industry is too big of a risk to overlook [...] The Sri Lankan government runs a tea research institute that covers everything from studying the treat of pests to helping tea growers respond and adapt to the changing climate" (Kaye, 2014, <https://www.triplepundit.com/2014/06/climate-change-threatens-sri-lanka-tea-industry/>).

Other threats to the Sri Lankan tea industry include the following:

- Government interventions: The government ban on importing glyphosate to control weeds in 2016 has led to a weed explosion impacting on tea production and plantation operations; plans in the 2016 budget proposed to restrict the size of tea estates run by regional plantation companies to 5,000 acres, a reduction of 20,000 acres on average (reducing economies of scale); the government provides subsidies only to small holders; the concentration is still on producing premium quality tea, rather than on tea bags which are gaining popularity;
- Working conditions: The failure of trade unions to achieve a higher pay rise for workers could potentially damage productivity; workers are expected to pluck 18 kgs per day – but they encounter weeds, leeches and bees; workers are moving away due to living conditions, causing a shortage of workers and an increase in retired workers living on the estates;
- Social issues: these include leaky housing, alcoholism and domestic violence, and lack of sanitation and of access to education (Sexton, 2016).

## 5.8 Changes to integral buildings and related settlements

40,000 new houses are planned by the government to rehouse workers (Sexton, 2016).

# 6. Legal protection in force

## 6.1 Legal protection

The following acts and ordinances form the existing legal framework for the protection of Sri Lankan cultural heritage:

- *Antiquities Ordinance No. 09 of 1940*;
- *Treasure Trove Ordinance No. 18 of 1887*;
- *National Environment Act No. 47 of 1980*;
- *Galle Heritage Foundation Act No. 07 of 1994*.

The following acts protect Sri Lankan natural heritage:

- *National Environment Act No. 47 of 1980;*
- *Wilderness Areas Act No. 03 of 1988.*

Issues with the legal protection in place include institutional power overlapping, political intervention, lack of social awareness and delays in fund generation (Wijesinghe, 2016).

“Unless development activities in areas like [these] projects are accompanied by proper EIA [Environmental Impact Assessment] studies and mitigation of the archaeological resources that will be damaged, vast number[s] of sites - in fact much [of] Sri Lanka’s unrenowned cultural heritage and the [raw] data for all future studies on ancient Sri Lanka will be destroyed without record.

Judicial law-making alone is not enough. [The] legislative process [should be harmonised] in line with the judicial vision [...] Sri Lanka is lagging far behind in fulfilling the requirements of the CCPWCNH [Convention Concerning Protection of World Cultural and Natural Heritage] when compared with other signatories. A number of imminent threats to Sri Lankan heritage are visible. There is a need to incorporate International principles via [a] legislative process and consider an introduction of an Act [such as a] ‘Cultural and Natural Heritage Protection Act’” (Wijesinghe, 2016).

Sri Lanka is a country with a rich cultural heritage (including World Heritage properties). It needs to preserve its World Heritage properties. There exists a number of possible threats to heritage. Being a signatory to the World Heritage Convention, the country is bound to bring its law in compliance with international standards and to consider establishing a strong legal framework to protect Sri Lanka’s heritage for future generations.

“Even at present the rapid expansion of vegetable gardens threatens the natural forests, with illicit gem mining, felling of trees etc. [...] being other direct human threats. Invasive alien species and the phenomenon of some trees mysteriously dying have worried environmentalists” (Rodrigo, 2010).

## **6.2 Planning or other forms of formal protection**

“In Sri Lanka, there has been a hesitant evolution of land use policy away from the simple attraction of capital for plantation industries, through successive attempts to promote and protect a peasant economy, to the present imperatives of employment creation and sustainable development of natural resources. This last goal remains elusive. In many areas, land use is obviously badly matched with the land which is being visibly degraded. It is well understood that the present pattern of land use is not sustainable [sic] yet systematic information on land resources is scarcely used at any level of decision-making” (Dent and Goonewardene, 1993).

Private land ownership is limited to fifty acres per person. The Government of Sri Lanka owns approximately 80% of the land including most tea, rubber and coconut plantations, which are leased to the private sector on 50-year terms.

“People's participation in land use planning is a new concept in Sri Lanka but might be extended through empowerment of existing local water management groups to make decisions on change of water rights, land use and, even, land tenure” (Dent and Goonewardene, 1993).

### 6.3 Traditional protection and relationship to protection of physical features

Heritage landscapes require protection - not just the site-specific antiquities or the general environment.

## 7. Conservation and management

### 7.1 Conservation of natural and cultural features

There is conservation of historical routes along the Nuwara-Eliya district, and of tea plantation-related buildings and early industrial machinery displayed inside and outside factories. Historical features and display items are part of heritage tourism promotional campaigns.

The tea landscape in the “wet zone” may be considered as having a good state of conservation as the crop is still hand-picked.



*Image 6. Former Tea Factory near Corbets Gap, Knuckles Conservation Forest, Sept 2009.*

*Source: J. Lennon.*

## 7.2 Management of overall landscapes, including traditional management

Management is at the behest of the owners and follows traditional patterns.



*Image 7. Knuckles Conservation Forest, Hare Park Tea Plantations on South-west, Sept 2009.*

*Source: J. Lennon.*

## 7.3 Sustainable development including strengthening resilience of traditional systems

Tea landscapes are currently resilient, but subject to change from climate events, economic factors and labour availability as social pressures lead to change and migration to urban areas.

“Tea heritage tourism can be promoted. The tourism board and other authorities are working on value-adding campaigns and the perception of tourists on the heritage landscape values of tea estates can be used for the betterment of heritage protection” (Wijetunga & Sung, 2015: 682).

“The tea industry plays a significant role in the Sri Lankan economy in terms of foreign exchange earnings and providing employment opportunities. For more than a century, the tea industry was the main employment provider, the main source of foreign exchange and the main source of government revenue. Nevertheless, recent statistics suggest that the contribution of the tea industry towards the Sri Lankan economy is gradually declining. The industry faces several problems. The area under tea cultivation is stagnant or shrinking, productivity is low, the replanting rate is low, production costs are high and there is a shortage of labor willing to work in the industry. Sri Lanka's share of world exports of tea and production have declined significantly as a result” (Thushara, 2015).

## 8. Conclusion

### 8.1 An overview of the profile of this sub-region and its tea landscapes

“As Ceylon tea prepare[d] to celebrate 150 years in 2017, there [were] serious questions surrounding its future [...] Famed for its taste and quality, Ceylon tea put Sri Lanka on the world stage. But with plunging output and rising costs, the Ceylon tea industry faces a perfect storm of challenges. If this industry were to fail, the consequences for more than one million people employed by the industry, and Sri Lanka at large, would be huge” (Sexton, 2016).

“The tea estate is the unit of the tea heritage cultural landscape. It consists of tea plantations, tea factories and activity area, staff quarters, labour housing (coolie lines), water drainage systems, tea trails and the associated Indian Tamil culture. The tea estate is significant as a settlement type in the island due to its unique character and elements. Therefore, tea estate settlements are considered as a third type of settlement pattern in Sri Lanka with urban and rural settlements” (Wijetunga & Sung, 2015: 681).

### 8.2 Whether the lack of documentation and research hinders full analysis of the tea landscapes

Detailed estate histories and further research would add to understanding the potential Outstanding Universal Value and enable better comparative analysis.

### 8.3 The distinctiveness of these tea landscapes in relation to other sub-regions

The “high-grown” tea landscapes are distinctive in relation to those in India such as Assam, which was the source of the tea plants.



*Image 8. Lush Kandy garden with small Holder Tea Growing, Sept 2009. Source: J. Lennon.*

#### **8.4 Which landscape might be said to best reflect the particular characteristics of this region and which, if any, might have the potential to demonstrate OUV, either on their own or in a series?**

The “wet zone” tea estates above 1,500m may have the most particular characteristics of this region, and still retain a good state of conservation and traditional processing, such as hand plucking, that could be considered to have a certain degree of authenticity and could deserve a further study on their potential to demonstrate OUV.

#### **8.5 What are the main vulnerabilities of the tea landscapes?**

Tea plucking in Sri Lanka is done predominantly by hand because of differences in terrain and the way tea is planted, resulting in labour costs higher than in other countries. As wages account for up to 80% of input costs for the tea industry, labour pricing, combined with lower productivity, is disadvantaging Sri Lankan growers in the global market (<https://oxfordbusinessgroup.com/news/growth-prospects-sri-lanka%E2%80%99s-tea-industry>).

#### **8.6 How are these impacting on conservation, authenticity and integrity?**

The main vulnerabilities of the tea landscapes of Sri Lanka are not yet having a great impact on conservation, authenticity and integrity.

#### **8.7 How effective is current protection and management and in what ways might these be improved?**

It appears that there are no specific heritage landscape protection laws. Management is up to the estate owners (Wijesinghe, 2016).

#### **8.8 Possible recommendations for the future**

It is advised to plan the legal heritage protection of the key authentic estates which show the historical evolution of tea landscapes.

#### **8.9 Views on their potential to demonstrate Outstanding Universal Value, including integrity and authenticity, as well as ecological and cultural resilience, and an adequate state of conservation**

In order to prepare any potential nomination to the World Heritage List, much more detailed and in-depth research and study would be required, as there is a great lack of basic documents, maps, inventories, etc., that would also require work on site.

## Bibliography

Cave, H.W., *Golden Tips*, Low, Marston, London, 1900.

Dent D.L. and Goonewardene L.K.P.A, "Resource assessment and land use planning in Sri Lanka: a case study", *Environmental Planning Issues*, No. 4, December 1993, The International Institute for Environment and Development, London, 1993. Available at: [pubs.iied.org/pdfs/7752IIED.pdf](http://pubs.iied.org/pdfs/7752IIED.pdf).

Gascoyne, K.; Marchand, F.; Desharnais, J.; Americi, H., *Tea: History, Terroirs, Varieties*, Camellia Sinensis, Tea House, Firefly Book, 2011.

Hobhouse, H., *Seeds of Change*, Macmillan, London, 1992.

Moxham, R., *A Brief History of Tea, the Extraordinary Story of the World's Favourite Drink*, Robinson, London, 2009.

Sexton, C., *Ceylon Tea: Does it have a future?* Available at: <http://newsfirst.lk/english/2016/12/ceylon-tea-future/156469>.

RateTea.com, Tea-Producing Regions of Sri Lanka / Ceylon <https://ratetea.com/region/sri-lanka/3/>.

Thushara, S.C., *Sri Lankan Tea Industry: Prospects and Challenges*, Conference Paper, May 2015.

Wijesinghe, W.A.; Sanath, Sameera, *Protection of Natural and Cultural Heritage in Sri Lanka: A legal Perspective*, Department of Legal Studies, Open University of Sri Lanka, 2016. Available at: <https://www.academia.edu/9439400/>.

Wijetunga Ch. Sh., Sung J. S., "Valuing the Cultural Landscapes Past and Present: Tea Plantations in Sri Lanka", *Landscape Research*, 40:6, 668-683, 2015.

### Press & web

Anderson, R., "Tea industry's future depends on corporate collaboration", BBC News, 14 February 2014, <https://www.bbc.com/news/business-26123944>.

"Growth prospects for Sri Lanka's tea industry", *Oxford Business Group*, 19 September 2016. <https://oxfordbusinessgroup.com/news/growth-prospects-sri-lanka%E2%80%99s-tea-industry>

Kaye, L., "Climate Change threatens Sri Lanka's tea Industry", *Triple Pundit*, 18 June 2014, <https://www.triplepundit.com/story/2014/climate-change-threatens-sri-lankas-tea-industry/43031>

Rodrigo, M., "Lanka's central highlands win heritage battle", Window to Nature. *Weekly Environmental Diary*, 7 August 2010. <https://window2nature.wordpress.com/2010/08/07/lanka%E2%80%99s-central-highlands-win-heritage-battle/>.

Sirimanna, B., "Sri Lanka's tea industry faces a threat of collapse amidst worker wage hike" *Sunday Times Sri Lanka, Business Times*, Sunday, 7 July 2011, <http://www.sundaytimes.lk/110717/BusinessTimes/bt11.html>

"Some thoughts on what ails Sri Lanka's tea industry", *Daily News Sri Lanka*, 13 October 2016, <http://dailynews.lk/2016/10/13/business/95742>.

"What ails Sri Lanka's tea industry?" *Daily FT*, 13 October 2016 <http://www.ft.lk/article/573481/Www.aquavista.lk>.

# Cultural Landscape of Thai Nguyen Tea

*Expert Group from Cultural Heritage  
Department of Vietnam & Department of  
Culture, Sports and Tourism of  
Thai Nguyen province*

## 1. Vietnam tea overview

### 1.1 Tea growing areas

Vietnam is one of the countries in which tea originates; it has a long tradition of growing and producing tea thanks to its climatic and soil conditions favourable to tea planting. Tea plants can adapt themselves to various areas; they can be found in 34 cities and provinces from the north to the south of Vietnam, but they are mainly distributed in six tea growing areas:

- i) North-Western Zone of mountainous northern Vietnam, including the two provinces of Lai Chau and Son La;
- ii) Viet Bac-Hoang Lien Son Zone, including the provinces of Ha Giang, Tuyen Quang, Lao Cai and the western part of Yen Bai (Nghia Lo and Van Chan);
- iii) Northern Midland, including Vinh Phuc, Phu Tho, Bac Can, Thai Nguyen, Ha Tay, Hoa Binh, Bac Giang, Bac Ninh, Southern Yen Bai and Northern Ha Noi;
- iv) North Central Zone, including Thanh Hoa, Nghe An and Ha Tinh;
- v) Western Highlands, including Lam Dong, Gia Lai-Kontum and Dak Lak; and
- vi) Central Coast, including Quang Binh, Quang Tri, Thua Thien, Quang Nam, Quang Ngai and Binh Dinh.<sup>1</sup>

### 1.2 History of Vietnam tea

According to scientists, tea plants originated from ancient South-East Asia (including southern Yunnan in China, Upper Laos, northern Myanmar, northern India and northern Vietnam). Thousands of years ago, the inhabitants of the Bach Viet rice farming civilization (from northern Vietnam and southern China) discovered tea plants and used them as a drink and herbal

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<sup>1</sup> Do Ngoc Quy, Nguyen Kim Phong, 1997, p.198.

medicine. From its natural source, the tea plant was then cross-bred and produced into different tea varieties to suit climatic and soil conditions. Tea plants have been introduced into various areas all over the world as a result of cultural exchange and acculturation, wars and invasions, becoming an important and useful drink for humankind. In Vietnam, there are both naturally growing and farmed tea plants.

#### 1.2.1. NATURALLY GROWING TEA PLANTS

Naturally growing tea plants can be found in many areas of Vietnam, mostly distributed in the northern mountainous areas. In 1892, a French scientist, Pierre Lefèvre-Pontalis,<sup>2</sup> discovered ancient tea plants in the form of forest trees in the northern area lying between the Red River and the Mekong River. In 1907, Philippe Eberhardt, head of a delegation of agriculture and forestry inspection (Inspecteur Général de l'Agriculture et des Forêts en Indochine), discovered naturally growing tea plants on Tam Dao Mountain (Vinh Phuc province) at an altitude of 900 m. Professor Auguste Chevalier, a French botanist who collected plants throughout Indochina, detected many wild tea plants in forests north of northern Vietnam, in the eastern part of Truong Son mountain range (Annamite Range), central Vietnam, and in the southern part of central Vietnam and Laos.<sup>3</sup> In particular, a Russian research work published in 1976 with the title *Tea plants of Northern Vietnam*<sup>4</sup> by K.M. Djemukhatze offers thorough information on naturally growing tea plants in northern Vietnam.

According to K.M. Djemukhatze, wild growing tea can be spotted in many areas of the former Nghia Lo province (presently Nghia Lo town, Yen Bai province) in the forest of Suoi Giang. Suoi Giang tea plants grow on mountain slopes at an altitude of 900-1,700 m above sea level, in southern, eastern or other directions, in valleys or on hill tops. This illustrates that these tea plants are native to the area. Locals often plant on slopes, which are especially favourable to farming tea; it is important to select slopes that are favourable to farming techniques and can protect soil from erosion. In the tea planting area of Suoi Giang, there are no obvious signs of soil erosion. Plants have a wide canopy and are covered with thick dark green leaves. The height of the stem is 1.40 m, with a diameter of 60 cm. The bottom foliage consists of horizontal branches and has a regular oval shape, with a diameter of 10 m. Plants are about 6 m tall and their life expectancy is not less than 300 years. The tea plants grow well, giving a large and fat bud.<sup>5</sup>

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<sup>2</sup> Pierre Lefèvre-Pontalis, *Note sur l'exploitation et le commerce du thé au Tonkin*, Paris, 1892.

<sup>3</sup> Do Ngoc Quy, Nguyen Kim Phong, 1997, p.24.

<sup>4</sup> On working in Vietnam, K.M Djemukhatze had researched the ecology and biochemistry of wild tea found in some forests in Vietnam. When returned home, he summed up in a book *Tea Plants of Northern Vietnam* (1976). This book was translated by Agricultural Assoc. Doctor Nguyen Ngoc Kinh, from Russian into Vietnamese.

<sup>5</sup> K.M. Djemukhatze, 1976. In Nguyen Ngoc Kinh (trans), 1981, p.44.



*Image 1. One of Old Shan Teas in Suoi Giang commune. Source: Do Ngoc Quy.*

The main stem and half-frame canopy is of a greyish-white, the same colour as birch plants. In December, tea plants grow strongly, and many have flowers blossoming. The sepal consists of five to six petals, and has an oval shape with pointed tips. The corolla includes five to nine petals which grow unevenly. The petals stick together in an oval shape with edges curved upwards. There are a lot of stamens of a bright yellow colour. Most of the tea flowers are white and the fruit skin is green, sometimes dark brown. Fruits are easily separated and from them large tea seeds fall down. Most fruits contain one or two seeds, but rarely three or four seeds can be found.<sup>6</sup>

In Lang Son, wild tea is found mainly in mountainous areas. A typical wild tea area is located in Tien Thong commune, an area of beautiful scenery at a height of 600-800 m above sea level, and comprising about 15-20 ha. The tea growing areas are located in tropical forests, dominated by perennial tea trees in addition to other tropical flora, including bamboo, wild chili and other woody plants and vines. Tien Thong is a natural wild tea area, about 200-250 years old. These tea plants are native species, rather than imported products from other countries. This has been confirmed by the land cover. The land here mainly consists of humus feralit and red gold soil on the mountain. There are also other types of tropical soils, which vary based on the terrain, altitude and other ecological conditions. Different from Suoi Giang tea area, tea plants in Tien Thong commune grow very tall, even comparable to the height of bamboo. Tea plants do not only grow at the foot of the mountain but also on the slopes. The height of trees is 12-14 m, and the diameter of the stump is 30-40 cm and the tops 17 cm. For some plants, the trunk is so wide that one person cannot embrace it completely. The tree trunk is straight and tall, and looks like birch both in shape and colour. Trees begin to branch

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<sup>6</sup> K.M. Djemukhatze, 1976. in Nguyen Ngoc Kinh (trans), 1981, pp.42-43.

at 6-8 m in height. The canopies are compact, and, for most trees, the leaves are large. The leaves grow rather well, though some trees have fewer than others. Most of the leaves are covered with fine, white feathers underneath. The bark is not often damaged, although many termites can be found underneath. In Tien Thong, most of tea plants bloom in December, and their flowers are white, sometimes bright pink, and fragrant. In the middle of the flower, there is a large ring of golden stamen. In many flowers, the stamens are longer than the pistil, but some flowers have short stamens. Some trees produce large tea fruits. By analyzing a large number of tea fruits, it can be seen that almost all the fruits have one to two seeds. Seeds are large, with light brown skin, and very shiny.<sup>7</sup>

Ha Giang is at a higher latitude than Nghia Lo and Lang Son provinces. The wild tea plants there were discovered in the 1920s. These tea plants are classified by Vietnamese experts as types of "Shan" and "midland" tea. A typical example is the wild tea area in Thong Nguyen commune, which has similar characteristics to Suoi Giang area, though there are some differences. In wild tea areas located on high mountains, on difficult-to-access terrain, tea plants are much shorter than those of Suoi Giang. For most of these plants, their age is less than 100 years, but some trees are 200 or 300 years old. The tea plants have big, dark leaves. The soil is of raddle, but is not very thick. Near the ground, the trunk is approximately 125 cm in circumference, while the canopy is 3 m high. These plants are very rare.<sup>8</sup>



In 2011, ten populations of ancient tea plants were found in the Hong mountain range of Luu Quang forest, Minh Tien commune, Dai Tu district, Thai Nguyen province. The plants grow in jungles mixed with bamboo forest at an altitude of over 850 m above sea level. Since Luu Quang forest is far from residential areas and difficult to access, ancient tea plants have been preserved intact. According to some experts, these tea plants have existed for hundreds of years. Some trees are approximately 1 m in diameter and 20 m in height. Tea buds are much larger than usual and leaves are softer, larger and thicker, and have a clearer serration on

*Image 2. An old Tea Plant in Luu Quang Forest, Minh Tien Commune, Dai Tu District, Thai Nguyên Province. Source: Vu Tien Hieu.*

<sup>7</sup> K.M. Djemukhatze, 1976. in Nguyen Ngoc Kinh (trans), 1981, pp.57-59.

<sup>8</sup> K.M. Djemukhatze, 1976. in Nguyen Ngoc Kinh (trans), 1981, p.63.

the edge, with a fresh taste that is not as tart as those planted in mass quantity. When consumed, this tea is as fragrant as Bat Tien tea.

#### 1.2.2. TEA PLANTS FARMED BY HUMANS

In Vietnam, people have known how to plant tea for a long time. Until the middle of the 20th century, tea plants were grown throughout the mountainous midland in central and northern Vietnam. This type of tea plant is tall, with large and thick leaves, and it can be harvested to produce fresh tea called green tea. From 1882 to 1945, there began to appear other types: industrial black tea and Chinese pan-fired green tea. At that time, the French began to organize large-scale tea plantations such as those in Lam Dong, Kon Tum and Dak Lak provinces.

Since 1945, Vietnam has established state-owned forestry enterprises and tea producing and trading companies in large numbers, mainly in two key tea producing areas: the northern mountainous areas and the western mountainous midlands. Currently, together with state-owned enterprises, many private companies and households have invested in tea production and business.

In Thai Nguyen province, tea acts as the key plant which brings economic and cultural value, grown by many inhabitants in most areas of the district. Today, the province is renowned for its tea. In addition to tea production by households, many cooperatives and business companies have been formed to enable the production and business to work more professionally, making it become one of the targets of economic development, cultural exchange and tourism promotion and attraction.

Vietnam's tea production is increasing over time. While Vietnam exported only about 2,000 tonnes of tea in 1960, it exceeded 135,000 tonnes in 2015, with farming areas of 134,455 hectares. Of these, Thai Nguyen tea has a special taste and is favoured by many; it is exported to about 70 countries in the world (China, Taiwan, Indonesia, Malaysia, Pakistan, Afghanistan, Russia, United States of America, etc.).

## **2. Cultural landscape of Thai Nguyen tea - an international scale heritage site**

Among the 34 tea-growing provinces mentioned above, Thai Nguyen is one of the leading provinces in terms of cultivation area, yield and quality of tea products. In particular, it is considered as a typical national tea cultural landscape and recognized as such at an international level. Research is beginning to be carried out in order to identify the characteristics and values of this heritage site.

## 2.1 Description

Thai Nguyen is a mountainous province, belonging to the midland and mountainous area of the north-east with a natural area of 3,541.67 km<sup>2</sup>, located in the geographical coordinates from 21° 19'N to 22° 03'N and 105° 29'E to 106° 15'E. Thai Nguyen borders with Bac Kan province to the north; with Lang Son and Bac Giang provinces to the east; Hanoi capital to the south; and Vinh Phuc and Tuyen Quang provinces to the west. Thai Nguyen has nine administrative units, including seven rural districts (Dai Tu, Dinh Hoa, Phu Luong, Vo Nhai, Dong Hy, Pho Yen and Phu Binh), Thai Nguyen city and Song Cong town. The population is over 1.1 million, with nine ethnic groups living together: the Viet / Kinh, Tay, Nung, Dao, San Chay, San Diu, Hmong, Hoa and Ngai.

At present, in all the districts, the city and the town of Thai Nguyen, tea growing and processing takes place. As of 2017, the total tea growing area is 21,372 ha. Tea growing areas are distributed in Thai Nguyen city and in rural districts of Dai Tu, Dinh Hoa, Phu Luong, Vo Nhai and Dong Hy.



*Image 3. Survey Group on Thai Nguyen Tea Cultural Landscape working in La Bang Tea Village, Dai Tu District. Source: Nguyen Viet Cuong.*

Over hundreds of years, the people of Thai Nguyen have domesticated tea species from the wild, and have imported or cross-bred others to create premium quality tea with a delicate fragrance and natural green colour. This tea is the favourite of customers and earns the title “the best tea of all”. Some typical tea products include Tan Cuong tea, Bat Tien, Trai Cai, shrimp-like bud tea, premium fishhook shaped tea, Phuc Van Tien tea, and others.



Map 1. Map of tea planting districts in Thai Nguyen province.  
Source: Thai Nguyen Ministry of Culture, Sport and Tourism.

This article reviews the tea planting areas in Thai Nguyen and the way in which they are interwoven with cultural heritage, the beautiful natural scenery and the life of ethnic minority groups.

#### 2.1.1. GENERAL CHARACTERISTICS OF TEA PLANTING AREAS IN THAI NGUYEN

In general, tea planting areas are located in valleys or in low hills running in the north-south direction and declining from north to south, surrounded by high mountains like Tam Dao, Ngan Son and Bac Son. These are the bow-shaped mountains that shield the tea areas from extremely strong sunlight in the summer as well as cold winds in the winter. The average temperature is 22-23°C, and the average humidity is 81.2%, with high rainfall of 2,000-2,500 mm. At the same time, reddish yellow soil on the shale in the hills occupies the largest area. The soil has a medium to heavy texture, with a soil pH of 4.5-5.5, and a slope of 8-25 degrees. In particular, the water supply for these tea areas is very abundant because of the intertwined river system, with the three major rivers of Cau River, Cong River and Rong River, and many other small rivers under the Ky Cung and Lo river systems. In addition, the water supply includes the sources of water in ponds and lakes, especially Nui Coc Lake, and a very large underground water source. These climatic and soil conditions create a favourable environment for large-scale intensive tea plantations of excellent quality.

At present, in the tea areas of Thai Nguyen province, tea planting, care and production follow partly the traditional manual process and partly the production model of VietGAP (the

abbreviation for Good Agricultural Practices).<sup>9</sup> The VietGAP production model tends to be applied extensively here.

For a long time, the tea planted in the tea growing areas of Thai Nguyen was native to the midland and farmed by seeding. However, in recent years, the production of this tea has gradually decreased due to aging and poor quality, and has been replaced by new high productivity and quality teas instead. As of 2017, the total tea area of Thai Nguyen province is 21,372 hectares, of which the midland tea species accounts for 32.5%, and the new tea variety 67.5% [among them, LDP1 tea (68.9%), TRI 777, PH1 (6.8%), Kim Tuyen (13.2%), Phuc Van Tien (10.1%), and other new tea varieties (1.0%)]. The LDP1 tea varieties, and some imported tea varieties such as Kim Tuyen and Phuc Van Tien, have a high productivity and quality and are used for processing high-quality green tea.

The irrigation system for tea gardens has also been gradually replaced by automatic rotary valves.

Forms of production in the tea areas are mainly carried out by households, craft villages, cooperatives and businesses. At present, the traditional method of processing using pans and by hand is less used and mainly appears at tea festivals. Processing by mechanical means of semi-mechanized rotary machinery, crushing and small-scale processing lines can be mostly found in households and cooperatives, accounting for 80% of the output of green tea of various grades. Industrial processing methods appear in small and medium enterprises, but they are applied to few businesses and the products are mainly flavoured black tea and green tea.

The following table illustrates and summarises green tea processing procedures in the form of the traditional method and by using mechanical equipment:

Table 1. Traditional method and mechanical equipment for green tea processing	
Traditional method	Using mechanical equipment
Step 1. Raw material (fresh tea bud).	Step 1. Raw material (fresh tea bud).
Step 2. Remove yeast by pan teafiring.	Step 2. Remove the enzyme (teafiring, tea beating machine, steamer).

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<sup>9</sup> VietGAP is the acronym for Vietnamese Good Agricultural Practices, and is issued by the Ministry of Agriculture and Rural Development of Vietnam for each product or group of fishery products, grow and feed. VietGAP forms the principles, order and procedures to guide organizations and individuals to produce, harvest and process post-harvest to ensure safety, improve product quality, ensure social welfare and health of producers and consumers as well as environmental protection and traceability of production.

Step 3. Crush and shake (hand torches or handmade turrets).	Step 3. Crush the first time (by machine).
Step 4. Dry (dry, pan).	Step 4. Sieve (by machine).
Step 5. Classification (hand sieve).	Step 5. Crush the second time.
Step 6. Finished products.	Step 6. Sieve (machine).
	Step 7. Dry (dryer, rolling machine).
	Step 8. Classification (sieves, mechanical cutting, fan).
	Step 9. Mix and pack products.

Harvesting is implemented on the basis of a 30- or 32-day harvest. Depending on the product types, people will pick tea in different ways. Tea is mainly hand-picked. For example, to make the product *dinh tea* (royal tea), only the tea bud is picked. Other picking ways are: one bud, one leaf; one bud, two leaves; one bud, three leaves, etc. During harvesting, households mobilize all of their members, mostly female, to pick tea by hand. This can also be found in the cooperatives or large enterprises. When picking tea, women often perform more elaborate work than men.

The application of modern science and technology has contributed to promoting a rapid increase in productivity and the area of tea planting in Thai Nguyen.

Products are sold in both domestic and export markets. The domestic market offers the best advantages. The Thai Nguyen tea brand appears in all provinces and cities. Tea is sold in many locations: traditional markets, shops, agents and supermarkets, with many forms of advertising and promotion. Many households, cooperatives and enterprises have tea distribution networks throughout the country. High quality products are exported to Pakistan, Taiwan, Russia, the USA, China, the UK, Afghanistan, Indonesia, the United Arab Emirates, etc., with the Pakistan market accounting for up to 50% of tea exports from Thai Nguyen.

High quality tea products deserving the title "the best tea of all" exist not only due to optimal climate and soil conditions, but also because of the time-honoured tradition and experience of the Thai Nguyen people. Therefore, in answering the question "What is the most important element in making Thai Nguyen quality tea?", no final answers seem to be found.

Tea trees have been long attached to the Vietnamese in general and to the Thai Nguyen people in particular. Tea does not only contribute economically, which is key to raising income and helping to reduce poverty, but is also associated with intangible cultural values of the inhabitants. Through the process of settlement and production associated with traditional tea

planting areas, the Thai Nguyen people have collected, refined and created cultural values and icons related to tea. Cultural values are expressed through traditional production, proverbs and idioms, culture and arts, products associated with a story or symbolic meaning of tea, the art of tea appreciation, processing, beliefs and customs, and behavioural culture, etc. The Thai Nguyen people and Vietnamese people as a whole have long said that "the betel nut is the beginning of the story" or "the teapot is the beginning of the story" when guests visit, meaning that the host has to make tea first and can only then talk about business. This is clear evidence of the value of tea in everyday life, through which it can offer motivation or inspiration for inhabitants to invent works of art for generations.

In particular, tea has long been an important drink and promoted as the essence of the art of Vietnamese cuisine. Vietnamese people have two ways of drinking traditional tea: fresh and dried. For fresh tea, green tea leaves are picked, lightly lit, put into a kettle or large pot and boiled, then used in everyday life. For dried tea, the dried tea buds are put in a pot with boiling water. In addition, the Vietnamese are very precise in enjoying tea, using the method: "first: water, second: tea, third: pot, fourth: cup", meaning that the most important choice is the water, then the tea, the pot and the cup. The way of enjoying tea is divided into different categories: *độc ẩm* (drinking tea by oneself), *song ẩm* (making tea for two), *tam tứ ẩm* (making tea for three), *ngũ quân anh* (drinking tea with friends), as well as enjoying tea according to the seasons, drinking marinated tea, and combining tea with herbs as a medicine and to prevent disease.

Having a space dedicated to the drinking of tea is also very sophisticated, and usually only former elites and imperial courts could afford it. Since tea enjoyment depends on economic conditions and living habits, each region or each individual has different ways of drinking tea, such as a cup of fresh tea, a pot of tea served in the morning, or a cup of tea diluted carefully, which reflects the important role of tea in people's lives.

## 2.1.2. DIFFERENT CHARACTERISTICS OF TEA PLANTING AREAS IN THAI NGUYEN PROVINCE

### 2.1.2.1. Tea planting area of Thai Nguyen city

Thai Nguyen city is known for the tea brand Tan Cuong. Planting areas for this special tea are located away from the centre of Thai Nguyen city, about 5 to 10 kilometres to the west, mainly situated in the three communes of Tan Cuong, Phuc Xuan and Phuc Triu. As of 2017, the total tea planting area of Thai Nguyen is 1,458 ha.

According to the history of Tan Cuong tea, tea has existed in the lives of the population's ancestors since the beginning of the twentieth century. Mr Nguyen Dinh Tuan (1876-1941), often known as Doctor So, was born in Trau Lo village, Mai Dinh commune, Hiep Hoa district, Bac Giang province. He was famous for his intelligence and poetic talent. In the final years before his retirement, he was appointed as a Surveillance Commissioner in Thai Nguyen province. In his autobiography, Doctor So mentions that on his way to Yen Bai province to take

up a new position of academic manager, he met Mr Cu Doan, with whom he had taken the interprovincial examination held by the royal court, who lived in Phu Tho province. From him, Doctor So understood the economic value of tea plants. Tan Cuong (Thai Nguyen province) was deserted at that time, and the people's lives were hard. Doctor So sent Vu Van Hiet (commonly known as Doi Nam), the first head of Tan Cuong commune, and some young men to Phu Tho to collect tea seedlings for farmers to plant and earn extra income. Between 1921 and 1922, Doi Nam began to form tea plantations. In 1925, he set up a tea processing workshop. Tan Cuong tea was packed in boxes, using the brand name of *Bach Hac* (White Crane) which gained a reputation and dominated foreign markets. In 1935, Doi Nam's tea products were exhibited in Hanoi and won the first prize for *Canh Hac* tea (Crane's Wings). In Tan Cuong commune, Doctor So is not only seen as the founder of the commune, but also considered as the ancestor of Tan Cuong tea area.



Image 4. Tan Cuong Tea Area, Thai Nguyen Province. Source: Dong Dang.

The tea species were brought by Doi Nam from Phu Ho (Phu Tho province), specifically the Phu Tho Research Center of Agri-Forestry (as it was known in the French Colonial period; presently named the Tea Research Institute of the Northern Mountainous Agricultural and Forestry Science Institute (NOMAFSI)), and were grown in Tan Cuong (Thai Nguyen). The plants belonged to a species of midland tea (*Camellia sinensis* var. *macrophylla*), a cultivar of Chinese variegated tea (*Camellia sinensis* var. *macrophylla*). The morphological characteristics of the plant are that it is small, woody, has a large leaf of a medium area with a length of 12-15 cm, a width of 5-7 cm and a light green colour with irregular sharp teeth, pointed tips and eight to nine pairs of tendons. The tea has an average bud size and offers rather good productivity and quality, which adapts to the ecological conditions in the midlands, being especially resistant to adverse conditions, pests and moderate cold.

The species derived from Phu Ho (Phu Tho province) is very compatible with the climatic and soil conditions of Tan Cuong, which is why it has a special flavour and taste. It can resemble the natural fragrance of young rice, imbued with a delicate tartness; a taste that can only be found in the Tan Cuong area.

The tea areas of Tan Cuong are located on a relatively flat terrain. However, they still have the characteristics of a midland terrain with bowl-shaped hilly mounds alternating with each other. Tea is planted around the hills in a cone shape, and surrounded by beautiful natural scenery, mountains and rivers, very close to the scenic complex of Nui Coc Lake in Dai Tu district.

In these areas, tea cooperatives operate effectively; in particular, the Tan Huong Tea Cooperative in Phuc Xuan is UTZ Certified (global good agricultural product standards). High quality tea products are sold in the market, such as special tea buds, shrimp-shaped tea, nail-shaped tea, etc. Products of Tan Cuong tea have been exported to many countries around the world.

In Tan Cuong commune, a tea cultural space was built in 2011 to host the first national Tea Festival. The cultural space was designed with the convergence of three main architectural spaces: a reception, an exhibition area and an introduction to tea culture and products. Various groups of documents and artifacts are stored and displayed so as to introduce the history and development of tea products and their unique culture. Among them, there are many precious materials and objects such as a collection of documents and artifacts on planting, caring for and processing tea, a collection of ancient pots, etc. In particular, on the second floor, there is a place to showcase and introduce the history and development of tea cultivation in Tan Cuong tea area. It is estimated that about 15,000 visitors visited Tan Cuong tea area in 2015.

#### **2.1.2.2. Tea planting area of Dai Tu district**

Dai Tu is located in the north-west of the province of Thai Nguyen, and has favourable natural conditions and fertile soil suitable for many crop trees, especially tea plants. In the district, 30/31 communes and towns are designated to grow tea, of which there are 19 communes lying at the foot of Tam Dao Mountain, Red Mountain and Mountain of God where the soil, irrigation and climate is favourable for tea plants, creating zones for the cultivation of quality tea products such as La Bang, Khuon Ga (Hung Son), Hoang Nong and Quan Chu. The district of Dai Tu has the largest tea growing area: 6,333 hectares, accounting for about 30% of the total area of the province of Thai Nguyen. Fresh teabud output reached 62,000 tonnes in 2015, and the teabud of Dai Tu yielded at 115 kg/ha, worth 102 million VND/ha.

Produced in the largest planting area, tea from Dai Tu has a typical aroma and taste. Currently, in the district of Dai Tu, 52.73 hectares of tea have been certified as having VietGAP standards. Apart from the midland tea variety, the inhabitants have recently introduced new varieties of higher yield and quality, such as the tea varieties LDP1, LDP2, Kim Tuyen, Bat Tien, Phuc Van Tuyen, Keo Am Tich and TRI777. In the future, the authorities of Dai Tu district will support



*Image 5. La Bang Tea Planting Area in Dai Tu District. Source: Nguyen Van Phai.*

locals developing planting areas for top-lined varieties and nursery gardens, enhance quality control of varieties, gradually replace new processing equipment, and encourage and enable organizations and individuals to invest in small and medium-sized factories equipped with modern and synchronous equipment and processing techniques for green tea, focusing on brand promotion, especially the registration of trademarks of tea produced in Dai Tu.

The tea area of Dai Tu is located around the Tam Dao National Park, a scenic area of Nui Coc Lake that relates to the legend of Lady Cong and her lover Coc, which contributes to shaping the values of the tea cultural landscape in the largest planting tea district of Dai Tu, Thai Nguyen province. This land, with its romantic scenery and enormous tea hills, has attracted thousands of tourists to visit and study each year. It is a wonderful environment with favourable conditions to promote economic development and tea culture among people at home and abroad.



*Image 6. Nui Coc Lake Landscape. Source: Viet Hung.*

### 2.1.2.3. Tea planting area of Dinh Hoa district

Dinh Hoa is a mountainous district located north-west of Thai Nguyen. For years, the tea plant has been identified as a key crop tree in agricultural production, as it helps many households to escape poverty and possibly become wealthy. The district currently has 2,230 hectares of tea. Fresh tea bud output reached 21,000 tonnes in 2015. The largest tea planting areas include Binh Thanh, Phu Dinh, Phu Son and Diem Mac, which is known for its premium tea speciality. Since 2011, the district of Dinh Hoa has implemented seven production models following VietGAP standards in the communes of Trung Hoi, Phu Dinh, Son Phu and Thanh Dinh, totalling over 69 ha. In the coming years, it strives to increase the total area to 3,000 ha, of which tea stem planting would account for over 70%. Meanwhile, it will carry out master planning, building up tea producing villages as well as cooperatives and teams.

In Dinh Hoa district, the monument of Dinh Hoa safety zone, which was called a *windy forest capital* or “a capital of resistance” areas during the Anti-French Resistance War period of 1946-1954, was classified by the Prime Minister’s decision as a special national monument. Annually, it attracts a large number of tourists to visit and study.

In addition, there are traditional villages of ethnic minority groups, such as the village Ban Quyen of the Tay ethnic group, in which the Tay people’s traditions are still preserved. This needs to be conserved together with the tea cultural landscape and the natural beauty so as to promote the typical traditions of Tay people in Thai Nguyen province as well as Vietnamese traditions as a whole.

### 2.1.2.4. Tea planting area of Phu Luong

Located north-west of Thai Nguyen province, Phu Luong district owns a tea planting area of 4,357 ha, producing 101 kg/ha per year (or 40,909 tonnes), of which an intensive planting area for new varieties of high yield and quality covers 2,500 ha (accounting for 57.4%). These areas are situated in rather flat hills and low mountains. Tea trees are shielded by palms, creating an icon for the land of “palm forest and tea hills”.

The largest tea planting areas are located in the communes of Tuc Tranh (1,033 ha), Vo Tranh (603 ha) and Phu Do (467 ha). The tea brand named after the site of Khe Coc (in Tuc Tranh commune) is one of the famous brands of Thai Nguyen. Khe Coc tea is known for its deep and delicate taste. The tea is planted in clean alkaline soil and watered by the upstream Song Cau River.



*Image 7. Palm Forest and Tea Hill, Phu Do Commune, Phu Luong District. Source: Dong Dang.*

#### **2.1.2.5. Tea planting area of Dong Hy district**

Dong Hy District is the third largest tea area. It has nine tea producing villages, concentrated in Minh Lap commune, Hoa Binh commune and the town of Song Cau, as well as many tea making and trading cooperatives. Their tea products have gained many awards and cup prizes in exhibitions and competitions held by the province and others. Regarded as a key crop tree producer, the district has focused on investment from different sources, supplying tea varieties to households in various communes, especially high quality tea stem varieties. Currently, Dong Hy continues to apply VietGAP standards for tea production in the communes of Hoa Binh and Minh Lap and in Song Cau town, with an area of over 30 ha. In 2017, the total area reached more than 3,200 ha, of which the marketable area is over 2,710 ha, at an estimated yield of 11,900 kg/ha a year and over 31,000 tonnes of fresh tea bud.

The tea planting area of Trai Cai in Minh Lap commune is long-known. Bestowed by nature with alluvia and water from the famous river of Song Cau, the tea products of Trai Cai are extremely fragrant and delicate, and are highly appreciated by customers as a speciality of Thai Nguyen province. At any time of the year in Minh Lap, enormous green hills can be found. The locals have grown habituated to planting and producing tea. Over time, there have been four traditional tea producing villages, located in Ca Phe 1, Ca Phe 2, Song Cau and Trai Cai. In these villages, the main income source comes from tea plants.

#### **2.1.2.6. Tea planting area of Vo Nhai district**

The mountainous district of Vo Nhai is located in the northern part of Thai Nguyen province, bordering with Lang Son province. Currently, its tea area is approximately 1,000 ha, of which

the area of tea stem cultivation accounts for over half. The remainder is the midland tea area. In recent years, the district has focused on replacing the midland tea with high quality varieties. Tea is grown in the communes of Lien Minh, Binh Long, Lau Thuong, La Hien, Dan Tien and Trang Xa. At present, the district has two traditional tea producing villages and one tea cooperative. In 2017, the output of fresh tea bud reached over 5,800 tonnes.

### **3. World Heritage List and Thai Nguyen Tea Cultural Landscape**

Further research could study the potential of the Thai Nguyen Tea Cultural Landscape to meet the criteria for inscription on the World Heritage List.

The Thai Nguyen Tea Cultural Landscape is an excellent example of the interaction between humans and the natural environment and of the traditional continuous residence of humans, illustrated by the fact that locals have resided, reasonably exploited and used the potentialities of nature, such as soils, for planting various trees, typically tea trees.

In their settlements and work, inhabitants have learnt how to take advantage of natural conditions like climate, land, terrain and water sources, and intensively plant speciality trees (i.e. tea), which bear many meanings in the food culture of Asia and all over the world. This clearly justifies a harmonious interaction between humans and nature, paving a pre-condition for sustainable development, protection of the living environment, and the creation and exchange of culture.

Thai Nguyen possesses diverse natural landscapes of plains, midlands and rolling mountains, and favourable natural conditions for tea plants. For thousands of years, the inhabitants have lived in a beautiful natural scenery, and many tea planting areas are attached to legendary stories and special places such as the Song Cong River, Mountain Lake Coc, Tam Dao National Park (in association with Dai Tu tea), the karst system of Hang Pagoda, Tien Nu Cave (relating to the tea culture of Dong Hy), Phoenix Mountain, and Mo Ga Stream (connected with the tea culture of Vo Nhai). This impacts people's understanding of life and the world as well as the cultural values relating to production, trading and culinary art attached to tea plants and tea culture.

The people of Thai Nguyen have created special tea products from tea plants and have learnt the know-how of tea processing and appreciation, which are learnt and transferred from generation to generation. It is an achievement gained from everyday life so it is a special cultural value – tea culture is still being developed and transmitted now. This cultural value is represented in various forms like farming techniques, processing, production, the art of tea enjoyment, spaces for tea drinking and utensils for tea making, as well as behavioural norms between humans and nature and among humans, mindsets, lifestyles, customs, beliefs and arts, etc.

#### **4. Factors affecting the cultural landscape of Thai Nguyen tea**

The tea plant is not only the basis of the production and trading sector, but also bears many cultural values; it has asserted its position in the economic development of the region and is a key element for development, enjoyment and cultural exchange. The cultural landscape of Thai Nguyen tea is affected by the following factors:

- The process of population growth and urbanization: development leads to an increase in population, urbanization and industrialization, which occupy many agricultural land areas, including tea planting areas. It is a challenge and a risk in the preservation of the integrity of the traditional tea planting areas.
- Environmental pollution: the human impacts cause environmental problems such as water pollution, water shortages and air pollution, which also undermine yields and the quality of the tea.
- Natural impacts: climate change also affects Vietnam, causing droughts, floods, landslides, frost, etc. In 2011, for example, about 22 ha of the tea planting area of Phu Luong was damaged due to droughts. Besides, diseases and pests pose threats to the development of tea plants and leaves, including *Peribatodes rhomboidaria*, *Geometridae*, etc., which can affect the evolution, integrity and values of the cultural landscape of Thai Nguyen tea.
- Fake and poor quality products: for the purpose of profit, some seek to imitate the brands of Thai Nguyen tea, whereas some households do not follow the procedures strictly and sell poor quality products. This has significant impacts on tea producers as well as on the development of tea plants, values and the brand name of Thai Nguyen tea.

#### **5. Management and protection of the integrity and authenticity of the cultural landscape of Thai Nguyen tea**

Thai Nguyen is a key tea planting area in Vietnam, covering an area of 18,500 ha, of which there is a marketable area of about 17,000 ha, with a yield of 10,900/ha and total output of about 185,000 tonnes. Defining tea as a key crop tree, the authorities of Thai Nguyen province have taken many measures to enhance its productivity and quality, including the application of VietGAP standards.

Over time, the planting area has been increasing, helping to promote the economy, sustainable social order and the life of the inhabitants as well as of ethnic minority groups.

Inhabitants have preserved typical traditions of producing, processing and enjoying tea, which have been collected and have become cultural values and norms.



Image 8. The 3rd Thai Nguyen Tea Festival in 2015. Source: Vu Tien Hieu.

In preserving and developing the cultural landscape of Thai Nguyen tea, the Prime Minister issued *Decision No.203/QĐ-TTg dated 22 January 2013*, approving the project of conservation and promotion of tangible and intangible cultural values of Thai Nguyen tea for the period 2013-2015 and 2016-2020. The main contents can be described as follows:

- Preserving and developing Thai Nguyen's famous tea planting areas and traditional tea producing villages associated with traditional production methods, such as Tan Cuong, La Bang, Khe Coc, Trai Cai and Song Cau; and master planning the tea planting areas in order to improve productivity, quality and food safety of fresh tea bud material;
- Collecting, summarizing, listing, storing and filing scientific documentation, and displaying and exhibiting artifacts, relics and antiques; restoring, preserving and improving cultural art forms;
- Improving the quality and promotion of traditional folk festivals of Thai Nguyen and tea culture among communities; developing contemporary cultural art forms in harmony with traditional ones;
- Furnishing facilities used for cultural and sports activities and organizing the Thai Nguyen Tea Festival, including the Thai Nguyen Provincial Museum, multi-purpose cultural houses, cultural exhibition centres, a sports complex and boat sailing centres, etc.
- Training, retraining and improving the capacity of the professional management, officers and cultural researchers; providing training on skills, professions, behavioural culture, communication and performing arts related to tea making and enjoyment;

- Furnishing infrastructure, services and products in the tourist destinations of Thai Nguyen so as to connect them and form intra-provincial and inter-provincial tours and travel routes to Thai Nguyen Tea Festival; focusing on tour and route development and tourist attractions associated with the traditional villages.

### **Selected bibliography**

Quy, D.N. Nguyen Kim Phong, *Vietnamese Tea Plant*, Agricultural Publishing House, Hanoi, 1997.

Lefèvre-Pontalis, P., *Note sur l'exploration et le commerce du thé au Tonkin*, E. Leroux, Paris, 1892.

Djemukhatze. K.H., *Tea Plants of Northern Vietnam*, Nauka Publishing House, Moscow, 1976. Trans. by Doctor Nguyen Ngoc Kinh, Agricultural Publishing House, Hanoi, 1981.

Province Party Committee, People's Council, Thai Nguyen People's Committee, *Dai chi Thai Nguyen*, National Political Publishing House, Hanoi, 2009.

People's Committee of Dai Tu district, *Comprehensive report on tea plant development in Dai Tu district up to 2020 with a vision to 2030*, Dai Tu, April 2012.

Thai Nguyen People's Committee, *Project on Value Enhancement and Sustainable Development of Tea Plant and Trademark of Thai Nguyen Tea, for the period 2017-2020*, Thai Nguyen, July 2017.

Website of Thai Nguyen province ([www.thainguyen.gov.vn](http://www.thainguyen.gov.vn)).

# Background History of Tea Cultivation in Myanmar

*Dr Kalaya Lu, Associate Professor,  
Dr Kyaw Kyaw San, Lecturer,  
Dr Aye Mya Nyein, Lecturer  
Dpt. of Botany, Univ. of Mandalay*

The word “tea” comes from the word used in the Chinese dialect in place of the word “cha”. Southern China and northern Myanmar are considered to be the homeland of tea, which was cultivated in China as early as 2700 BC, and was later carried to India and Europe by the Chinese. *Camellia*, belonging to the family *Theaceae*, was believed to be native to Yunnan Province in China and northern Myanmar (Maung Sein, 1973). According to the latest taxonomic study, there are altogether nine species of *Camellia* in northern Myanmar, namely *Camellia caudate* Wall, *C. asimilis* Champ, *C. costei* Rehd, *C. drupifera* Lour, *C. irrawadiensis* F. Kingdon-Ward, *C. stenophylla* Kobuski, *C. sinensis* (or) *C. assamica*, *C. wardii*, and *C. forrestii* (Kalaya Lu, 2006).

Among these species, *Camellia irrawadiensis* is endemic to Myanmar. Regarding its morphological character, it was observed to be the most primitive type among *Camellia* species worldwide (Kingdon-Ward, 1950). It was first discovered by F. Kingdon Ward in the 1940s near the Putao District in Kachin State in northern Myanmar. It was found near the Mali Hka River (Pro-Ayeyarwaddy), from which it took its name *irrawadiensis*. Tea has been known for thousands of years by the Tai people of Yunnan Province and northern Myanmar. Because of the long history of understanding, cultivating and utilizing tea leaves in the area, a lot of valuable traditional knowledge has been handed down for several generations.

In Shan State, the most popular non-alcoholic beverage is tea. Local Tai people of Shan State use tea as an effective stimulant to refresh themselves after a hard day’s work at the farm. Tea has become an essential part of their daily life and improves their daily routine.

Northern Shan State is renowned for its high quality of tea leaves and tea plantations. Northern Shan State and northern Myanmar were where the Ai Lao Kingdom was located from 200 BC to 400 AD (Anonymous, 1888-1924). The King of Ai Lao initiated the south-western Silk Road

trading route, known as the Hsu San Tu road, via the Putao area of northern Myanmar to India. After Khun Lone Li Maw negotiated with the Chinese emperor of the Han dynasty, the north-west Silk Road reached its peak in the 2<sup>nd</sup> century. Tea leaves from Yunnan and northern Shan State played a very important role as exports to India.

During the Lanna period (1296-1558), the cultivation of tea plantations achieved its golden age. Fermented tea leaves were the first innovation by the Tai people of the Lanna Kingdom. Shan State (Kyaing Tone) in Myanmar, Xishuangbanna in Yunnan, and Chiang Mia in Thailand were once the cultural estates of the Lanna Kingdom (Li, 2007). Tea cultivation can be traced in Xishuangbanna (Yunnan), Pan Kung and Pan Long (northern Shan States). In Xishuangbanna, 1,000-year-old tea trees are living monuments or solitary specimens. In Myanmar, on the other hand, 1,000-year-old tea trees still remain *in situ* in Northern Shan State at Lwai Seng mountain range, as Tai and Shan people regard old tea trees as sacred and pay them respect.

## 1. Fermented tea leaves used as pickle

The Tai people of Upper Myanmar, from Kachin State and Shan State in particular, first introduced fermented tea during the 8<sup>th</sup> century.

The Tai people seem to have originated in south-west China; they were especially numerous in the southern China area later known as Yunnan. In the 1<sup>st</sup> century, the Ai Lao Kingdom emerged in Yunnan, using for the first time the south-west Silk Road. The kingdom, however, collapsed in the 6<sup>th</sup> century, and in the 7<sup>th</sup> century, the Tai established the Kingdom of Nanchao, including areas now known as Kachin State and Shan State in modern Myanmar. Like other people of south-east Asia, the Tai people were inclined to be migratory (Sein, 1973).

Though many stayed in Nanchao, others moved westward across the north of Myanmar. In addition to forming principalities there, they even entered Assam, India, where in 1229 they established the Ahom kingdom. Others moved south from Nanchao along the great river valleys of Mekong and Chao Phraya. In the Menam-Chao Phraya Region, they adopted the aspired name Thai, meaning “free men” in the Mekong Region (Pearn, 1963).

The Tai had reached what is now northern Thailand by the end of the 11<sup>th</sup> century, and established a small state there at Payao in 1096. In 1296, they consolidated the Kingdom of Lanna, which encompassed the Chinengai, Chieng Mai, Xisauangbanna and Kyaing Tone area. The Tai people of northern Myanmar, Shan State and Thailand were greatly influenced by Ai Lao and Nanchao language and culture (Chartchai et al., 2017).

The first people to settle in this area in large numbers did so after migrating from southern China and northern Vietnam, which is now part of the Tai Lue autonomous prefecture (Xishuangbanna) in the extreme southern Yunnan Province of China. Thus, they were Chinese in ethnicity and were referred to as Yunnan in Yuan literature (Chartchai et al., 2017). The Yuan refer to themselves as the Khon-Muang people of the area. These Tai speaking people may have had

knowledge of tea plantation and fermentation, as recorded in Chinese literature. It is reported that Zhuan Cha'tea Oolong tea, a sour and non-salted fermented tea, was produced by a Tai speaking hill tribe of Yunnan province (Chartchai *et al.*, 2017).

The original recipe for tea fermentation has not been identified within any other groups of hill tribes but the Tai speaking groups.

Myanmar recorded cultivation of tea in the 12<sup>th</sup> century, during the Bagan period. King Ahlaung Sithu of the Bagan dynasty (1118) visited northern Shan State in order to search for an ancient temple that was erected by King Asoka of India. The Palong ethnic group participated in searching for this temple, which has still not been found. However, King Ahlaung Sithu gave the native ethnic Palong people seeds of tea as a gift for their voluntary participation in the search. The Palong people accepted the seeds of tea and planted them at Lai Seng mountain so as to show their respect to the Bagan king. Nowadays, nearly 800-year-old tea trees can be observed at Lai Seng mountain range, in northern Shan State. Native ethnic people of northern Shan State regard these old tea trees as sacred and pay them respect. The Novice Ceremony is a yearly celebration for these relic tea trees, during which the trunks of the trees are wrapped with monk rope during lent or a fasting period. Ethnic Palong people still worship these relic tea trees with offerings because they believe that they can bring luck, good harvests and good prospects. In this region, the tradition of tree worshipping has been handed down by generation to generation over many centuries; therefore, this practice is deeply rooted in the local people, and the *in situ* conservation of aged tea trees has become a community concept.

Looking into the history of Myanmar, a close relationship between the Myanmar royal court and Shan royal chiefs had been established since the Bagan period during 13<sup>th</sup>-14<sup>th</sup> century. Most of the Myanmar kings in the Inwa period (14<sup>th</sup>-16<sup>th</sup> century) were Shan, Tai or of mixed Shan blood. In this period, which has come to be called the Shan period in Myanmar (Maw, 2017), fermented tea became one of the essential royal food items in the Inwa court. The custom of drinking tea also became rooted in Myanmar food culture, as Myanmar acquired the habit from the Tai or Shan people of eating fermented tea leaves and drinking traditional black tea.

In the Kong Baung period, during the 17<sup>th</sup> century, tea drinking and fermented tea eating culture had already become Burmanised. Tea was designated an important royal item and laymen of Myanmar were not entitled to drink royal tea. The Myanmar king distinguished the high-ranking position of his court men by offering fermented tea, which was wrapped in banana leaves.

**Table 1. Varieties of Tea Species and Locality**

Sr. No.	Locality	Ethnicity	Tea variety	Cultivation			Century of cultivation
				Small scale	Medium scale	Commercial scale	
1	Pan Kum (northern Shan State Ah Twin Taung)	Tai Mong, Palong	<i>Camella sinensis</i> <i>C. grandibracteata</i>		✓	✓	10 <sup>th</sup>
2	Nan Kham	Tai Mong	<i>C. Leptophylla</i>	✓	✓		10 <sup>th</sup>
3	Nan Phatka	Tai Mong	<i>C. candida</i> <i>C. yunnanensis</i> <i>C. kissii</i>			✓	10 <sup>th</sup>
4	Tan Yang (NSS)	Tai Lue, Palong	<i>C. sinensis</i> <i>C. drupifera</i>		✓		21 <sup>st</sup>
5	Ko Kang (NSS)	Ko Kang, Tai Lue	<i>C. oleifera</i> <i>C. yunnanensis</i> <i>C. sinensis</i>		✓		19 <sup>th</sup>
6	Nan San (NSS)	Pa Long	<i>C. yunnanensis</i> <i>C. kissii</i>		✓	✓	15 <sup>th</sup>
7	Pan Long	Palong, PaO	<i>C. microphylla</i>		✓		19 <sup>th</sup>
8	Yatsauk (SSS)	Tai Long, PaO	<i>C. sinensis</i> <i>C. caudata</i>	✓	✓		19 <sup>th</sup>
9	Pindaya (SSS)	PaO, Danu	<i>C. yunnanensis</i>	✓			20 <sup>th</sup>
10	Tamonye (SSS)	Ko Kang, Tai Lue	<i>C. szechuanensis</i>		✓		20 <sup>th</sup>
11	Homalin (upper Sagaing)	Tai Lian	<i>C. wardii</i> <i>C. cardifolia</i> <i>C. stenophylla</i>			✓	5 <sup>th</sup>
12	Nang Mone (Kachin State)	Tai Khamti	<i>C. irrawadiensis</i> <i>C. warolii</i>	✓			2 <sup>nd</sup>
13	Putao, Putaung (Kachin State)	Tai Khamti	<i>C. irrawadiensis</i> <i>C. warolii</i> <i>C. forrestii</i>	✓			2 <sup>nd</sup>
14	Mohnyin (Kachin State)	Tai Lian	<i>C. wardii</i> <i>C. cordifolia</i>		✓		5 <sup>th</sup>

			<i>C. forrestii</i>		✓		
15	Chin State	Chin	<i>C. sinensis</i>			✓	21 <sup>st</sup>
16	Thandaunggyi (Bago Region)	Kayin	<i>C. sinensis</i>			✓	21 <sup>st</sup>

**Table 2. Cultivation of Tea in Myanmar in 2016-2017**

No.	Regions and States	Area under cultivation (in acres)
1	Shan State (north and south)	200,419
2	Mandalay Region	16,976
3	Kachin State	15,040
4	Chin State	9,200
5	Upper Sagaing Region	4,251
6	Pago Region	3,400

Tea was cultivated mostly in Shan State in Myanmar. It goes without saying that Shan State has a long history of cultivation and utilization of tea. The second most cultivated area is the Mandalay Region, and Kachin State is regarded as being in third position. In addition, Kachin State, now known as Northern Myanmar, has a long history of cultivating local tea species that can be dated back to the Ai Lao period (Kalaya Lu, 2008). In 2003-2004, Chin State started cultivating tea plantations in the style of terrace cultivations. Now, it has attained an area of cultivation of 9,200 acres. Homalin of the Upper Sagaing Region also has a reputation for cultivating local tea species. Most of them are cultivated in home gardens. Homalin has a long history of tea cultivation; according to their mulberry paper manuscript, the Tai Lian people of Homalin have cultivated tea plantations since they settled in the Hugaung-Kabaw valley in the 8<sup>th</sup> century AD (Kalaya Lu, 2008). The Thandaunggyi area of Pago Region has fair ecological conditions, providing for tea cultivation. The Kayan ethnic people of Thandaunggyi area established tea plantations in the 2010s. Now, the cultivation area has reached 3,400 acres.

**Table 3. Yearly cultivation of Tea in Myanmar**

No.	Year	Area under cultivation (acres)
1	2005-2006	201,720
2	2009-2010	228,780
3	2011-2012	236,240
4	2012-2013	223,860
5	2015-2017	236,270

Kachin State, known as Northern Myanmar, has 15,040 acres of land under tea cultivation, and is the third most cultivated area in Myanmar. Chin State has good geo-physical conditions and local climate conditions that are suitable for cultivation of tea plantations. The cultivation of tea plantations there was established in 2004. In the Upper Sagaing Region, Homalin township is known for its niche dried black tea products. The cultivation of tea has been gaining momentum. Thandaunggyi is the newest area in which tea plantations have been established; cultivation started in 2005.

## 2. Climate, topography and soil

The tea plant is essentially a crop of the sub-tropical and temperate climate. It is well suited to growing under varying climatic conditions, ranging from sea level to an altitude of 2,500 above sea level. The plants grow best in partial shade conditions with temperatures ranging between 18°C and 35°C and an annual rainfall of 100-180 cm per year.

Tea plants are usually cultivated on the slopes of hills. The method of contour terracing has recently been practiced. Soil must be well-aerated, deep, friable loam or forest land rich in organic matter. The plants are raised from seeds or seedlings or by grafting and are transplanted in rows at 5 feet intervals. In Putao, northern Myanmar, tea plants are grown as living fences. In Kachin State, most of them are cultivated as home garden plants. However, in northern Shan State, plants are sometimes interspersed with cash crops and permanent shade trees due to their sensitivity to drought, strong sun and wind. Proper drainage of the soil and moist humid conditions are essential for the healthy growth of tea plants. The best topographic range for the cultivation of tea plantations is between 1,000-1,500 m above sea level. Namsan, which is said to be the town of traditional tea, is situated at 1,000 m above sea level. In northern Shan State, tea plantations are cultivated at an altitude of 1,500-2,000 m above sea level, while in northern Myanmar, tea plantations are sometimes grown on abandoned plots (following the shifting cultivation agricultural system) at an altitude of 3,500 m above sea level. In Chin State, tea plantations are practiced in the style of contour farming at altitudes ranging from 2,300-3,000 m above sea level.

## 3. Cultivation

Tea is cultivated on a large scale in areas with a moist and warm climate. It grows from almost sea-level to an altitude of 2,460 m. Good rainfall, well distributed throughout the year, and the absence of strong, dry winds and freezing temperatures are some of the essential requirements. An average annual rainfall of 150 cm-370 cm is well suited for the cultivation of tea. However, an annual rainfall of 750 cm does not seem to produce any harmful effect on the plant, provided that the soil is well drained and there is no waterlogging (Sen, 1996).

In Myanmar, tea plants are usually propagated from seeds through grafting, budding and layering. The seeds are usually collected in May-June. In December-February, they are sown in moist soil after soaking for 24 hours in water. The sowing of seeds is done in nurseries, which should be properly shaded. The seedling plants germinate within 1-3 months after sowing. Generally, seedling plants of 1 to 1½ years old are transplanted to the fields or hillsides in April-October. The land used for planting is cleared by removing forest growth, taking care to prevent soil erosion. Pits of a convenient size, generally 30-45 cm deep and 24 cm wide, are dug, within which the seedling plants can be grown. After transplanting, the young plant should be covered with soil and a tripod assembled to protect the plant from the threat of animals. The old seedling plants are planted at 6 ft intervals in a row. The orientation of the plants in the next row are in an alternate manner to the plants in first row; therefore, the plants are in a zig-zag arrangement, which is very suitable for the plucking of tea leaves.

The parent tea plants are allowed to grow to their full size of 8-12 metres and usually flower between March and July. The soil must be systematically measured, hoed and weeded.

Among the tea plants, oolong tea is planted at 1½ ft intervals in a row. These plants obtained from rooted cuttings are most commonly used to set the uniformity of plant height during harvest time.

#### 4. Pruning

Pruning is an essential part of growth of the tea plant in order to maintain its shape. Firstly, the main stem is cut a few inches above the ground and lateral branches are allowed to develop. The process of pruning is repeated yearly in such a manner that the plants are shaped as flat, wide and bushy.

#### 5. Plucking

When the plants attain the height of 2 ft, plucking can be initiated. Most of the ethnic tea cultivators, Tai and Palong, are accustomed to plucking the tea by hand. The Palong ethnic people are recorded as being the experts in tea plucking. They can pluck and gather as much as 40-50 viss (64-80 kg) of tea leaves per day. The first plucking is done when the plants reach 2 or 3 years old. The optimum yield of leaves is gathered when the plant is of 8 years in age. Plucking proceeds for 7-14 days. In Pan Kum, only 3-4 plucking sessions are possible in a year. The most famous plucking is called "Shwe Phe Moe Lut", which is carried out before the rain. In "Shwe Phe Moe Lut", only 2 small young leaves and the terminal bud are plucked. In Hsipaw, Tan-Yang, plucking can be done 10 times per year.

Plucking is generally done by hand and the leaves are collected in baskets worn at the waist or on the back. When harvesting the leaves, only the final two leaves are plucked. The best quality tea leaves are plucked before the rainfall in April. These tea leaves, suitable for green tea, are also called "Shwe-phe". Tea leaves from the next month are called "Char-kan", those from the

third month are called “Khar-watt”, and those from the fourth month “Khar-nail”. Plucked plants stimulate new shoot growth, allowing the next plucking to take place in about 2 weeks. Finally, the leaves are dried under the sun for about one day and packed.

In northern Shan State, March to April is the best time of the first flush or first plucking before the shower rains of April. The second flush will follow a month later; it is usually done in May. In southern Shan State and some areas of northern Shan State, plucking continues throughout the year at four intervals. Good plucking stimulates the new growth of leaves.

## 6. Processing the dry tea

Harvested tea leaves may be processed into either green tea, black tea or fermented tea (Laphet-so).

In preparing black tea, the fresh leaves or harvested tea leaves are steamed for about 1 minute or allowed to wilt, then manually twisted by hand-rolling the leaves on a hard surface or bamboo mat. The rolling and twisting of the leaves secretes a yellowish-colour liquid, and then the leaves are rolled by roller and crushed by crushing machine. These leaves are put in an iron pan for heating, and are stirred around until they dry. The dried tea is passed through a perforated drum machine, which classifies the black tea into first, second and third class. The smaller leaf parts that pass through the sieve are categorised as first class. The classes of tea depend upon the sieve-plate.

**Withering:** Fresh leaves have a moisture content of about 75%. This moisture content has to be reduced before the leaf can be rolled without breaking up. The plucked leaves are spread uniformly on withering racks, arranged horizontally one above the other. Depending on the climatic conditions, the withering process can be completed within 16-24 hours. If the atmosphere is humid, hot air is circulated over the racks to hasten the process. During withering, a loss of turgidity in the leaf cells, a partial loss of carbohydrates and a limited breakdown of proteins occurs. The leaves lose their crispness and become soft and flaccid and are termed as withered. They are now ready for the second step.

**Rolling:** The withered leaves are now rolled in rolling machines to rupture the leaf cells and to extract the sap. Through this process, the enzyme and polyphenols are intermixed, and it also helps to spread the soluble extract on the leaf surface. Proper rolling gives the characteristic twist to the leaves and exposes the leaf juices for fermentation.

**Sieving:** After proper rolling, the leaves are passed on to the sifters. These consist of long and flat metal sheets with perforations, fixed to a frame. The metal sheets are in constant motion and function like a sieve, allowing the broken, smaller leaves and fine particles to fall below, while the larger leaves remain above. These are removed and rolled for the second time under increased pressure. The leaves are now quite flaccid and more or less green in colour and are ready for the next step.

**Fermentation:** During the rolling process, the enzyme polyphenoloxidase begins to act on the substrate, polyphenol, resulting in the formation of orthoquinones. The rolled leaves are spread on tiles or aluminium sheets and allowed to ferment. During fermentation, the tannin present in tea leaves is partly oxidised, giving the leaves their characteristic reddish-black colour. The quality of the leaf depends upon the correct degree of fermentation. The time for fermentation ranges from 3 to 5 hours. Generally, the shorter the fermentation period, the more pungent the liquor, while the longer the fermentation period, the softer the liquor and the deeper the colour.

**Drying or Firing:** After achieving the correct degree of fermentation, the leaves are dried to check for further oxidation and to remove all moisture. The grade and quality of the tea depends on the age of the leaves. “Shwe Phe”, meaning the youngest tea but with a golden tip, is regarded as the best quality tea. “Moe Lutt” means that the tea has been plucked before the rainy season.

In Myanmar, fermented tea leaves are made into pickle, which is traditionally and commercially very important. Zayangyi, located in northern Shan State, has a reputation for the production of high quality fermented tea leaves.

On a commercial basis, tea can be divided into basic categories:

1. Traditional fermented tea leaves;
2. Traditional sun-dried tea leaves;
3. Black-semi fermented;
4. Unfermented green;
5. Silvery white (unfermented);
6. Oolong or semi fermented.

Commercially, black tea is the most popular and most important.

**Green tea leaves** are green in colour and farmed without fermenting. Myanmar introduced green tea in 2010. The tea leaves needed for manufacturing green tea are always picked without the stalk.

**Oolong tea:** The colour of oolong tea is greenish-brown and brews to a medium liquor. Small-scale production of oolong tea occurs in Myanmar.

## 7. Special types of tea

**Scented tea:** This is prepared by drying the leaves with Spanish jasmine *Jasminum grandiflora* L. and then separating out the dried flowers. The tea acquires the scent of Spanish jasmine. It is a special preparation of the Shan State.

**Agar tea:** Dried tea leaves are steamed with water scented with agar oil extracted from agarwood (*Aquilaria agallocha*).

**Mint tea:** Oil obtained from the mint plant is sprinkled on the dried tea leaves, which are air dried for a few hours. These mint-scented tea leaves are put into a bottle and tied closed.

**Lotus pollen dusted tea:** This tea is very unique and produced using the traditional knowledge of the Tai Lue people, handed down from the Nan Chao period, when it was specially processed for the royal family. Dried tea leaves are put into lotus flowers in the evening before they close into buds. The small amount of dried tea leaves in the lotus bud is dusted and scented with lotus pollen throughout the whole night. When the sun rises, the lotus flowers reopen, and the lotus-scented and pollen-dusted tea leaves can be collected by boat. It is a long and laborious work, and one of the aristocratic traditions of tea drinking culture which is still practised by the Tai Lue people of northern Myanmar. Lotus-scented tea has a very sweet odour and a pleasant flavour; the Tai Lue people say that a better taste cannot be found in the world.



Image 1, 2, 3. Preparation of Lotus Scented Tea; Indigenous Technique of the Tailae. Source: authors.

The tea is the heirloom of indigenous techniques handed down from older generations. It holds the potential for niche Non-Timber Forest Products (NTFP) and cultural ecotourism.

## 8. Modes of use

### Traditional fermentation method

The conventional methods and fermentation processes for production are basically the same, but vary considerably among regions.

Firstly, the collected tea leaves are steamed for about 2-2 ½ hours and set aside for 1 hour to cool down. After they are cooled, the leaves are put into a bamboo basket, pressed tightly with banana leaves and left to ferment for 2-3 days, without adding any water. The fermentation process goes on for 1-2 weeks. Local strains of yeast and *Lactobacillus* play an important role in local fermentation. Based on the time of aerobic fermentation, a prolonged fermentation process can be carried on for 1-2 months so as to gain the required sour and bitter taste. Many factors affect the taste of fermented tea, including the age of the leaves and the fermentation process. Microbiologically, a two-step fermentation process is followed in this traditional method

of fermentation. The initial step starts with yeast, which also supports anaerobic fermentation. *Lactobacillus* strains are mostly found in step 1 of the fermentation process. The final fermented product has a sour-bitter taste with a good flavour.

### **Fermented tea**

Fermented tea has a sour-bitter taste with a good flavour. Elderly Tai people are used to chewing this tea rather than consuming it. Fermented tea leaves are consumed by the Tai Khamti people as a condiment to chicken or pork. The Tai Mong people of northern Shan State boil it with eggs in order to infuse them with the flavour of tea.

As for beverages, a small amount of fermented tea is put into a fermented rice wine pot for one night, creating the rice-tea wine that is typical of the Tai harvesting festival. Myanmar people are accustomed to eating fermented tea leaves as salad. Fermented tea leaves are saturated in groundnut oil or sesame oil and mixed with fried garlic and shredded tomato and eaten as a mixed salad.

The Tai Lue people of northern Myanmar collect the pollen of *Camellia spp* during the flowering season, which they mix with rice powder and molasses to make cakes. These cakes are sundried for preservation and are eaten as traditional confectionary after they have been steamed.

### **Tea root and bark wine**

This beverage is prepared by the Tai Lue of eastern Shan State, and has become popular in the Kyaing Tone area. The infusion of fermented tea roots and bark is mixed with sugar and a local yeast strain obtained from the fermented tea leaves, creating a beverage that is highly carbonated and drunk as medicinal wine.

In Shan State, traditional sun-dried tea is roasted with rice. Conventional roasted tea is very popular. Most of the people of Shan State prefer drinking roasted tea.

In Mohnyin (Kachin State), unfermented fresh tea leaves are used as a vegetable. The leaves are boiled and mixed with lime juice, grated coconut and peanuts to create a very famous dish, which is usually eaten at the full-moon day pagoda festival in March.

### **Medical properties of tea**

The medicinal value of the plants is due to the presence of specific chemical substances, which, when consumed in small doses, produce physiological actions in the human body. Some of these important compounds include alkaloid, glycoside and resin tannin, etc. The refreshing and stimulating effect of tea is due to the presence of the alkaloids theine and caffeine. Tea contains 2-5% theine, 13-18% tannin and a small amount of caffeine and volatile oil (Kyaw San, 2014).

Tea leaves are also considered an antioxidant. Following traditional Myanmar medicine, a pinch of fermented tea leaves saturated with sesame oil ought to be taken after meals to prevent any kind of disease. The principal amino acids present in tea leaves are glutamic acid,

phenylalanine, leonine and isoleucine. In addition, tea contains a unique amino acid L-theanine that may modulate aspects of brain function in humans.

In the process of leaf fermentation, ecological microorganisms participate in the chemical changing process which can promote antioxidant and antimicrobial activities. Traditionally, the juice extracted from leaves is given along with honey in cases of indigestion, diarrhoea and fever. Chewing tea leaves can remove foul odours from the mouth to help digestion.

The leaf extraction is used as an eye-drop in case of various eye diseases. It can also be used as a dressing for blistered surfaces and ulcers. The decoction of the leaves is also used to treat nausea and vomiting. Drinking tea leaves daily is said to prevent whooping cough and bronchitis, and a decoction of leaves is used as a remedy for dysentery and diarrhoea.

## 9. Production of tea in Myanmar

In Myanmar, over 120,000 acres of land is under tea cultivation in northern Shan State in Lashio, Muse, Kyaukme, Kwanlon and Laukkai District; over 50,000 acres are under tea cultivation in southern Shan State in Loilin and Linkhei District; and about 7,178 acres are under tea cultivation in the Homalin Township, Sagaing Division. Tea is also grown in the eastern regions of Thanlwin, in Thandaung, Kayin State, and in southern and northern Chin State. Myanmar tea differs in quality according to cultivation and processing methods.

### **Shan State**

In Myanmar, the custom of drinking tea and chewing fermented tea leaves started in Shan State about 2,000 years ago. The influence of both Ai Lao culture and Chinese culture at that time was so dominant in that neighbouring state attributed to Ai Lao. However, the culture in Shan State developed with indigenous knowledge to create something different from those original influences. Tea drinking and cultivation has varied in Shan State according to the local climate, environment and indigenous knowledge resulting from the peoples' struggles with the harsh environment. Some areas of Shan State have unique methods of use and production of tea.

Hot and humid summers followed by heavy rain fall and cold winters create the specific climate, topography and edaphic conditions needed to make northern Shan State a tea region. Mostly, local varieties of tea are cultivated using traditional methods. Recently, high-yielding varieties have been exported from China. The tea plucking season extends from March to December.

### **Pan Kum or Ah Thwin Taung Tea**

This type of tea is the most famous for its flavour and aroma and is known as "Shwe Phe Moe Lut". Among the various types of tea, "Shwe Phe Moe Lut" has been drawing the public's attention since the Bagan period, 11<sup>th</sup> century, thanks to its remarkable flavour, taste and colour. Pure tea, green tea and oolong tea have also been produced since 2015. About

10,000 acres of land is estimated to be under tea plantation in the Pan Kum area, and 500 tonnes of fermented tea are produced yearly.

A combination of culture and tradition among the Tai people of the former Lanna Kingdom must have created the traditional method of fermented tea production and processing of tea leaves.

Among the Tai people of Myanmar, the chewing of fermented tea leaves is a common habit for the elderly people of Shan State but it has become less popular, and in northern Thailand the habit has disappeared.

### **Northern Myanmar (or Kachin State)**

Kachin State has a long history of cultivating tea, ongoing since the time of the Ai Lao Kingdom. Kachin State is encompassed by the Eastern Himalaya mountain range, the altitude ranging from 150-5,000 m above sea level. Tea plantations are booming on the foothills of the Himalaya mountain range, which provides the perfect climate conditions for tea cultivation: heavy rainfall, moderate summers and cold winters. Six species of wild tea plants and one endemic tea plant grow in this area demonstrating that this is one of the areas where tea trees originated. The area is the third largest tea production region in Myanmar, and has great potential for commercial cultivation in the near future. The local Tai Khamti people have a long history of home garden cultivation of tea, especially with the local varieties of *C.irrawadiensis*, *C.wardii* and *C.forrestii*. These species are known as Himalaya tea species that cannot be cultivated in any other part of the country.

### **Sin Kyaing Tea Estate**

Situated in the north-eastern part of Kachin State, terrace cultivation is carried out here on the Himalaya foothills, with a total cultivated area of about 800 acres. The *Camellia sinensis* species from China was planted here for the manufacturing of green tea.

### **Mandalay Region**

The Mandalay Region is the second largest tea production area in Myanmar. Even though most of the land in the region is flat and not suitable for growing tea, two places have been recommended for tea cultivation: May Myo (Pyin Oo Lwin) and Moegoak. Pyin Oo Lwin is situated at an altitude of 1,500 m above sea level while Moegoak is at 1,500-2,000 m above sea level. The transport links of the Mandalay Region are the best for tea companies. Therefore, land used for tea has increased over 5 years in the Mandalay Region. Most of the tea is grown and manufactured using orthodox methods. These companies avoid growing local species of tea; their species are mainly introduced from China. The Mandalay Region has two distinct areas for producing Khar, a special brand of green tea.

**Moegoak tea** is famous for its special strong flavour and long leaves. Moegoak is also famous for producing traditional fermented tea leaves known as Moegoak tea leaves.

**Pyin Oo Lwin** uses Chinese varieties of tea and practises orthodox methods. About 80% of the present output of tea is special green tea. Fermented tea leaves are not produced in Pyin Oo Lwin.

### **Chin State**

Chin State was designated as a tea state by the government in 2005. The high mountain slope has an elevation ranging from 2,500-3,000 m above sea level. Combined with red loamy soil and an annual rainfall of about 80-110 inches, an environment is created which is favourable to the growth of tea, *Camellia sinensis*. The slow growth of the leaves, due to the extremely cold climate, and their slow maturation help to create a good quality green tea. The Chin area has the potential for extensive growth of tea plantations.

### **Thandaunggyi (Bago Region)**

Nature has provided the Thandaunggyi area with the most congenial climate and organic rich soil, which favour the growth of genetically modified tea species introduced from China. Tea is cultivated on the moderate mountain slopes at an altitude of 300-800 m above sea level. This area is marked by rain throughout the year and by cold winters. Annual rainfall is 100-120 inches per year. November to April marks the growing season. Terrace plantations are grown on the mountain ranges. Due to the ideal climate conditions, the plucking season lasts throughout the year. Traditional fermented tea is not produced here; this is a new cultivation site for the manufacture of tea using both the orthodox and crush, tear and curl (CTC) methods.

## **10. Recent status of tea cultivation production**

The objectives of the Myanmar tea sector are to fulfil domestic consumption needs; to export surplus agriculture products; to earn foreign exchange; and to support rural development through agricultural development. The key factors for development are: the creation of a profitable and sustainable market for tea; the utilization of good quality seeds to produce quality products with higher prices; and the adaptation of good agricultural practices (Nu Nu Yi et. al., 2014).

Therefore, the development of tea production is necessary in the context of modern agriculture, because tea cultivation and production has great potential for generating foreign currency. Myanmar still has large and extensive areas for the cultivation of tea. In addition, there is much diversity of native tea species with good ecological adaptability to local climate conditions. The tea industry also has a fair value chain and a supply chain, and provides sustainable employment to a large number of people. The role of the research and development sector should be accelerated to close the knowledge gap. The significant factor of Myanmar's tea cultivation lies in its spectacular array of local species diversity. Altogether 13 local species have been used to produce tea for drinking and eating, and this variety is reflected in a diversity of taste and flavour. In such a situation, uniformity of odour and flavour cannot be assured. Some of the endemic species - *C. wardii*, *C. irrawadiensis*, *C. forestii* - have never been cultivated in any other tea exporting country but Myanmar. Cupping tests for selecting the best

eco-varieties are increasing, and are important for choosing the best species. There is a large number of farming families who live both in rural and town areas and consist of female workers in particular. The government has issued a policy that encourages the extensive cultivation of tea using organic farming systems.

Traditionally fermented tea (Ah Twin Taung) should be considered to be designated as GI (or Geographical Indication) of Myanmar in order to increase exports. This would also require systematic high-quality management all along the supply chain.

Generally, tea cultivation utilises conventional methods; there is a need to acquire Good Agricultural Practice (GAP). GAP has to be appropriate not only for cultivation, but also for harvesting, preparing for the market and transportation. Due to neglecting the GAP system, Myanmar tea products do not meet the requirements. The participation and networking of the government sector, International Non-Governmental Organisations (INGOs), Non-Governmental Organisations (NGOs), Community-Based Organisations (CBOs) and farmers is essentially needed to reform traditional production into orthodox production. CTC-type manufacturing has been operating at a small scale in some parts of northern Shan State, but it needs to be encouraged. Much attention has to be paid by the government and the local agriculture ministry to the overall development of tea production in the sectors of pre-harvest and post-harvest technologies and loaning and financial institutions.

The Kokang tea brand is popular in the local market; within the past decade, Kokang white tea has extended to new markets both in local and foreign countries. External exposure and support for promoting the market and potential market of tea is also still left wanting. The Myanmar Tea Association was established in 2015 to assist farmers and has held workshops on the value-chain of tea and the use of GIs to promote products.

## 11. Conservation of tea genetic diversity

Myanmar is considered to be one of the birth places of tea trees. It is very important for the conservation of genetic diversity. In Myanmar, 13 species of *Cammelia* are found in Kachin State and Shan State. Moreover, Myanmar has a long history of the utilisation and cultivation of tea. Culture-linked genetic resources conservation plays a very important role in preserving trees over 800 years old. The Twin Taung area consists of Nam San, Zayan, Kum Hae, Man Kout, Wang Long, Wang Kaung, Taung Moe, Pankum Kumhall and Kumpound villages. These Twin Taung tea estates in northern Shan State were known to be the first tea plantations in Myanmar, and their production and cultivation of tea is still ongoing today. These areas have high potential to be designated as heritage tea landscapes, and further research and work in this sense should be encouraged.

There is also great potential for strengthening community links to conservation activities based on the available diversity of tea species by enhancing agroforestry and organic farming

in order to maintain the traditional tea landscape. The tree worshipping culture of local ethnic people also testifies to a co-existence of culture and biodiversity. The conservation of tea estates, management of mountain range farms, and the *in situ* conservation of mother tea trees should be considered integral measures in contemporary sustainable tea development. In regard to genetic diversity, this particular area is locally significant, nationally important and globally unique.

## 12. Recommendations

### 1. Improving the productivity of the current tea farming system

This is the most vital issue faced by tea communities and stakeholders in tea estates. Interventions for improving the productivity of the subsistence of tea farming systems are much needed.

### 2. Linking to micro-credit and micro-finance

Tea communication should be organised and self-help groups formed to instil the habit of saving and enhance financial security.

### 3. Development of market linkages

Market linkages should be developed and the local retail market should be extended; establishing a retail market network could be another option. The Myanmar tea exhibition has to be promoted.

### 4. Promotion of capacity building and tea agroforestry should be encouraged

Tea agroforestry provides the best opportunities for creating a green belt, which can mitigate climate change.

### 5. Encourage research on tea landscapes and their values

## References

- Anonymous. *History of the Shan State* (II 002), The Library of Congress, Orientalia memo 3/25/52., 1888-1924.
- Chartchai, K. et al., "Recent Research Advances and Ethno-Botanical History of Miang, a Traditional Fermented Tea" (*Camellia sinensis* va. *Assamica*) of Northern Thailand" *Journal of Ethnic Foods*, 4 (2017) 135-144.
- Cowan-Goe, I. and Than Than Sein, *Myanmar Tea Cultivation and Processing Guide*, Strengthen Publication Series, International Labour Office, 2020.
- Harvery, G. E., *History of Burma (to 1824)*, Frank Cass London, 1967.
- Heywood, V., LiR. K., Brummit, Culham, A., Seberg, O., *Flowering plant families of the World*, New York, 2007.
- Kalaya Lu. *Studies on Floradiversity of Nmai Hka - Than Lwin water Division (Northern Eastern Kachin State)*. Ph.D. Dissertation. Department of Botany, University of Yangon, 2005.
- Kalaya Lu, *Traditional utilization and conservation management of Non-Timber Forest Products (NTFPs) of Northern Myanmar*, Granted Departmental Research, Department of Botany, Myitkyina University, Kachin State, 2008.
- Kingdon-Ward, F., "Does wild tea exist?", *Nature*, 165: 297-299 (1950).
- Kyaw Kyaw Sann, "A study on Morphological Characters of Tea Plant and Effect of Fertilizers on Growth of *Camellia sinensis* (L.) Kuntze". *Universities Research Journal*. Vol.6, No.1, 2014.
- Maung Sein, L., *Nan-Chao in Yunnan (AD 649-808)*, M.A. Thesis, Rangoon University, 1973.
- Li, Jin, *Zhuang History and Culture*, Ethnic Publication House, Nanning, China, 2007.
- Nu Nu Yi, Thet Oo, Mg Mg Hla Shwe and Yan Lin. *An analytical study on food safety issue in different stages of vegetable production form farm to table*, Livelihoods and Food Security Trust Fund, Food Security Working Group, 2014.
- Pearn. B.R., *An Introduction to the History of South-East Asia*. Longmans of Malaysia Ltd, Kuala Lumpur, Hong Kong Print, 1963.
- Sai Aung Tun., *A Brief History of Shan State to 1960*. Yangon University, Yangon, 2005.
- Sen, S., *Economic Botany*, New Central Book Agency, Allen Press, New York, 1996.
- Shwe Zin Maw, *The Uneasy subordinate alliance: the relations between Myanmar and the Shan States in the Late Nineteenth century* (International Conference on Burma/Myanmar Studies), Chiang Mai: Chiang Mai University, 2015.
- Tai Aung Chit, *A study on Economically important plant grows in Lasho and Thein-ni township*. Ph.D Thesis. Department of Botany, University of Mandalay, 2009.
- U Myo Min, *Old Burma (as described by early Foreign Travellers)*. A Hanthawaddy Publication, Rangoon, 1947.

**Ethnic groups of Myanmar have a long history of cultivating tea**



*Image 1. Tai Mong People of northern Shan State are said to be the first cultivators of tea plantations in South-East Asia.*



*Image 2. The Tai Lae People of northern Myanmar are accustomed to using the pollen of tea flowers to make pollen cake.*



*Image 3, 4. The Tai-speaking people of northern Myanmar are also involved in tea cultivation.*



*Image 5. Palong, belonging to the Mon-Khmer language group, was handed down by the Tai people with regard to tea cultivation.*



*Image 6. In the present day, the Palong tribe of northern Shan State is mostly engaged in tea cultivation and processing.*



*Image 7. A 1,200-year-old tea tree standing as a living monument to tea cultivation in Xishungbanna Province, China, which used to be a cultural estate of the Lanna Kingdom.*



*Images 8,9. Cultivation of tea in Myanmar (Shan State) can be dated back 1,500 years, during the Lanna period. Shan State used to be one of the cultural estates of the Lanna Kingdom.*



*Image 10, 11. Commercial-scale tea cultivation at northern Shan State.*



*Image 12. Tea plantation in northern Shan State.*



*Image 13. Tea plantation in Kachin State.*



Images 14,15. Tea festival, first held in Mandalay, the third capital of Myanmar, in March 2017.



Images 16, 17. Fermented tea leaves were first introduced during the Lanna period, between 1,000-1,500 years ago. Northern Shan State used to be one of the cultural estates of the Lanna Kingdom.



Images 18, 19. Fermented tea leaves were innovated by the Tai or Shan people, who used to cook the fermented tea with pork or chicken.



Image 20. Fermented tea has become one of the essential and traditional food items in the context of Myanmar culinary culture.



Image 21. The most popular fermented tea leaves come from Zayangyi village, Namsan township, southern Shan State.



Image 22, 23, 24, 25, 26. Popular brands of fermented tea leaves.



Image 27. Roasted tea leaves from southern Shan State.



Image 28. Green tea from Kokang, one of the best teas from northern Shan State.



Image 29. Green tea from Kokang, one of the best teas from northern Shan State.



Image 30. A silvery-white colour and hairy leaves are some of the unique characteristics of Kokang tea.



Image 31. Northern Shan State has created an ecological niche suitable for the production of best quality tea.



Image 32. Green tea from Tangyan, northern Shan State.



Images 33, 34. Black tea from northern Shan State.



Image 35. Ecological niche-based black tea from Tamonye, northern Shan State.

Image 36. Ecological niche-based black tea from Namsan, northern Shan State.



Image 37. Ecological traditional style roasted tea leaves.

Image 38. White tea (or silver needle) has become a famous item.

Image 39. Ecological niched-based black tea from Kokang, northern Shan State.



Image 40, 41, 42, 43. Famous Brand of dry tea leaves.

# Conclusions

*Mónica Luengo*

The aim of this study, as mentioned in the introduction, was to provide a useful framework for potential nominations to the World Heritage List of tea landscapes in Asia. The intention was not to identify all the types, nor all the possible sites, but to initiate a path of research that could serve as a basis for later work. It was a complex task given the richness in values of these landscapes and the vast geographic scope, with an incredible diversity.

The first steps of the study were more difficult than expected considering the absence of previous work on the subject, so the process has been complex. The search for homogeneity between the different articles, in order to provide a common framework for comparative analysis, was one of the main requirements. Soon it was clear that there was a great diversity of perspectives from which the subject could be approached, providing evidence for one of the study's first conclusions: there is significant specialised expertise on tea, from agro-sciences to history to economy, but a lack of ad-hoc expertise to address the identification and understanding of these cultural landscapes with all their specificities.

There is an infinite amount of information and documentation on ecological, botanical, social, artistic, cultural, industrial, gastronomic and, above all, economic aspects about tea, which is undoubtedly one of the great crops grown in the region. There is also abundant data referring to production, surface, yield and incomes, and to tea varieties, flavours and scents, including green tea, black tea and red tea, and the thousands of varieties produced. However, there are only few examples of studies, all of them very recent, concerning the landscapes resulting from the cultivation of tea. There is insufficient current data regarding tea landscapes and their values, attributes, authenticity, integrity and protection and management processes. However, the numerosity and diversity of these landscapes, along with the multiple values they express, suggest that there may be potential for inclusion on Tentative Lists and, eventually possibly, for nomination to the World Heritage List.

The consideration of these landscapes for World Heritage Listing may contribute towards improving the balance and representativeness of the List under a variety of themes, such as

agricultural landscapes, shared heritage, cultural routes, industrial heritage and even 20th century heritage. The research on tea landscapes would illustrate important cultural periods, raising awareness of the importance of this heritage type. China and Japan are currently working on surveys from a cultural landscape point of view, but there is still a long way to go. It seems paradoxical that while tea is an important part of economic, social, cultural and religious life, the landscape from which all this flow of life springs and arises has not been adequately studied, perhaps because the associated tangible and intangible values vary greatly depending on the specific context, and even more so when discussing cultural landscapes in an Asian framework.

While compiling this thematic study, it was evident that there is a need for further research and documentation to understand better tea landscapes in Asia, their formation and their evolution as a basis for comparative studies that may reveal potential for World Heritage Listing. Many of them are organically-evolved landscapes and exceptional bio-cultural repositories with associated intangible values, where traditional knowledge is clearly present.

Every location boasts of having the best tea in the world: whether it grows on hills, high mountains or by rivers; in orderly alignments that follow contour lines, as in Sri Lanka or Myanmar; exposed to the winds and the sun or protected under palms, as in the Vietnamese Phu Luong district (the “palm forest and tea hills”), under great trees or even under screens of reeds or straw, as in the Japanese Uji-cha cultural landscape. The traditional tea fields in Hwage-myeon in Korea combine tea trees, other trees, crops and plants extending along the rocky slopes, so they do not appear as the most common line pattern, but feature a more natural looking landscape, which is much less orderly or designed than that which is usually associated with tea trees growing in lines on the hillsides. However, in every case, it is always the same tree, with infinite varieties. It is the origin of a world trade that long ago exceeded the limits of the Asian region to settle all over the world.

All countries agree that the origin of tea cultivation is China, from where it spread throughout the world. The oldest examples of tea landscapes may be found in this country, such as the ancient tea plantations of Jingmai Mountain in Pu'er, which have been entered onto the Chinese Tentative List (currently the only one). But many landscapes from other countries, although not so ancient, have specific stories that make them unique and could be reflected in potential nominations.

The study also introduces a very important aspect, which is the heritage consideration of these landscapes for protection and management purposes. Many of them are protected by agrarian or environmental laws, and even their product, tea, is subjected to strict quality controls, but there are very few that have heritage protection since they are considered only from a production point of view. Some few examples, generally associated with well-known brands, such as, for example, the craftsmanship of traditional tea making at Mengding Mountain (China), have been listed as intangible cultural heritage - including aspects like the protection and maintenance of relic sites; the selection, planting and cultivation of varieties of tea trees;

processing... - but the landscape itself is yet to be protected. Therefore, it can be affirmed that, in general, little protection has been granted to the landscape and places from a heritage point of view, although there are examples such as the Uji-cha producing areas of the Yamashira region in Japan that were registered under the Agency for Cultural Affairs' Japan Heritage programme as "A Historical Walk Through 800 Years of Japanese Tea". In addition, in Vietnam, the Thai Nguyen tea landscape has been protected by a project to conserve and promote tangible and intangible cultural values. But, it has been mostly the inhabitants of these landscapes that have themselves preserved the typical traditions of the cultivating, processing and enjoyment of tea.

The same can be said in relation to the management of these landscapes, which is usually considered solely from an economic or production perspective, and only sometimes considered from an ecological point of view, and, in very few cases, also from a heritage point of view. Institutions such as the Indian Tea Board, and similar existing bodies in other tea-producing countries, focus mainly on productivity, under-valuing the cultural heritage. Thus, many of the traditional tea landscapes are in danger precisely because their production is considered prior to their cultural character. However, there are already examples where the processes of biological agriculture or bio-cultural strategies have managed to safeguard traditional knowledge and techniques. The Food and Agriculture Organization of the United Nations (FAO) has already granted four of these landscapes the status of Globally Important Agricultural Heritage Systems (GIAHS), recognizing both their production and heritage value: Pu'er Traditional Tea Agrosystem and Fuzhou Jasmine and Tea Culture System (both in China), the Traditional tea-grass integrated system in Shizuoka (Japan) and the Traditional Hadong Tea Agrosystem in Hwagae-myeon (Republic of Korea). In all four of these landscapes, their cultural heritage, a product of wisdom created by ancestors living in harmony with nature, has been protected and recognised.

Few crops in the world have transformed entire regions of countries as tea has done, dominating the current landscapes and associating these regions with the tea landscapes where the different brands are produced. Frequently, the undulating fields with the neat and distinctive rows of tea bushes characterise the region's identity. Production of tea has increased at an incredible pace, reaching maximum levels. Global demand for tea does not stop growing (3 billion cups are consumed every day across the world!), prioritizing productivity despite sustainability challenges, and giving rise to environmental and social emergencies that are having a tremendous impact on tea landscapes. However, consumers are increasingly demanding high-quality tea that is frequently granted by the landscapes' values. These tea landscapes and tea production activities employ millions of people, a great percentage of whom are smallholder farmers for whom the basis of their livelihood is the cultivation of tea on the land that hosts them. Hopefully, this thematic study will be the trigger for the development of cultural landscape analysis, research and studies in the region, shedding light on this amazing heritage that is yet to be discovered.

## Recommendations

- Further research is highly advisable on tea cultural landscapes from an holistic perspective, linking nature and culture according to the guidelines of the latest strategies in relation to World Heritage (such as the Nature-Culture Journey, ICOMOS-IUCN), that considers that natural and cultural heritage are closely interconnected in most landscapes, and that effective and lasting conservation of such places depends on better integration of philosophies and procedures regarding their management. Particularly in tea landscapes, people have interacted with their natural surroundings, participating in the functioning of ecosystems and shaping the landscape through the cultivation of tea trees.
- Further analysis and documentation are also highly advisable regarding the potential for new heritage typologies associated with tea cultural landscapes, such as cultural routes. Linked to the theme is an inscription on the List: the Darjeeling Himalayan Railway (DHR), a component of the World Heritage property Mountain Railways of India, which connects the two districts of Jalpaiguri and Darjeeling, a trading point for tea in the colonial period, in the Indian state of West Bengal. This rail route played an important role in the tea trade in India. But there are other routes that, based on the tea trade, linked regions and countries with an intense exchange of ideas and values, such as the well-known ancient Tea Horse Route that paralleled the Silk Road, connecting Chinese regions to other countries such as Nepal and India. Other typologies that could arise come from the field of industrial heritage, as, since its origins, tea cultivation and production has become a huge industry with a history that goes back for centuries and with diverse and incredible assets associated with tea processing, transport, settlements, lodgings, and other kinds of built heritage. This typology is still little recognized or appreciated in many Asian countries and further research could be an excellent starting point to identify, protect and manage a threatened heritage.
- Further research also presents a unique opportunity to focus on a rights-based approach to World Heritage, promoting “strong relationships with communities and peoples in their work, embracing the principle of free, prior and informed consent of source communities before adopting measures concerning their cultural heritage, and offering all possible assistance so that communities and right holders are consulted and invited to actively participate in the whole process of identification, selection, interpretation, preservation and safeguarding, as well as the stewardship and development of cultural heritage” (ICOMOS, 2020, *Buenos Aires Declaration marking the 70th anniversary of the Universal Declaration of Human Rights*). Tea cultural landscapes’ must have a community-based approach, where sustainable development strategies, through traditional knowledge and with community-driven conservation and local empowerment, can be successfully applied (ICOMOS, 2014, *Florence Declaration on Heritage and Landscape as Human Values*). Much of the work carried out in tea landscapes has been

the result of minority ethnic groups (the Blang people in China, for example) or derived from migration (such as the Nepalis in India). Their cultural heritage is still to be recognised.

- A gender-based approach in future research on tea cultural landscapes is also essential. Tea landscapes are key to livelihoods in many countries, with the tea industry being a huge employer of cheap and skilled labour, especially at the time of plucking the tea leaves when women, in particular, are required to work intensively. It should be ensured that women have an equal participation in discussions and decision-making. Further research should open the door to new theoretical perspectives to better understand gender relations, and could reinforce the promotion of gender equality in the World Heritage List, recognising the contribution of women to society (UNESCO, 2014, *Gender Equality. Heritage and Creativity*; Rössler, M, “Gendered World Heritage? A review of the implementation of the UNESCO World Heritage Convention”).
- More research could also highlight potential new nominations relating to shared heritage, as around tea many nations have shared a rich and complex history. This is of key importance in relation to tea trade, tea cultivation and even the tea tree varieties that were exported from China to other countries. A clear example could be the commercial production of tea in India after the conquest of large areas by the British East India Company as the origins of a great tea industry with a rich and complex heritage. The research could be reviewed from a new perspective, as ICOMOS highlighted during its 2020 International Day for Monuments and Sites (ICOMOS, 2020, Shared cultures, shared heritage, shared responsibility) and explore the idea of sharing in relation to different cultures, heritage and responsibility.
- Deepening the study of tea cultural landscapes could bring to light exceptional intangible heritage, like that of the Blang people of southwest and southern China, who still maintain their primitive worship and altars for the Tea Ancestor, the Sacred Trees of the Tea Spirit, or that of the Tea festival in Jorhat, in the north-eastern state of Assam in India, not to mention the well-known Japanese tea ceremony (chan-no-yu). The thematic study mentions some of them, and also the very close links between tea and religious and spiritual aspects. But they are only a minimum sample of the incredible intangible heritage (ideas, beliefs, rituals, traditions, ceremonies, literature, arts...) linked to tea cultural landscapes.
- Protection and management of tea cultural landscapes in the Asian region from a heritage point of view is still a pending subject. There is a lack of studies and surveys that would lead first to the identification of such landscapes and then to the protection and management of these landscapes that are living and evolving. They thus present one of the main challenges for this type of landscape - how to protect and manage the conservation of their authenticity while maintaining one of their main characteristics: dynamism. This is even more evident in productive agricultural landscapes, where frequently change is inevitable and there is a need to find a careful balance between the

conservation of the essence or significance of the landscape, and change, simultaneously integrating all ecological processes and intertwining natural and cultural systems and process.

- Considering potential nominations to the World Heritage List, protection and management should take into account the interplay of natural and cultural processes and recognize new challenges that may threaten in the future their Outstanding Universal Value. Among these challenges, some may be highlighted:

- **Climate change**

Climate change has become one of the main threats to cultural heritage in general and to World Heritage properties in particular, and especially to cultural landscapes, having a great impact on their integrity. Climate change will have a negative effect on the habitat suitability of tea-growing areas, for which much depends on the change of seasonality, precipitation, temperature increase, among other factors, in the whole region, and thus on tea landscapes. Modifications to yields and quality will consequently have an influence on tea production and on the livelihoods of inhabitants and farmers. Recent studies have already reported on current impacts on tea systems, so there is an urgent need to address this issue and adopt mitigating measures. Appropriate strategies and policy frameworks should be implemented urgently so as to protect, conserve and manage this very fragile cultural heritage, subject to climatic factors affecting the tea agro-system. The change to improved quality tea clones, the use of drought tolerant cultivars, the selection of new suitable areas for tea and the abandonment of the traditional landscapes are factors that have already begun to take place. Along with these changes, natural catastrophes (e.g., floods, landslides, diseases) and environmental pollution (water and air pollution, mainly) have increased, having a direct impact on tea landscapes.

- **Abandonment of the agricultural lands**

The process of migration from the countryside to the city is already affecting many tea planting areas. It is a challenge and a risk to the preservation of the integrity of the traditional tea landscapes. The abandonment of traditional tea landscapes is spreading, with an impact on rural communities, biodiversity and ecosystem services. Although migration occurs at different scales, it is always associated with socio-economic changes such as declining and ageing populations, and an absence of new generations to receive and practice traditional knowledge and techniques that have as a consequence not only the loss of cultural heritage (both tangible and intangible) but also a reduction in the rich biodiversity of traditional tea landscapes.

- **Industrialization**

Another major risk affecting tea landscapes is intense industrialization. In search for an increase in yield and production, due to pressure of global market forces, industrialized processes have been encouraged in the past years. Recent strategies,

such as those adopted by FAO GIAHS landscapes and others, have involved turning towards organic and traditional farming to sustain the tea landscapes, and should be taken into consideration.

- **Tourism**

Increasingly over the past years, there has been a growing interest in tea heritage tourism, which has much contributed to well-being in rural areas in tea-producing regions. Tea tourism is motivated by an interest in the production, cultivation, history and traditions of tea. It is mostly developed in tea gardens, tea factories and tea shops, together with institutions, such as museums or centres that interpret tea culture. However, tea tourism is increasing at an enormous pace in several traditional tea-producing areas and might constitute a risk as sometimes indigenous and imported tea traditions are being transformed into simple experiences for tourists, without adequate interpretation. Tea tourism might be an opportunity, rather than a risk, if adequately linked with eco- and agro-tourism and cultural tourism, linking its benefits directly to the community.

Countries in the Asian region, a major tea-producing area, should consider some tea cultural landscapes for potential nominations for inscription on the World Heritage List, but there is still a long way to go considering the need for more detailed research and field work. Asia produces a varied range of teas, and supports a huge tea industry with an associated heritage that represents the long history of tea cultivation and tea landscapes. These tea landscapes, with an intense and calm sense of beauty, are the past and future of their rural environment and communities, a paradigm of a cultural landscape resulting from the harmonious interaction between humans and nature, and should be represented on the World Heritage List.