# Constructing sustainable development

A content analysis of the green policies on the tea industry at Jingmai Mountain region, Yunnan Province, China

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Master Thesis Series in Environmental Studies and Sustainability Science,
No 2020:048

A thesis submitted in partial fulfillment of the requirements of Lund University International Master's Programme in Environmental Studies and Sustainability Science (30hp/credits)


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Lund University Centre for Sustainability Studies

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Submitted September 30, 2020

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## Abstract

Sustainable development at the local level is greatly impacted by policymaking. In China's Jingmai Mountain region, the sustainable development policies are centred mostly around the tea industry, due to the social and environmental dynamics surrounding tea in that region. However, considering the complex interlinkages between the tea industry and local environment and society, the policies concerning the tea sector have many other significant local impacts. In recent years, due to the shift in China's political focus to ecological civilization, a series of policies on the green development of tea industry were drafted, including the organic transformation of terrace tea gardens and ancient tea forests conservation programs at Jingmai Mountain. Thus, to explore the potentials of the future impact and direction of sustainability in the Jingmai Mountain region, the "sustainable" and "developmental" factors, as conveyed in the sustainable development policies, need to be examined.

This thesis examines local policies on sustainability, green economy, and development in detail, through content analysis of policy documents, supplemented with semi-structured interviews. By using sustainable development theories to analyse environmental and developmental factors, measurements, and indications of current policies, this thesis presents the political imagination of the research site, and the potential impact on future development. As the analysis in this thesis shows, the policies aim to achieve local sustainability via a set of fundamental plans for tea industry regarding its infrastructure, regulation, standardization, marketing, and branding, and also for tea-related industries. I found that the policies are environment-oriented ways of boosting the economy; their aim is to balance sustainability and the needs for future social development, and also to integrate the development of other tea-related industries, considering culture and tradition as social resources in building the economy. During the design of 'local sustainability', governmental bodies from multiple levels are dominating most procedures, but it is focused on short-term targets without adequate consideration and agenda for the long-term transition.

More research is needed to investigate the local sustainable development policies and practices at Jingmai Mountain region, in particularly landscape ecology, anthropology, and sustainability science. The integration of participatory approaches could foster the local sustainability design and actions, considering it can get transdisciplinary and multi-level perspectives involved. This would lead to improvement of the sustainability of policymaking and sustainability practices among collaborators.

**Keywords**: local sustainability, green development, content analysis, policy studies, tea industry, Jingmai Mountain region

**Word count (thesis): 10,850**

## Acknowledgement

I would like to take the chance to say thanks for all who supported me, have been supporting me during the thesis writing, under this huge pandemic. I cannot finish this, without your support in any forms.

Firstly, I would like to thank all scholars who helped me during my thesis study. I would like to say thanks to my supervisor Sara Brogaard, who has been inspiring me, encouraging me, and guiding me through the whole journey. At the same time, I would also like to thank the others from LUCSUS who offered generous, open, and inspiring discussions, lectures, and seminars with me. These interactions mean more than knowledge sharing, but the equal, open, and friendly atmosphere of academia. For other researchers and professors whom I have contacted, thanks for all your open discussion and kind encouragement, they meant a lot for me to set the plan to enter the research field and work in the distance when I had no choice.

Secondly, sincere thank my LUMES-22 family, especially my 'Wednesday afternoon' thesis group. You are the ones who encourage, inspire, and challenge me during the whole two years journey. These learning experience from peers encourage me to be a more honest, careful, and brave person for future academic work. As for my friends who spent the time to discuss and improve my thesis patiently with tons of curiosity and wise. Sweden is much more colorful than what I experienced before met you. It is a pleasure and exciting experience for me to work with you and help each other, and for sure, it is more than a thesis and academic.

Most importantly, I would like to give the deepest gratitude to my parents and my Jiujiu. You are the ones who truly educate me what transdisciplinary and interdisciplinary mean, through helping me to ground, formulate, and adjust my thesis study. You are the bravest ones I know during the Coronavirus outbreak, which makes me believe there is always clear, bright deep blue sky up there behind clouds, during gloomy days. I cannot imagine if I would be a luckier person than who I am now.

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## List of abbreviations

**FAO** the Food and Agriculture Organization of the United Nations

**GDP** Gross Domestic Product

**GEP** Gross Ecosystem Products

**GIAHS** the Globally Important Agricultural Heritage System

**IGSNRR** Institute of Geographic Science and Natural Resources Research of Chinese Academy of Science

**MOA** the Ministry of Agriculture and Rural Affairs of P.R. China

**UN** the United Nations

**UNESCO** The United Nations Educational, Scientific and Cultural Organization

**UNESCO-WHS** the World Heritage Site listed by UNESCO

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# 1. Introduction and aim

How are policies concerning tea industry linked to the development of Jingmai Mountain region? Seen as a tea production and processing region in China, Jingmai Mountain region is well known for its premium tea products, ethnic traditions deeply interlinked with tea, as well as the massive size of ancient tea plantations and agroforests. Its policymaking of development strategies shifts from time to time, influenced by political actions at the national level. These include the economic reform and privatization (in 1980s), modification of government intervention (from 1980s to the present), sustainable development (from early 2000s), and ecological civilization (since 2013) (Pan & Lu, 2013; Mao & Wang, 2019; Gao, 2018; Gao & Su, 2018b). At the local level, policymaking is affected by both higher and local contextual dynamics (Heilmann, 2016, p.74, 84). Besides accomplishing major political changes, the local government also copes with the integration between the policies and socio-economic circumstances. For the local government, the process of policymaking and implementation goes beyond just political procedures and decisions; it is also about adapting political concepts and agendas at higher levels (national, provincial) to local context (prefectural city, county), and about interaction with local stakeholders (Chan et al., 2008; Donaldson, 2009; Zhong, 2003, p.93). The policies are made with the intention to foster local economy around the tea industry, in return, the policies are also influenced by the status of tea market, like investment, branding, quality controls, consumption preferences, and so on (Lv, Zhang, et al., 2009; Lv, Zhao, et al., 2009; Gao, 2018; Gao & Su, 2018a, 2018b). For instance, in the 1980s, ‘modernization of tea gardens’ was widely used for promoting standardized terrace tea garden farming, by introducing new tea planting techniques to small farmers by local government and researchers.

Recently, the political focus of the development of the tea industry lies within sustainability. The current development strategy for the tea industry suggested by the people’s government of Yunnan province in 2018 is referred to as "tea industry’s green development" in their policy documents, with a series of accompanied policy documents from provincial and local governments. Therefore, throughout this thesis, I have used "tea industry’s green development policies" or “the policies”, which includes the following policy documents briefly introduced in chapter 4 of this thesis, coded as P1-P7, G8-G17. This series of policies consist of goals such as the conservation of ancient tea trees, the transformation of all tea gardens

to meet standards of green or organic labels[1] in China, design and application of local[2] and association standards[3] of Pu'er tea production procedures, with further extension to other tea-related industries, to accomplish green economic development around tea industry and other tea-related industries (People's Government of Yunnan Province, 2018; The standing committee of Pu'er city people's congress, 2018). At the same time, the agroecosystem of Jingmai Mountain region is regarded as the only large-size ancient tea plantations in the world, and to recognise this, the documentation is being finalised to nominate this region as a UNESCO World Heritage site.

However, there is a lack of examination concerning the design of the policies. For instance, why are these chosen approaches considered appropriate strategies, and to what degree the design of the policies is considered green, and to what extent? Moreover, in terms of local sustainable development, how do the political design and the political imagination it conveys contributes to sustain, or develop, other social, economic, and environmental factors. Here, 'political imagination' refers to the imaginary status of Jingmai Mountain region shaped by the policies, and how the policies contribute to the transcendence. The thesis examines it through analysing content of the policies and the discourse that these policies are embedded in, including their goals, indications, measurements, and interventions, as well as the political and economic factors they built on. Blackburn (2000) suggests, sustainable development is about structural change, from a dominator society to a co-operate society. Even though the policies contain approaches like governmental intervention and support to other stakeholders in the tea industry, how these approaches contribute to co-operative sustainable action is still to be discovered. For sustainable development, political will is the necessary first step, while economic instruments are also essential. The combination of both contains uncertainties, such as market failure, political failure, or financial gap (Cairncross, 2000; Gillis & Vincent, 2000). Meanwhile, the tea industry itself also contains sustainable development issues like production and processing, market structure, energy use, agrochemical use, falling prices and associated economic decrease, climate change, stakeholder engagement and so on (Biggs et al., 2018; van der Wal, 2008). Additionally, at individual level, there are also other interlinked

[1] Green/Organic labels: the certifications on agricultural food and products, used to categorize different qualities of products, regarding agriculture production and management (Scoones & Elsaesser, 2008, p.5).

[2] Local standards: Standardization system updated from the 1990 version in 2020, referring to the standards-setting of products can be modified to fit the local traditional and cultural situation by local government (The State Administration for Market Regulation, 2020).

[3] Associate standards: A standardization system formed and used in China since 2015. Actors from production, business, management and services sectors are encouraged to collaborate with governmental bodies on setting standards for specific industrial procedure (Ministry of Civil Affairs of the R.R. China, n.d.; Standardization Administration of the P.R. China, 2018).

social challenges, like livelihood, health and safety, wages, representation of small farmers, uneven value distribution and so on (van der Wal, 2008). Thus, the policies associated with local sustainable development need to be examined in detail, for a better understanding of its political causalities, economic basis, and practical design, which will be the aim of this thesis. In the thesis, the practical and theoretical background are presented in the Context (chapter 2) and Theories sections (chapter 3).

Therefore, to analyse the design of the tea industry's green development policies, this thesis will examine the following question: what's the political imagination of Jingmai Mountain region's sustainable development, formulated by tea industry's green development policies?

The research question structures the thesis by examining sustainability and developmental factors, measurements, and components of the tea industry's green development policies, as well as analysing to what extent the policies contribute to local sustainable development. The question limits the scope of this thesis with the focus on the *Tea Industry's Green Development* policies specifically, considering them highly influential for the sustainable development of Jingmai Mountain region, therefore providing the basis and the setting for other approaches which can contribute to local sustainable development. The main method employed in this thesis is the content analysis of the policy documents, supplemented with semi-structured interviews. The use of both methods is introduced in more detail in chapter 4.

To answer the research question, there are three sub-research questions to guide the analysis on the policies. By using the classifications of sustainable development, chapter 5 and 6 are structured with three sub research questions:

1) what to be sustained and what to be developed?

2) How do the policies link environment and development, to what time frame?

3) what is the typology of sustainable development that policies are formulating?

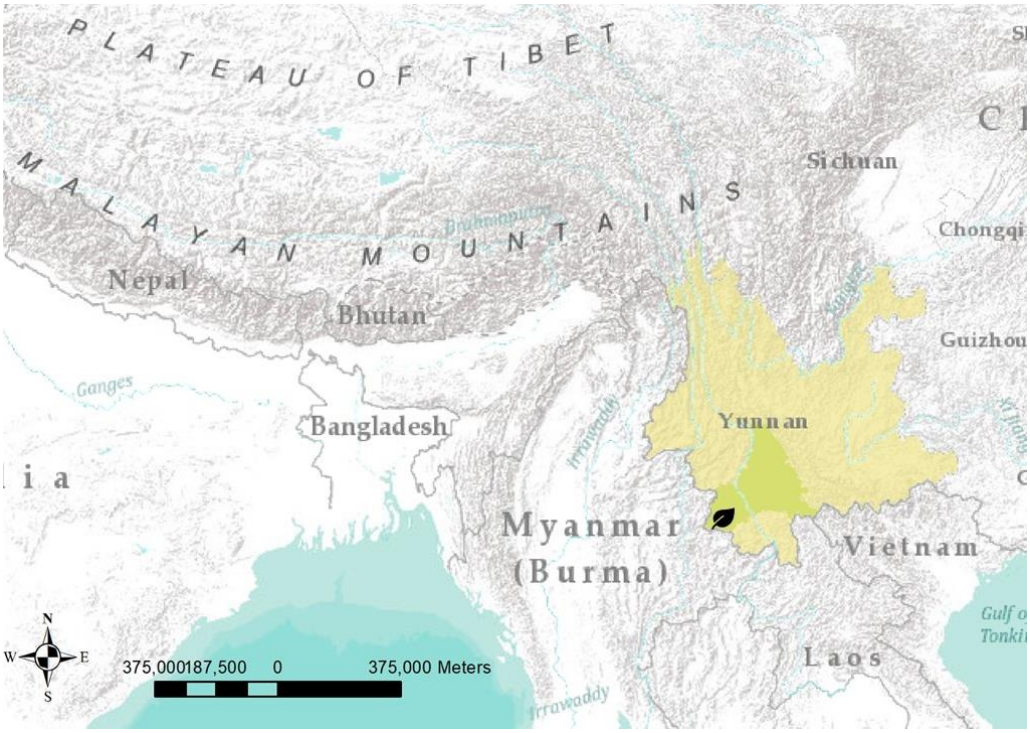
Via the former two questions, the 'what' and 'how' parts are explored: what the political imagination is, how it links the two dimensions of sustainable development inside and outside of the context of the tea industry, and to what temporal extent. Chapters 6 and 7 are structured based on the third sub-research question; to finalize the findings, they build on the former ones through a broader sustainable development theoretical lens.

## 2. The context

The impacts of policies and policymaking are also influenced by the context of Jingmai Mountain region, presented in this chapter. The diverse authentic traditions, culture and dynamic ecosystem have informed the policies, at various levels. Therefore, literature from geological, geographical, ecological, biological, archaeological, and anthropological fields contribute to increasing the knowledge about this region. Their insights help to understand the social and ecological elements that inform policymaking and its implementation.

### *2.1 Jingmai Mountain region*

Located within a southern branch of the Himalayas, the Hengduan Mountains are biodiversity hotspots, due to their sub-tropical and mountain climate (UNESCO World Heritage Centre, n.d.; Yu, 1986). Jingmai Mountain region is one of these mountains. It is located, in the administration division of Yunnan Province[4], Pu'er City (Pu'er Prefecture), Lancang County, which is the most southwestern region of P.R. China, close to the border with Myanmar (fig 1).




[4]Based on China's administration system, Jingmai Mountain region is in the administration division of Lancang County, Pu'er City (Pu'er Prefecture City), so both county and city governments are the main actors on local policymaking and implementations, together with other governmental and legislative bodies. People's Government of Yunnan Province, and congress and departments at the provincial level participate in setting regional developmental plans, legislative practices with effects on city and county levels.

**Figure 1.** Terrain map of Jingmai Mountain region, Pu'er city, Yunnan Province (own illustration, 2020. Based on data from gadm.org). The terrain map shows the landscape of Jingmai Mountain region, visualizing the location of Jingmai Mountain region (represented by a leaf) within the administrative Pu'er Prefecture City (light green), Yunnan province (light yellow), P.R. China.

Tea, especially Pu'er tea serves as a significant role for Jingmai Mountain region, so as Pu'er City. Ecological and biological tea literature remark the value of Pu'er tea region, as the one holds the most complete genes and plant taxonomy of tea species in the world. According to tea classification specialist Yu (2016), the scientific name for Pu'er tea is Assamica tea variety (*C.sinensis var. assamica (Master)* Kitamura). It is commonly known as Assamica tea from India, but actually mainly distributed and probably originated in the south and southwest of China (Yu, 2016; Chang, 1981; Chen et al., 2000). The name 'Pu'er tea' is commonly used throughout academia, tea industry and its market, as well as governmental bodies in China (Fan, 2015). Meanwhile, Yunnan province has the largest size of tea gardens in China, counting for 350,000 ha and 19% of total tea garden areas of the country in 2019 (Department of Agriculture and Rural Affairs of Yunnan Province, 2019). Tea scientists believe that the southwest of China, especially Yunnan province is the origin place of ancient plants and tea species, with existing tea species accounting for more than 77% of total existing modern tea species, and Pu'er tea variety is the main tea type planted in Yunnan province (Fan, 2015; Yu, 2016; Tong et al., 2015). Thus, Jingmai Mountain region's complex and well-preserved agroecosystem based on tea plantations is regarded as the model of sustainable agriculture. Jingmai Mountain region is a 'living museum' of Pu'er tea, containing various forms of tea plantations: from large trees, small trees, and to bushes (Chen et al., 2000; Yu, 2016).

Nowadays, tea gardens in Pu'er mainly consist of terraces and ancient tea trees forests (Hung, 2013; Shen, 2008). 'Ancient tea trees garden' or so-called 'ancient tea trees forest' have not yet been defined, and generally terms are used depending on the field of research and the status of forest management. For example, in reports, government documents, the term 'ancient tea trees (forest) garden of Jingmai Mountain region' is usually used, which includes its social factors. At Jingmai Mountain region, tea tree forests hold high levels of biodiversity: it includes complex forms of plantations (from high-middle-small trees to bushes and herbs and grasses) and resource utilization (Jiang et al., 2019; Qi et al., 2005). Scholars found that ancient tea forests used to be the only type of tea gardens in Jingmai Mountain, until the big transformation - the 'modernization of tea gardens' process during the 1970-80s, reshaped most of the local landscape of the Pu'er tea region, from ancient tea forests to terrace tea gardens, a form of high density monoculture (Hung, 2013; Zhang, 2010).


**Figure 2.** Terrance tea garden (left) and tea trees forest (right) at Mangjing, Jingmai Mountain region (Retrieved from Hung, 2013). Terrance tea garden refers to cultivated, monoculture tea planting and management, usually owned by small farmers or sold to big tea companies, under the administration of agriculture departments; Ancient tea trees forest/garden refers to the forest where contains ancient tea trees (>= 100 years old), forest usually owned by small farmers, under the administration of forestry departments (Hung, 2014; Shen, 2008; Tong et al., 2015a; Jiang et al., 2019).

The ancient tea forests make up to the main agricultural land-use type at Jingmai Mountain region. In 2012, Jingmai Mountain region was listed in the Globally Important Agricultural Heritage System (GIAHS), in name of Pu'er Traditional Tea Agrosystem (FAO, n.d.; IGSNRR, 2012; IGSNRR, 2010; Yang, 2012). This agrosystem contains 187,000 ha of wild tea tree communities and ancient tea plantations, emphasizing the cultural diversity and traditional methods used for tea plantation, which in return providing environmental and livelihood service to the ethnic communities (People's Government of Pu'er City, Yunnan Province, 2012). Later, in 2013, it was listed to be national key culture relic and candidate for World Cultural Heritage by National Cultural Heritage Administration, and was named as 'Tea source of the World' by International Tea Commit (People's Daily Online, 2013; UNESCO World Heritage Centre, n.d.; Xue & Wang, 2018).

Until today, 14 ethnic groups have been populating in the Jingmai Mountain, and most of their livelihood is related to tea production (Ma et al., 2018). According to archaeological research, one of these ethnic groups, the Bulang (or Blang), started tea-related practices like plantation and processing already around AD 695 (Chen & Miao, 2016; He, 2015). Most scholars who study ethnic groups at Jingmai Mountain region believe that the well-preserved agroecosystem is closely linked with the belief systems and agricultural

practices of ethnic groups: the Bulang group regards tea trees and Jingmai Mountain region as the most important heritage from their ancestors, which needs to be well preserved with specific techniques (Qi et al., 2005; Xue & Wang, 2018; Guo, 2019). For example, to cope with pests or to prevent tree diseases, chemicals are rarely used by the Bulang group, since they believe that chemicals will destroy the whole agroecosystem, while their traditional approaches like in-time tea leave picking and no harvesting during rainy days could help with the gradual decrease of pest populations (Duan, 2019a; Guo, 2019).

Tradition and culture of ethnic groups living in Jingmai Mountain region were being studied before being named as a site of the GIAHS. Together with FAO and MOA, Institute of Geographic Science and Natural Resources Research of Chinese Academy of Science (IGSNRR) explored the tradition knowledge and culture on agricultural practices, which resulted in a few books and documentaries, remarking the cultural uniqueness and sustainability meaning of Jingmai Mountain region as a comprehensive and integrated system consisting of diverse social-ecological factors (IGSNRR, 2013; Zheng, 2015). Followed with diverse fields of researches, there are mainly two perspectives on Jingmai's tradition and culture: On the one hand, grounded research teams collaborating with cultural heritage administrative department highly appreciate the existing residential villages and its social-ecological landscape. In their point of view, conducting research and illustrating conservation plans should focus on people living there, where there is not a solid, deadly, nor physical heritage, but a 'living heritage' - Jingmai Mountain region is actively interacting with holistic and dynamic factors from multiple social and political levels, at macro and micro spatial scales, so that the goal of conservation is sustaining its cultural, social and ecological diversity (Zhou, 2018; Zuo, 2019; Zou, 2015, 2018). On the other hand, there are researches seeing Jingmai Mountain region's cultural landscape from the material scale, then to the spiritual scale. Therefore, the environmental and agricultural values of agrosystem are prioritized before the integration of social and ecological factors. In order to achieve sustainable protection of the agrosystem, traditional knowledge, cultural factors and social structure are suggested to be integrated as one necessity (Chen & Miao, 2016; Fan, 2015; Chen & Zhang, 2015; Ma et al., 2018).

### *2.2 Tea industry, development, and sustainability at Jingmai Mountain region*

At the national level, the tea industry in China is different from other agricultural industries (e.g. food, crop, and tobacco), which are under strict administrative regulation, concerning its production process, quality control (e.g. selection of seeds, hybrid, planting techniques, chemical use, and environment), and market (e.g. regulation on prices and production planning). According to the Ministry of Agriculture and Rural Affairs of P.R. China (MOA), both coffee and tea are special agriculture products different from other

crops, which are dependent on the market with limited governmental intervention (MOA, 2007, 2013, 2017). Since 2000, MOA (2007, 2016a, 2016b, 2017) have made it clear that tea industry, the asset for regional development of tea production areas, should be developed based on market circumstances: The private sector such as tea companies and factories are regarded as the main actors for the development of tea industry, through advancing techniques, investment and innovations, brandings, and setting up the regional standards for a tea product. At the same time, the public sector (regional and local governments, and public research institutes) is having a supporting role, which is mainly participating in the development of the tea industry through providing knowledge and quality control.

However, for tea regions like Jingmai Mountain region, the tea industry has more correlations with the local development, as well as social and environmental sustainability, rather than a simply economic setting. On a long-term basis, issues regarding social and economic sustainability are important because they have significant impacts on local environmental and social structures, especially when the political and economical circumstances change. Regarding tea-related practices as a sector or industry is a new thing in Jingmai Mountain region, compared to the unique, long-time, and loose practice pattern in the past: ancient tea forests in charge of small farmers (Duan, 2019b; Yu, 2016, p.21-22). The Opening of China in 1978 brought the potential and requirements of the open market, despite the previously communal nature of plantation planning and processing. Due to the economic reform, privatization and purchase of tea fields put 'the real market' in front of small farmers and local governments. The big changes of Pu'er tea market significantly impacted on the Jingmai Mountain region. After long-term fieldwork, Hung (2013, 2016, p. 12-19) and Zhang (2010) find that:

1) In the 1990s, the recognition of long-time aged Pu'er tea by consumers from Hongkong, Taiwan and Guangdong Province was a key turning point, not just for Jingmai Mountain region, but for the whole Pu'er tea region. Thus, in the 1990s and early 2000s, following visits and increasing consumption caused communities and local governments to reorganized vegetable and fruit agricultural practices, and also brought massive investments into tea gardens, factories, facilities and even brandings;

2) In the 1970s-1980s, terraced tea gardens were promoted by local governments in the whole Pu'er tea region, regarding them as the modern approach of tea plantation and management. The shift from self-sufficient food agriculture with limited profits from sales to intensive tea plantation and sale, while importing other food products, changed both the land use and lifestyle of communities;

3) Therefore, since the emergence of the tea market, especially the Pu'er tea market, the 'invisible hands' of market and capitalism, have been very influential at the local level. Market signals are generally the key information for small farmers and local governments to make decisions on production, and local developmental plans.

Meanwhile, in-site research on different aspects of tea production started. For instance, the tea science institute of Pu'er city, established in 1985 and was fully funded by the state. Since then, its research and trials include planting techniques, experimentation, farming training, and standard setting of tea products (Tea science Institute of Pu'er city, 2020). As a result, the complete database of (Pu'er) tea species and ancient tea trees was built upon the large-scale field surveys in the 1970s, which is the scientific foundation of policies studied in this thesis (like ancient tea tree conservation programs and promoting specific tea species) (Gao & Su, 2019).

Due to these social changes, the ecological changes have been tremendous, through land-use change and landscape reforming. The introduction of terrace tea gardens brought techniques like a single-species plantation, intensive harvesting, hybrid on specific species, reforming the land via artificial fertilizer, clear cut followed by replanting and chemical pest prevention (Qi et al., 2005; Tong et al., 2015b; Guo, 2019). Continuous surveys on ancient tea trees discover that, until 2019, the total number of ancient tea trees resources in Yunnan province has been declining since the 1980s, with a dramatic drop by 50% (Jiang et al., 2019).

Therefore, all these changes towards 'development' lead to the discussion about 'sustainability'. For the past decades, almost all large-scale land-use changes were regarded as the right and crucial paths to go. However, as soon as the market for the product from ancient tea forests developed, the value of agroecosystem was recognized. Under the international and national discourse of sustainable development, political concepts like green economy, circular economy, and ecological civilization, are integrated into the policies designed for Jingmai Mountain region. These policies are the focus of this thesis.

# 3. Conceptual Framework

Sustainable development theories bridge social and natural sciences, towards an interdisciplinary understanding of sustainable development. For this thesis, these theories contribute to setting up a theoretical framework, to find the angle to link tea sector practices and research with local sustainable development, as well as offering comprehensive points to critical thinking.

## *3.1 Sustainable development and China's model*

What is sustainable development? Since 'sustainable development' as a vision formally proposed in the 1990s at the UN conference, discussions around it generally come from the UN, at the intergovernmental level. Browne (2017, p.38) suggests the concept of sustainable development integrates the third dimension of human development into social-economic context: environment. In this term, the environment is emphasized to be the key benchmark for human development: so to say, society and economy of the 'human beings' are tightly depended on, and highly impacted on environmental factors and their changes. Some theories such as *limits to growth* (Meadows et al., 2004), and *planetary boundaries* (Steffen et al., 2015) make the point of environmental limits clear, there is no long-lasting human development if environmental factors are not carefully examined, considered, and treated. In this way, sustainable development is regarded as the vision that human development should correspond with the limitation of the environment, such as natural resources. In short, with appropriate use of resources and protection of the environment, sustainable development leads human development to a long-term and sustainable track.

Practically, scholars also see sustainable development form another angle that this concept could be defined by four classifications: sustainability, development, time frame, and interlink between human development and environment (Parris & Kates, 2003; Robert et al., 2005; U.S National Research Council, 1999). It breaks the boundaries between social, economic, and environmental dimensions proposed at the very beginning, into practical classifications – the 2×3 taxonomy of sustainable development, and linkages between sustainability and development. Goals, indicators, and targets are three major components this taxonomy is based on, considering as the derivative of choices qualifying context of development and sustainability (Parris & Kates, 2003). As summarized in table 1, these classifications help to distinguish one sustainable development goal/definition/practice from another, based on differences of its content.

**Table 1.**Classifications of sustainable development (adapted from U.S National Research Council, 1999).

| **What is to be sustained?** | **For how long?** | **What is to be developed?** |
|---|---|---|
| Nature (earth, biodiversity, ecosystems)<br>Life support (ecosystem services, resources, environment)<br>Community (culture, groups, places) | (x years/ 'now and future'/forever)<br>**Linked by**<br>(only/mostly/but/and/or) | People (child survival, life expectancy, education, equity, equal opportunity)<br>Economy (wealth, productive sector, consumption)<br>Society (institutions, social capital, states, regions) |

By using the classifications, Parris & Kates (2003) characterize and measure different sustainable development efforts such as Wellbeing Index and Ecological Footprint, which include measurements and guidance for sustainable development. Their result shows that even in the same name of 'sustainable development', content measured by these efforts are diverse and different from one to another. Some of them emphasize human development in a social context, the other put environmental impacts as the most important dimension. Therefore, adapted from the classifications, the research question of this study is set around these components, to develop a better understanding of targets, trends and timeframe of researched policies, as well as the goals that policies are contributing to.

China has also been exploring the path towards sustainable development alongside with international sustainable development actions, and has developed a unique model. This path taken is closely associated with the rapid economic growth because of the Opening of China in the 1980s led by the national government, and its economic achievement which contribute to the comprehensive development of other dimensions (Baker, 2015; Lin et al., 2013; I. Scoones, 2016). Socially, economic growth brings consistent resources for social development, supporting fields like poverty reduction and improvement of livelihoods (Lin et al., 2013; I. Scoones, 2016). Environmentally, Baker (2015, p.389-392) sees there are currently two main components in China: on the one hand, there are restoration and protection, tackling pollution and degradation issues due to severe environmental consequences of economic development; on the other hand, exploring approaches towards integrated sustainable development, in which, economic growth considers social and ecological impacts.

For sustainable development practices in China, national and local government bodies have the leading roles. At the national level, Baker (2015, p.397) describes how sustainable development actions are being framed into national five-year plans, including the development of all three dimensions. For instance, the scientific outlook on development proposed in 2003 has been the key ideology for setting national strategies, addressing development in a balanced state between social, economic and environment. Later,

the ideology of ecological civilization was proposed in 2015 by president Xi for national development. Addressing environment as the basis of development, ecological civilization is determined for comprehensive transition: degraded environment should be restored; economic development with negative environmental impacts should be changed; at the same time, environment monitoring and regulation system among the whole country should also be established based on environmental baselines (Wang et al., 2017). As one key component of ecological civilization the concept 'greening' is focused on the fields like industrialization, urbanization, and eco-environmental protection, covering transition paths towards circular, energy-efficient and clean economic development, with ecological and environmental concerns (Zhou, 2015).

These political designs and concepts, especially ecological civilization and greening deeply informed the policymaking of tea industry's green development policies, in terms of agenda proposing, targets setting, approaches choosing and so on. Compared to 'modernization of tea gardens' program introduced in chapter 2 which was mainly focused on increasing productivity and economic income for 'development', the policies studied in this thesis, also emphasize 'sustainability' and 'green'. In another word, for Jingmai Mountain region, these policies are designed to navigate its comprehensive sustainable development, based on actions around the tea industry. Therefore, by applying sustainable development theories for analysis on tea industry policies, the analysis narrows the focus down, to examine the agendas, indicators, measurements, trends, so as the ideology behind the text.

### *3.2 Sustainable development theories*

Why bother to make use of sustainable development theories, the ones generally focusing on a broad picture? Firstly, components of sustainable development matter. As Parris & Kate (2003) notice, the ones get measured, get managed. For green development of tea industry policies impacting on Jingmai Mountain region, most of them go beyond the 'tea industry' context, while linking other factors such as ethical tradition, culture, and ecosystem service, which fosters a 'green development' change in the whole social-ecological system. Therefore, policies on sustainable development can be seen as a choice containing and conveying values which get advocated during practice. In return, the 'green development' political actions reflect and contribute to the understanding of concepts like ecological civilization and greening: what the tactics target on, work on, and contribute to, would be considered as the state of 'green development'.

Thus, secondly, these theories help to visualize trends that policies could bring to Jingmai Mountain region once implemented. The policies are suggested as a vital political driving force for land-use change, via

institutional scale (individual to international), spatial scale ($m^2$ to the continent), and temporal scale (minute to millennium) (Bürgi et al., 2005). For Jingmai Mountain region, institutionally, policies to improve and regulate Pu'er tea industry, are generally understood as a political opportunity for local tea industry development, in which stakeholders can improve themselves for, and benefit from new development design (Gao & Su, 2019a; Pan & Lu, 2013). For instance, through proposing policy on Agro-Product Geographical Indications[5] by Pu'er city government, 'alliances' for responsible production are formulated, in which many tea companies at Jingmai Mountain region get involved to set up an association and local standards for tea especially Pu'er tea products from Jingmai Mountain region. Gao & Su (2019) point out, these actions are participatory ones that different stakeholders can engage in and collaborate for future traceability system, market branding and so on. Therefore, through participation, impacts on tea industry land-use are broad and in the long term, since the polices are also applied to other tea production mountains in Pu'er city.

Therefore, thirdly, back to the theoretical discussion, the use of sustainable development theories can surely offer the critical lens for the analysis. During policymaking, the policies are situated in certain socio-economic circumstances, with the possibility of missing some factors which can potentially contribute to the local sustainability in the long term. Thus, integrating sustainable development theories into the analysis can offer a comprehensive standpoint both temporally and spatially, by well examination of components of the policies, through a theoretical lens. Typology of sustainable development proposed by Faran (2010) surely provides perspectives to conduct policy analysis furtherly, to distinguish various approaches used in sustainable development actions and vision behind those choices. It builds on the first step analysis of classifying components of sustainable development.

[5] Agro-Product Geographical Indications: Indications set up by the Ministry of Agriculture, P.R.China, used for agricultural products from specific area, which are unique due to its geographical, historical, and traditional context (China Green Food Development Center, 2011).

# 4. Methods

To answer research questions, content analysis is the main research method used in this thesis, with supplementary semi-structured interviews. After assessing data availability, and validity of chosen topic, content analysis, specifically summative content analysis is used for data analysis. Meanwhile, several semi-structured interviews are used for scoping relevant research topics, providing diverse perspectives on policymaking and implementation. Moreover, interviewees also helped with the data collection process.

## *4.1 Summative content analysis*

The use of content analysis in this thesis adapts from the processes proposed by Mikkelsen (2005) and Krippendorff (2019), enlightened by Weber (1990). Mikkelsen (2005) suggests this method as a theory-based analysis, in which every step is framed under the theoretical justification. Thus, based on the sustainable development dimension, this analysis is designed for explicit four categories of tea industry's green development policies, which are currently under implementation. Here, table 2 shows the procedures of summative content analysis, including four procedures - selecting, sampling, coding, and analysis:

**Table 2.** Procedures of content analysis

| | |
|---|---|
| **Selecting** | **Scope:** Scope of this thesis is policy documents of tea industry's green development, which are implemented with impacts on Jingmai Mountain region. Except policies directly focus tea industry's green development, other complementary policy documents tackling associated issues are also considered. |
| | **Source and time frame:**<br>**Type 1. Policy documents (coded with P=policy documents, G=governmental documents).** Open policy documents accessed through the government website and local government/institute. Starting with *Tea industry's green development* from the government of Yunnan Province (P1, 2018), data selecting process scans all other relevant policy documents.<br>In total, four theme categories of policy documents are included as suitable data for sampling:<br>Category 1. Tea industry green development, since 2018.<br>Category 2. Tea industry development, 2006-2017.<br>Category 3. Historical heritage and relics, since 2010.<br>Category 4. Local development, since2008.<br>**Type 2. Newspaper articles (coded with N=newspaper articles).** As a supplement, some newspaper articles from local state media (Pu'er Daily) are also included. Data collected and used for content analysis in this study is selected from January 1st of 2019 to January 20th of 2020. These articles are all theme-sensitive, covering themes of 'Jingmai Mountain region', 'tea industry', and 'green development'. |
| **Sampling** | **Type 1. Policy document (P, G).** Since policy documents are coherently interlinked, in a massive amount. The criteria of sampling are set based on the research question, limited at Category 1 (P1-P7, G8-G17). The other three categories are used as supplementary data without content analysis, serving as supportive references to explain the policies. |

| | |
|---|---|
| | **Type 2. Newspaper article (N).** 28 out of 86 search results are included for analysis, after checking for duplication and relevance. 7 (source N1-7) of them are coded for content analysis, considered as propaganda of green development plans. The rest is used as supportive data for fact-checking. Full lists of the samples are in appendix 1. |
| **Coding** | **Coding frame:** To answer the first two sub-questions, all samples are coded and analysed based on coding rules (explicit in appendix 2). |
| | **Pilot and revise:** Via using analytical software Nvivo, after auto-coding 1) every text independently; 2) X categories independently; 3) X themes in each category independently, improved coding framework (see above) was formulated, while minor errors were corrected for language sensitivity. |
| | **Test of reliability:** Together with the last step. |
| **Analysis** | **Language:** Most documents are written and analysed in Mandarin Chinese for this thesis, while the ones related to World-heritage site and GIAHS are written and analysed in English. After analysis, the results presented in this text are all translated into English. Occasionally a few Chinese characters and Pinyin are also included in the text, when there are no official/commonly used translations of specific terms/phrases. |

As the strength of data selection, the thesis has a clear focus on policy documents, and to identify the components corresponding to the characters of sustainability, environment, and development. The selection provides the concrete material containing the understanding of what the 'political imagination' is, which is to be explored during the analysis. However, as the weakness, data selection here also limit the space for discussion in this thesis: on the one hand, the text-based content analysis can not exactly imply or reflect different scenarios during and after implementation of the policies, but a politically designed vision of the sustainable development of Jingmai Mountain. It formulates a way to examine the ideology, attempt, and motivation of the policies, to critically reflect on the political design. On the other hand, policy documents regarding other political actions which also have significant impacts on the research site, are not specifically included into the analysis, such as the protection and innovation of community in Jingmai Mountain region, plans to booster tourism, and UNESCO-WHS program. Part of the thesis intends to identify how the other developmental programs are generated and integrated into the policies for tea industry, in forms of economic and social pathways to sustainable development. Therefore, the correlations and content of the integration are the key to analyse, instead of introducing policy documents from all relevant fields into this thesis.

### *4.2 Semi-structured interviews*

As a crucial supplement, interviewees' insights and working experience on studied policies contribute to the analysis. On the one hand, they make up for the lack of fieldwork due to the COVID-19 pandemic, to keep this thesis updated to the status of the research site, and narrow down to the important factors of the policies. Besides academic literature, which is generally focused on specific issues via theoretical lenses at a specific period, interviews keep me updated with most details happening then and now. On

the other hand, since all interviewees are engaged in the policies studied in the thesis, the interviews also contribute to the analysis of the policies, via different perspectives. The policies only contain key information and objects to be implemented, to understand and furtherly analyse them, interviews provide plenty of background information, and actions happen after policymaking. Moreover, some interpretation parts of the interviews are also included in the result (chapter 5), to show the critical perspectives on the policies, as outsiders and partly ''insiders''.

Interviews in this thesis are mostly conducted through phone calls. Besides details presented in table 3, there are also introduction sessions (including introducing thesis, interview protocols and informed consent) and finalizing session (including double-checking interview transcript, formal closing of interview, and signing informed consent) conducted with each interviewee. Details of the interview are in the following table 3:

**Table 3**. Brief on the interviews

| **Interviewee (coded)** | **Description (Interviewee)** | **protocols (Interview)** | **Time** |
|---|---|---|---|
| **AO (Administration officer)** | AO is working at a governmental department specialized in the development of tea industries. He is engaged with both policymaking and implementation around the tea industry in prefectural Pu'er city, including Jingmai Mountain region. | 1, The introduction of the department<br>2, Department's participation in the tea industry's green development | Feb 11th, 2020 |
| | | 1, Implementation of tea industry's green development policies<br>2, Integration with the UNESCO-WHS program<br>3, Development of organic tea<br>4, Climate change and impacts | Apr 29th, 2020 |
| **IR (Institution researcher)** | IR is a researcher working on tea science research, who is engaged with drafting most policies including drafting specifications and regulations studied in this thesis, at the city and Jingmai Mountain region levels. | 1, The introduction of the institute<br>2, Policymaking and actions around ancient tea forest at Jingmai Mountain region | Feb 4th, 2020 |
| | | 1, Responsibilities and role of the institute in the tea industry, and green development actions<br>2, Management and difficulties around ancient tea forests at Jingmai Mountain region<br>3, Specifics around the organic transformation of terrace tea gardens<br>4, Climate change and challenges | Feb 11th, 2020 |
| **UR (University researcher)** | UR is a researcher working at local university, with a variety of outcomes regarding Pu'er tea industry and market, as well as the | 1, The introduction of the department<br>2, The market and development of tea at Jingmai Mountain region | Feb 10th, 2020 |
| | | 1, Transformation under the policies | Feb 29th, 2020 |

| | | |
|---|---|---|
| development of Jingmai Mountain region. He is partly involved with making of the policies studied in this thesis. | 2, Existing experience and current management status of terrace tea garden organic transformation<br>3, Understanding of ancient tea resources development and conservation<br>4, The status of research on tea and its engagement with local sustainable development | |
| | 1, Integration of the university and local sustainable development<br>2, The regulations of ancient tea forests<br>3, Future development of organic tea at Jingmai Mountain region<br>4, UNESCO-WHS program | Apr 29th, 2020 |

# 5. Results

This chapter consists of the analysis of results, structured into two sections based on sub-research questions: what is to be sustained and developed (5.1), linkages between environment and development (5.2), and timeframe of the sustainability policies (5.2). To present the result, social, environmental, and economic dimensions proposed in the sustainable development taxonomy (Parris & Kates, 2003) are integrated with the research content, and then divided into sustainability (sustaining tea agroecosystem) and development (developing social capitals and economy).

## *5.1 What is to be sustained and developed*

The political imagination of Jingmai Mountain region is based on, but also goes beyond the tea industry, in terms of both sustainability and development concerns. On one hand, the ancient tea forest as introduced in section 2.2 of this thesis is the main type of agroecosystem to be sustained. At the same time, considering the existing large scale of terrace tea gardens, transforming them into green and organic tea gardens, so that they adapt to the ancient tea forests, is considered the main developmental choice. The policies started with the provincial vision *the Green Development of Yunnan Tea Industry* (Yuncha chanye lvse fazhan) brought up in 2018*,* which assigned and provided practical guidance which set goals, dimensions, and named local departments to relevant actors at the provincial and local level (source: P1). Ten goals are suggested, covering issues of green development of the tea industry in Yunnan province, like greening all tea gardens, transforming to organic tea gardens, improvement of tea processing and increasing integrated profits from the tea sector by 2022 (source: P1). Following up with this visionary document, some provincial departments made further details like processing facilities management and founding, aiming to support tea garden transformation to tea farmers, companies and cooperative among small farmers (source: P2, P3).

### *5.1.1 Sustaining tea agroecosystems*

For the tea industry's green development policies that apply to Jingmai Mountain region, the concept of sustaining ancient tea agroecosystems is the basis. It is based on the long-time assessment of the agroecosystem, which present the following features: 1) it contains the full forms of different plantations, varying from herbs, arbours, shrubs, vines, to epiphytes; 2) in term of agrobiodiversity, it shows high species richness, compared to other types of agricultural lands at the same latitude; 3) for genetic biodiversity of ancient tea plantations specifically, there are 7 varieties/species existing; and 4) due to

difference of land management methods by landowners/small farmers, crops planted in the forests are different from one another (Jiang et al., 2019; Qi et al., 2005).

As a result of analysis, in the policies, approaches chosen for ancient tea agroecosystem is mainly around text unit category 'protection' – specifically, to maintain the status and functions of the agroecosystem. Sample P4, the main regulation on ancient tea plantations, defines 'ancient tea trees' as all types of ancient tea tree plantations, including wild ones, transition ones (from wild to cultivated) and cultivated ones over 100 years old. In order to protect these specific plantations, conservation and protection objects cover the whole ecosystem (regarded as ancient tea plants resources): including all other non-tea species, in forms of the ancient tea gardens (cultivated), ancient tea forests (non-cultivated or with limited management) and wild forests (source: P4).

Furthermore, the whole ancient tea agroecosystems consist of a variety of factors for life support, especially ecosystem services. Firstly, for social and economic needs, these rare varieties of tea are a consistent income sources for small farmers and other stakeholders. Corresponding to other specific indications on how to protect and sustain the agroecosystem services, the development design on ancient tea agroecosystems could be one that meets the needs of the present and future generations. Secondly, regulations to protect the existing micro-ecosystem, groups of plantations can also contribute to the integrity of agroecosystems. Sample P4 set rules of strict management of reserve zones, without further inappropriate agricultural activities. Thirdly, the policies are properly set up with capacity to adapt, including political designs (P4, P5), and further specifications for management on: currently existing cultivated ancient tea trees gardens (G15), and modelled ancient tea tree gardens (G10).

Besides ancient tea agroecosystems, for terrace tea gardens, the attempt to sustain ecosystem service is through organic transformation. Unlike the policies concerning ancient tea agroecosystem, there are no targeted policies on Jingmai Mountain region, but same indications apply to other terrace tea gardens in the administrative region. These organic transformation policies cover a set of systematic processes - from plating to final products. As the first plan for year 2020-2022, together with the guidance (P5) coordinatively suggested by city government*, Three-year Plan for Organic Transformation* (P6) divide transformation action task into short term target: transforming 50% of all terrace tea gardens into organic ones by 2022 (including processing ones and certificated ones), via approaches 1) establishment of organic fertilizer factories; 2) improvement of tea researches and tea processing; 3) nurture of big tea plantation and retailer companies; 4) allowance for transformation and so on. To support this short-period plan, sample P7 is the policy for establishing a traceability system of Pu'er product and its quality was drafted

by the administrative department of market regulation of Pu'er city and to be published by city government. Another six local technical specifications regarding organic and green Pu'er tea garden facilitation and management (G12, G13, G16, G17), processing (G11) and storing (G14), and two association standards regarding brewing tea (G8) and savouring tea (G9).

Thus, as discussed above, the policies are regarding Jingmai Mountain region as the agroecosystem, with diverse resources. Analysis on P4 shows high frequency of textual unit 'resource', which refers to ability of ancient tea agroecosystem for tea species research, documentation, and reproduction. It is built on the well-functioning agroecosystem, with richness of biodiversity, and other agricultural and environmental potentials. For conserving existing resources, different standards are decided in this regulation, depending on the status of the specific tea plantation and the form of ecosystem (P4). Meanwhile, the survey (every ten years) on ancient tea plant resources is scheduled (P4).

### *5.1.2 Developing social capitals and economy*

#### *Social capitals and development approaches*

Analysis on policies from the city government shows that Jingmai Mountain region's social factors associated with tea are also integrated in the green development plans. In the policies, social factors are considered as social capitals for green development, rather than objects to be preserved or conserved. In sample P4 and P5, text unit category 'tea culture' indicates the orientation for Jingmai's development, including text units like tea processing techniques, knowledge of Pu'er tea, ethnicity and tea, tea villages, and thematic tea tourism. Although since the 2000s, there have been financial investments on Jingmai's culture tourism, facilitating resorts, and tea companies, the integration between industries were not well coordinated. For instance, for a long time, economic practices at Jingmai Mountain region was simply between small tea farmers/ farming collectives and retailers, only some small tourism groups specialized in tea experiencing appeared occasionally (Hung, 2016, P125). Tourism was brought to Jingmai Mountain region through investment, in which big touristy company such as Bolian set up its own resorts, organic tea gardens, and its tourism routine for tea culture experiences (Bolian, n.d.). As social capital, tradition develops with more features, under the context of tea industry economy. For instance, Shankang Tea Ancestor Festival, the new year for Bulang people, is considered to be incorporating with the promotion of the tea market (Hung, 2016, c.6; Su et al., 2020). The tea ancestor worship ceremony during the festival includes a series of activities, which have been attracting many tourist populations since the 2010s.

***Economic development and tea sector***

Named after the tea specie, financially and economically dependent on the tea industry and tea sector, the people's government of Pu'er City was assigned tasks as a capable actor of the provincial tea sector green development (source: P1, P5, P6). At the same time, the experimentation of the national economic pilot and demonstration zone[6] has been conducting for years, in which the tea sector has been regarded as the core sector for green economy development. 'Tea' becomes the theme of green economic development, besides the tea industry. Sample P1 explains that these 'extensions' are built for a greener economic development path, compared to heavy industries and others depended on non-renewable resources. One the one hand, these new industries are considered with potentials for economic development in a clean and energy sufficient way(P1, P5); on the other hand, as the core of tea industry green development, organic transformation would be the 'green basis'.

Thus, as a key finding, the policies blur the boundaries between the tea production industry and other tea-related sectors – except the tea product industry, the policies also include other relevant industries, based on tea ecosystem services. Analysis shows that, focuses of the policies are quite different from term use of MOA at the national level, which is mainly focus on 'tea production' (chaye shengchan, 茶业生产 in Chinese), 'tea product' (cha chanpin, 茶产品 in Chinese) and 'tea industry development' (cha chanye fazhan, 茶产业发展 in Chinese). Sample P1, the vision at provincial level, illustrates a broader and comprehensive picture via 'extending the tea industry chain': Tea companies are encouraged to participate in deepening its industry chain with tea food products (e.g. tea seed pressed oil, tea-based drinks, snacks), tea industry tourism, and tea industrial experiencing; while there are also plans to attract investment from others companies like medical industries (since there is confirmed clinical and health values of Pu'er tea nutrition) (source: P1, P5). The vision of the tea sector in Pu'er city is that Pu'er city will become 'the centre of Pu'er tea in China', which contains 6 functions of exhibition, trading, storage, experiencing, researching and tourism (source: P1). Therefore, 'tea' is seen more than an agricultural and manufactural industry, but the theme of development of Pu'er city, in which tea-related industries with potentials are considered as options to the green development of tea.

Supplementary analysis on articles selected from the local state newspaper can furtherly explain the policies. In the main propaganda articles (N1-N7), there are four major themes illustrating the vision and

[6] Pilot and demonstration zone: a form of policy experimentation, which allows new approaches and innovative measures used within the 'zone' (Pu'er city) from the administrative bodies (Heilmann, 2016, p.303-305).

existing administrative orientation of city and county governments on Jingmai Mountain region, concluded with text unit categories of 'ecology', 'development', 'green', and 'finance' (see figure 3).

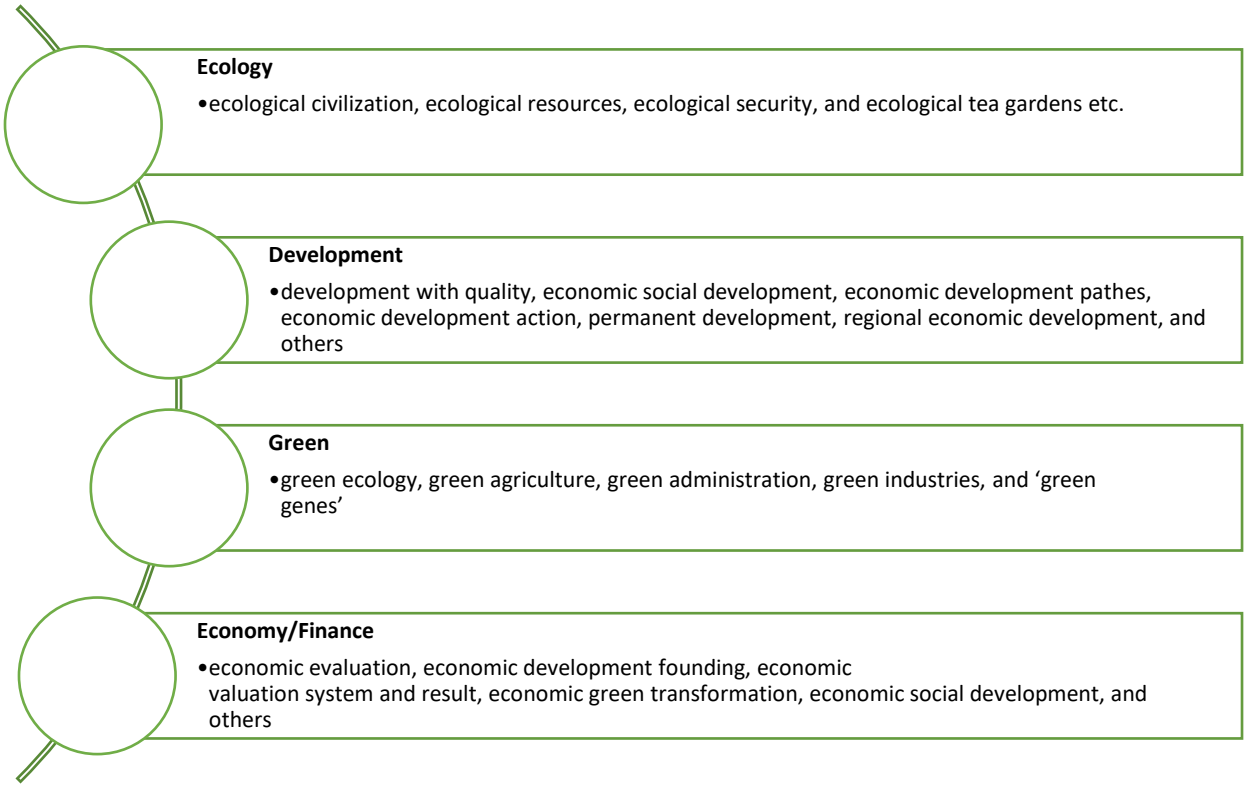



**Figure 3.** Four major themes of local state media articles (source: N1-N7). Theme 'ecology' is the basis: it is the main political ideology in all practices, where all industries and transformations are regarded as paths benefiting the ecological system in the long run. Theme 'development' is one approach for meeting 'ecological' goals. It suggests that integrated development is the path to local sustainability. Theme 'green' is the key to reform most sectors into sustainable ones. 'Green' implies that through green approaches, development can balance ecological factors with social and economic development well; Theme 'economy/finance' weighs equally to theme 'green'. It is related to developmental plans and strategies, performance of local government, and the transformation vision. In a word, it suggests how a reformed green administrative system could contribute to the new type of economic growth.

Meanwhile, analysis also shows, heritage protection and culture conservation have been an important part and a core task for city government, since the preparation for nominating as a world heritage site. Supported by the provincial government and under charge of national administration of cultural heritage, Pu'er city governmental departments have been working on archaeological documentation work since 2014. During preparing the nomination file of UNESCO world heritage site, the whole cultural landscape has been furtherly discovered, examined, documented, measured, and planned for future development

under protection and conservation status. This work covers massive amount of physical elements (like ancient tea plantations, tea tree forests, tea agrosystem, traditional residential villages, religious settings, and other archaeological findings), and social elements (like traditional architecture design, traditional ethnic costumes, belief and religious systems, technology and techniques of tea planting and management etc.). Instead of purely applied to protection and conservation, in the interpretation of local state media, these research findings are also regarded as in-depth and credible confirmation on regarded ecological and social resource. Therefore, seen as green industry, industries like tourism and recreation are expected to contribute a lot to the economic green transformation and development.

To conclude, the policies indicate the attempt to make full use of these social capitals for further industrial transformation or upgradation: instead of branding its ethnicity and tradition for tea products, Jingmai Mountain region is the living museum of tea, where tea-related industries can provide a full tea experience.

### *5.2 Timeframe, and linkages between environment and development*

As section 5.1 presents, the policies summarize and initiate different approaches for tea industry green development, associated with other industries around tea theme. Here, ancient tea forests conservation, terrace tea gardens organic transformation, and greening tea industry, are analysed as examples to discover what the timeframe of the policies set for. Furtherly, how these linkages between environment and development are formulated through policies, are analysed from macro to micro scales spatially.

#### *5.2.1 Timeframe*

This section presents analysis results, to discover to what timeframe the policies contribute to the sustainable development of Jingmai Mountain region. Components from GIHAS and UNESCO-World Cultural Heritage Site are also partly generated into indications of the policies, regarding ancient tea forests and tea-related traditions. In the regulation of ancient tea forest conservation (P5), the ecosystems of tea plantations are set with clear instruction for protection and conservation, from a natural dimension. Other culture and community conservation programs are not included since their targets and indications are out of the scope of tea industry policymaking. Here, table 4 summarizes analysis results of timeframes of tea industry's green development policies which impact on Jingmai Mountain region, categorized into three key programs. Because the policies are at the initiative stage, with a short implementation period until 2022, most targets and indications are clearly set with measurements. Long-term vision is not explicitly defined with targets after 2022.

**Table 4.** Time frames of tea industry's green development programs.

| Programs | Targets/Indications | Time frame/ For how long | Source |
|---|---|---|---|
| **Ancient tea forests conservation** | Establishment of institutions, protection zones, financial plans, and tea plantation resource list,<br>Protection and management based on the regulations, with limited intervention on ancient tea forest ecosystems,<br>Bonus or fees apply to appropriate management, or harm to ancient tea forests,<br>Survey on tea plantation resources, once every ten years. | Started from the 1st of July 2018; until further change of regulations | P1, P4, P5 |
| **Terrace tea gardens organic transformation** | Organic transformation of 600,000mu [7] terrace tea gardens (340,000mu certificated, 260,000mu under transformation) | 2020-2022 | P1, P5, P6 |
| | Tea garden: 80 tea companies with organic tea certification, and 50% of tea products are organic | | |
| | Deep processing: Facilitating 20 processing factories for organic production annually | | |
| | Technology and education: Organic tea industries education, covering 100,000 people annually | 2020-2022; long term plan afterwards | |
| | Supporting key actors: >7 companies with annual organic tea products valuing 5 million RMB; >7 organic certificated companies; 10 organic tea collectives annually; 20 tea planting farmer expertise annually. | 2020-2022 | |
| | Branding: 'the 1st organic tea of China – Pu'er', 12 organic tea companies in total, 3 worldwide famous organic tea companies | | |
| | Financial subsidy and bonus | | P1, P2, P3, P5, P6 |
| **Greening tea industry plan 2020-2022** | Greening all terrace tea planting procedures | By 2022 | P1, P5, P6 G10, G12, G13 |
| | Standardization of all tea processing factories | By 2020 | P1, P5, G11 |
| | Tea-based deep processing products count for 80% of all products | Until 2022 | P5 |
| | Traceability system: drafts and implements processing, garden facilitating, tea storing and quality control specifications; big data tank for Pu'er tea industries. test >1000 tea product samples annually. | Until 2022, no explicit information afterwards | P1, P5, P7, G16, G17 |
| | Technology and research: educating experts on tea product development, plant breeding, improvement industrial technology | Inexplicit | P1, P5 |
| | Integration of industries: establishment of Pu'er tea centre; tourism promotion including establishment of a series of touristy sites; building 20 tea villages, 3 tea-thematic tourism trails; tea-related industries contribute | Until 2022 | P5 |

[7] 15 mu = 1 hectare.

| | | |
|---|---|---|
| to 5-10 billion RMB GDP/ 1 county, 2-5 billion RMB/per/3 counties, 0.5-2 billion RMB/per/ 3 counties. | | |
| Policy support through subsidy: supporting facilitation of greening/organic tea gardens; supporting greening tea processing; financial support on small/medium size tea companies; supporting research on technological research; taxes reduction. | Since 2019, no explicit information about for how long | P1, P2, P3, P5 |

Based on the summary in table 4, there are three key findings about time frames of tea industry green development, impacting on Jingmai Mountain region: Firstly, most political components are focused on short-term targets, at the early stage of regulating all procedures of tea industry. Most policies are focused on plans to be accomplished within 4 years, with a clear emphasis on governmental intervention towards existing tea especially Pu'er tea market, as well as other industries within the 'tea sector', as argued in the last section (5.1.2). Therefore, secondly, at the early stage, industries that policies are specifically working on, especially Pu'er tea industry and its market, are already containing certain economic, labour and production structures. In terms of Jingmai Mountain region, there is already some big companies practicing organic terrace tea for years, alongside with other tea-based tourism activities. What the policies are contributing to is more like pushing the organic transformation forward, to get more actors engaged in, rather than establishing totally new rules out of no basis. Last but not the least, even taking the existing physical objects into consideration, the policies are headed on big transformation at a brief period. No matter the ancient tea forests conservation, or terrace tea gardens organic transformation, new instrumental settings, organizing institutions, facilitating, and resource restructure are required to meet the goals.

### *5.2.2 Linkages*

On the basis of definitions of sustainable development, how these linkages bridge environment and development are questions to answer with 'only', 'mostly', 'but', 'and', and 'or' (Parris & Kates, 2003; Robert et al., 2005; U.S National Research Council, 1999). Compared to the last section, in which analysis is based on tangible timeframes, analysis of this section is one step further. The linkages between environment and development is more than simply emphasizing on either environment or development, but to discover the goals and indications of textual content. In another word, considering the potential significant impact on Jingmai Mountain region's society and ecosystem, how the policies link environment with tea industry green development, become the key to understand Jingmai's path towards sustainable development.

The linkages between environment and development in the policies are diversified: the initiative (P1) from the provincial government provides the general development vision, and the specific the policy drafted for, the more features these linkages cover. As a result of content analysis, four scales of linkages are found (see figure 4): provincial (P1-P3), Jingmai Mountain region (P4, P5, P6, P7, G15), ancient tea forests(P4, P5, P7)/terrace tea gardens (P5, P6, P7, G12, G13), and the specific plantations for tea industry (G8-G17).

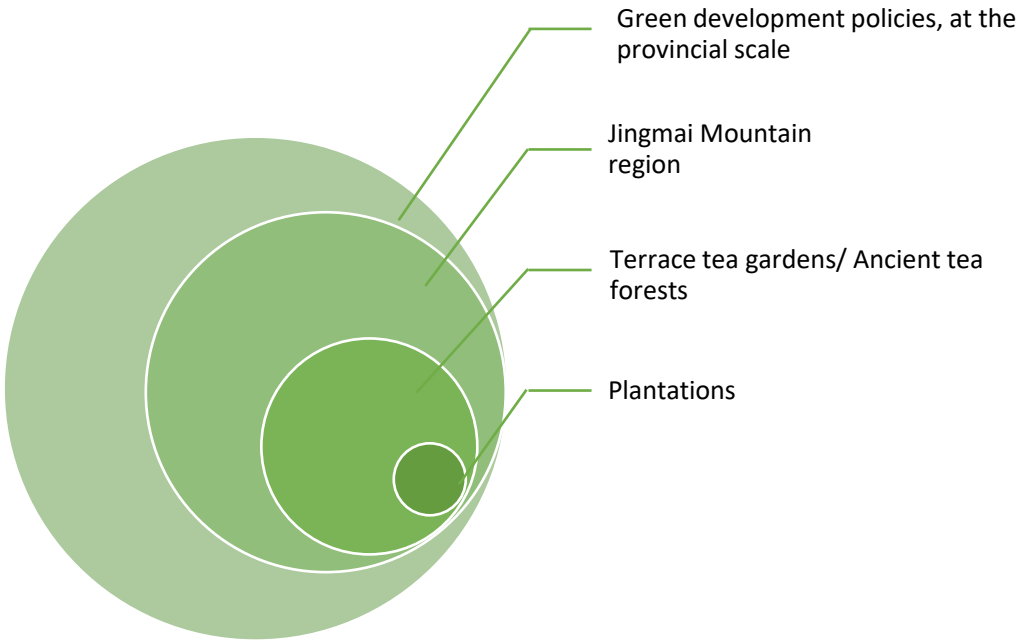



**Figure 4**. Four scales of linkages between environment and development.

At the macro scale (provincial), the policies (P1-P3) mostly emphasize economic development, with a consideration of taking green approaches. Since the policies from the provincial government cover all tea regions among Yunnan province, the 'political imagination' of Jingmai Mountain region is not specifically pointed out, but the picture of the tea industry at a geologically macro scale. This visionary policy (P1) along with the supporting ones (P2, P3) contain the most textual units which focus on tea production and quality: Through political actions (such as facilitating, tax, bonus, and regulation) and coordination with other actors (like research institute, big tea companies), the policies tend to achieve the improvement and green development of tea industry comprehensively. Thus, different from the previous role of government at the tea market, the policies show the determination of governmental intervention on the

regulation of the tea market and improvement of tea production for long term development. The statements on development of tea-related industries indicate the 'green characteristics', that the green development path of tea-related industries is through measures which are energy-efficient, high standardized on all agricultural and manufacturing procedures, and using clean energies. Therefore, at the same time, the development paths directly contribute to environment protection, via reducing the negative environmental impacts to the possibly lowest status.

However, in terms of negative environmental impacts from other tea-related industries, relevant points are missing from the policies (P1-P3) at the current stage. Besides the tea production industry, other industries are also with a possible environmental cost. Taking target 'the Pu'er tea centre of China' for example, it is the attempt to create a Pu'er tea zone consisting of exhibition, trading, communication, storing, tea experiencing, researching, and tourism functions. By gathering a cluster of all Pu'er tea-related industries to one area, it will surely increase energy and resource use for transportations, facilities, infrastructure and so on. At the same time, the encouragement of tea-related tourism is also missing the possible high environmental cost of tea regions. The 'green travelling' could lead to high resources, services, and facility demands on tea regions, which are potentially environmental threats if there is no specific environmental regulation on tourism in the coming years. In short, there are still many interlinked environmental constraints which have not been taken into consideration during policymaking.

At the Jingmai scale, the policies (P4-P6) also correspond to other developmental plans, including social development (e.g. poverty reduction, community infrastructure) and economic development (e.g. tea-based industries development, tourism development). There is also a statement from sample P6 that the organic transformation of tea especially Pu'er tea, is the responding as essential support for targeted poverty alleviation, to the social and economic development goals ''building a moderately prosperous society, and achieving rural revitalization (全面建成小康社会和乡村振兴)''. As in section 5.1.2 present that, tea production and other tea-related industries are suggested as the ones towards green development, which contribute to green economic growth. The development of tea industry and tea-based industries is considered as the path towards sustainable development for Jingmai, since potentially there will be economic growth interlinked infrastructure facilitating. Therefore, socially, tea organic transformation is seen as an approach with higher income for tea farmers, which can contribute to the work of poverty reduction for low-income tea growing communities. At the same time, the development of tourism is predicted with follow-up infrastructure facilitating, diverse income sources for tea village communities, also contributing to social development. Meanwhile, based on traditional tea

agroecosystem conservation, the policies are also suggested with capability to foster the work of tradition conservation, especially traditional villages conservation, preservation of tradition and culture. In this case, conservation could also be another dimension of development in which fragile and fragmented traditional culture and techniques are to be conserved and applied for green development as well.

From another perspective, at the Jingmai Mountain region scale, who the responsible actors are, and how the policies are going to be implemented also indicate the linkages. Based on the existing instrumental setting, two new departments were formed or reformed: the Centre for Tea and Coffee Industries' Development and the Forest Protection Department on Jingmai Mountain region. Besides coordination with industries, the Centre is also the key department for implementation of the policies. Its responsibility covers all targets proposed in the policies, with a focus on building organic tea gardens. It suggests the obvious orientation that the organic transformation actions are market-oriented, via the development of the tea industry and other tea-related industries. Interviewee AO, which works in this department, furtherly explains that most work of them at the current stage for the policies, are to coordinate small farmer collectives, big tea production companies, and other tea production actors to transform to meet the standard of organic tea farming (AO, Feb 11$^{th}$). During which the department is leading in procedures like making policy and specifications, seeking for certificating companies, coordinating subsidies and so on (AO, Feb 11$^{th}$, Apr 29$^{th}$). These activities suggest that it works both as an administrative role to regulate and standardize organic transformation, as well as a representative of Pu'er tea industry for future development. It coordinates the development of tea industry and tea economy, with a current focus on environmental protection and sustain ecosystem services. Meanwhile, for ancient tea forests conservation, as the main actor, the Forest Protection Department on Jingmai Mountain region is also formed and assigned with clear functions to maintain the good condition of forests, from one single plantation and its unique gene, to the large scale forests ecosystem (source: P4). Even the policies are development plans designed by the government, they are simultaneously built on, cooperating with, and relying on the existing tea market and its facilities. Thus, the picture of development is interlinked with environmental protection in some ways, especially in terms of sustaining the ancient tea forests.

Meanwhile, analysis on local state media articles (N1-N7) shows, current understanding and discourse around sustainability is beyond Pu'er tea industry, in which the tea industry and its potential ability to extend and deepen industrial chains are the starting point and recognized as key assets towards sustainability. At the same time, these interpretations are also highlighting the value of cultural landscape heritage, which is considered as an effective, long-term, and dynamic developing form. This form contains

possibilities to protect and even renovate current social-ecological environments, while other economic industries seen as green ones like circular tea industries and tourism can be well integrated in. therefore, there is an obvious interpretive trend that these two fields will be furtherly integrated, having correlatively positive effects on each other through a variety of interlinks.

The last two scales of linkages focus on the two different tea ecosystems, and their components. As discussed above, programs applied to Jingmai Mountain region are distinguished from transformation, to conservation. The series of exacting specifications (G8-G17) provide clear instruction on how these works are going to be conducted. Since the specifications covering techniques apply to single plantations, to the management of tea gardens, the linkages from these two scales are analysed here complementarily. Both interviewee AO and interviewee IR state that the current standards for organic transformation is at a higher level than organic standards of China, since the policies especially specifications are only made at the local level for Pu'er tea and other tea product, policymakers got flexibility, as usual, to make it stricter and limit the negative environmental impacts as much as possible (AO, Apr 29th; IR, Feb 11th).

For both management of ancient tea forests and organic tea gardens, development of the tea industry is tightly interlinked with environment protection and regulation, with potential for other developmental dimensions at Jingmai Mountain region. In specifications G12, G13, G16, and G17, environmental factors are set with high merits, covering water quality, air condition, soil management, suitable landscape, usage of organic fertilizer, selection of other non-tea plantations in the garden, picking methods, and so on. These interventions are expected with results that the tea ecosystems could be sustained with a complete ecosystem structure – including insects, birds, frogs, small mammals, and other suitable plantations.

However, during interviews, some difficulties regarding implementation of the policies are also recognized by interviewees. Interviewee IR participated in drafting specifications notices that there are many difficulties in implementing the process, and even in specification setting. He says that, ecologically, the genetic diversity of ancient tea plantations and aging issues are hard to control through specifications and regulations (IR, Feb 4th). He also concludes his experience that, before the regulation and technical support from researches, small tea farmers were generally lacking knowledge regarding proper management and nurture of ancient tea plantations (IR, Feb 11th). Interviewee AO also states, there is barely space for them to immediately respond to issues happening during policy implementations (AO, Apr 29th). If there is no specific administrative instruction, city governmental departments are hard to act on environmental and social problems such as pay-off during organic transformation, climate uncertainties, and necessary constructions out of plan (AO, Apr 29th; UR, Feb 29th).

## 6. Discussion

These political themes such as ecology, green, development and economy, are internalized with implementation and achievement of settled development plans. Administratively, these internalizations push the government body to continue its reform to adapt to the economic green development model. Concerning the tea sector and Jingmai cultural landscape protection, the whole city bureaucratic system heads to green administration via reorganizing departments for Jingmai ancient forest management, and tea and coffee industries development. At the same time, the existing dual economic evaluation system which integrates both GDP and GEP[8] measures turns government's focus of economic growth to green economy, ecological resources management, and environment protection. These reformulations set for economic green transformation are also considered with positive effects on other local development tasks, like poverty reduction through polyculture practices in tea forest. As stated, development of the tea industry and tea sector are regarded as the economic basis, and also as a carrier for all future design. Economic situations and activities are popular and followed timely, like development of Pu'er tea industry (e.g. the health of Pu'er tea market through governmental interventions and industry associations, increasing investment to tea-related sectors, and government participating tea expositions and international fairs), and Pu'er tea thematic tourism (e.g. increase tourist population, facilitating and improving tourism services, in-site clean energy vehicles).

However, the cultural and social contexts are still lacking appropriate consideration in the policies. Even other public sectors working on tourism, culture, tradition, and other civic affairs are engaged in green development actions, the main task of all departments is around the tea industry and its economic development. Su et al. (2020) explain the current situation of celebrating the festival is dynamically interacting with the market economy: as unique ethnic rituals associated with tea, the festival (and other traditions) is a symbol of tourism destination, investment; however, in return, these financial investments also reconstruct the meaning of traditions themselves, for Bulang groups. The political imagination with a specific focus on tea, then the others around tea, is highly addressing the importance of environmental protection, to sustain ecosystem service. It holds the potential risk of unbalanced development between social sustainability, and economic development.

[8] Gross Ecosystem Products (GEP) (definition by IUCN): 'the total value of final ecosystem goods and services supplied to human well-being in a region annually, and can be measured in terms of biophysical value and monetary value' (IUCN, 2016).

# 7. Conclusion

The 'local sustainability' is the clear political imagination of the Jingmai Mountain region, but the balance between sustainability and development, is blurred. By 'local sustainability', the policies intend to accomplish development while taking resources, capitals, interests of future generation into account - as most definitions on sustainable development. Resulting from analysis, the key focus of tea industry's green development policies, through organic transformation and conservation programs, is to establish the 'sustainable' foundation for future development. However, after detailed examination of the content the policies are based on, it is obvious that the processes of policymaking are under the complex economic and political circumstances. Economically, capitalism and market as the structural 'pull in' factor, for the local development to navigate the path: Potential market and profits of organic tea and deep-processed tea products are the key motivations for policymaking. Since there is already a market of Pu'er tea and other types of tea, what the governments and policymakers intend is to regulate the markets, and improve the tea industry's agricultural and manufactural techniques, for the potential income increase of the local economy, in-site tea companies, tea villages, and small farmers. Furtherly, politically, 'growth' is the 'push forward' role, tightly interlinked with sustainability and development. The policies are the result of provincial and local policymaking, to navigate Jingmai Mountain region's path under the politically development agendas: ecological civilization and developing green economy. These two concepts provide opportunity for local government to reorganize its rich environmental and social resources, to design the policies with sustainability consideration. Furtherly, we can also expect, through the path combining environmental and sustainable approaches, the policies will potentially contribute to shape the state of Jingmai Mountain region.

However, the status of sustainability design is weak. The analysis demonstrates that the 'local sustainability' of Jingmai Mountain region emphasizes not only the growth of economy and GDP, but also ecological limits, via taking ecological modelling for policy design. As we can see in chapter 5, the consideration of resource and wealth is highly based on the efficient environmental resource use and a series of conservative approaches: Social and ecological contents are regarded as resources/capitals to develop the society, and their values are measured by taking economic approaches. More precisely, for policymaking process, firstly, preserving ancient tea plantations did not happen before its economic values were recognised; secondly, cultural factors are seen as assets, encouraged to be used in tea thematic tourism - even commercialized as tourism sightseeing, in name of cultural development. Causalities behind policymaking are still in the line of economic growth and human wellbeing, where

steady development is on the agenda but does not appear to be the current interest of local policymaking. I argue that the policymaking process on the tea sector and the local sustainability is a situated environmentalism-oriented choice. On the one hand, it is designed for an integrated vision concerning social and environmental sustainability, but still located and rooted in the big tea (especially Pu'er tea) market and capitalism system, trying to demonstrate approaches out of economic basis. On the other hand, this policymaking might ignore other potential risks such as climate change, climate disaster, and pollution caused by tourism, which could lead to negative effects on long-term sustainability. In short, the policies are trying to move on the track focus on economic growth and other social development, through a series of higher environmental standards on tea industry and other tea-based industries.

Furtherly, there are two obvious gaps existing of the policies, which position the design and political imaginations at a relatively weak stage: Economically, all approaches proposed in the policies require high cost of time, resource, labour, and infrastructure investment for potential future economic benefits. However, the market demand on high quality tea products, especially Pu'er tea products, is uncertain. Therefore, unless there will be more economic benefits in the future, the transformation and conservation practices as planned might not be financially sufficient. Latterly, the time frames set in the policies are focused on a very short period (2-3 years), compared to the timespan demanded to meet the higher standards for the tea industry. Thus, there might not be expected outcomes because of lacking continuity of the policies, regarding taking the transformative and conservative approaches.

For the sustainability design of Jingmai Mountain region, the government plays various roles, which are all essential and leading ones. All levels of governments serve as the role of coordinator, even entrepreneur. Through policymaking, governments, especially the local government, are determined to transform tea industries, via devoting social and natural resources into 'green path'. However, there are still some details missing, concerning actors like small farmers. Policymaking was not fully considering issues related to small farmers, such as their abilities to adapt to new policies, flexibilities regarding livelihoods, and culture and traditions. In other words, there is a lack of integrated perspective for policymaking, and a certain understanding and practical gap between actors and decision makers. Thus, risks and uncertainties exist, considering policymaking on the tea sector might miss a comprehensive and justified process. The active participation of local government can turn to be risks to flexibility of other actors. For instance, extreme drought and issues related to the COVID-19 pandemic in early 2020 are just like some of other unknown risks, which could cause a big crisis to communities and tea sector in the

Jingmai Mountain region. If they did not have any other solutions for livelihoods, these risks would turn to be disasters to them.

Therefore, I would like to bring up the importance of taking a transdisciplinary and multi-level perspective into future research and policymaking, to understanding the diversity of local context, and contribute to its future development and sustainability. Besides the local context, considering the increasing frequency of interactions with actors from provincial, national, and international levels, with deepening connections. To foster transdisciplinary collaboration, participatory policymaking would be an appropriate approach. It helps to get key stakeholders involved, to integrate opinions from different governmental bodies and scholars who conduct in-site research, and most importantly, from the communities whose lives rely on the social-ecological environments there. Furtherly, it contributes to develop the features of Jingmai Mountain region with interactive, dynamic, and holistic characteristics. The more integrated and transdisciplinary that research and policymaking are, the more resilient the local system could be, for local sustainable development.

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# 9. Appendices

## Appendix 1 - list of samples used for content analysis

### Appendix 1.1 – List of samples (government public documents)

| Source code | Level | Classification | Coded (Yes/No) | Title (original language in Chinese + translated in English) | Published date |
|---|---|---|---|---|---|
| P1 | Provincial Government | Policy | Yes | 《云南省人民政府关于推动云茶产业发展意见》<br>"Suggestions of the People's Government of Yunnan Province on Promoting the Development of Yunnan Tea Industry" | 2018 |
| P2 | Provincial Department | Policy | Yes | 云南省农业农村厅、云南省市场监管局 《云南省茶叶初制所建设管理规程（试行）》<br>Yunnan Provincial Department of Agriculture and Rural Affairs, Yunnan Provincial Market Supervision Bureau "Regulations for the Construction and Management of the Primary Tea Plant of Yunnan Province (Trial)" | 2019 |
| P3 | Provincial Department | Policy | Yes | 云南省农业农村厅、云南省财政厅《云南省茶业绿色发展政策支持资金申报指南》<br>Yunnan Provincial Department of Agriculture and Rural Affairs, Yunnan Provincial Department of Finance, "Guidelines for the Application of Support Funds for Green Tea Industry Development in Yunnan Province" | 2019 |
| P4 | Provincial Congress | Regulation | Yes | 《普洱市古茶树资源保护条例》<br>"Pu'er City Ancient Tea Tree Resources Protection Regulations" | 2018 |
| P5 | City Government | Policy | Yes | 《普洱市人民政府关于普洱市茶产业发展意见》<br>"Suggestions of Pu'er City People's Government on the Development of Pu'er Tea Industry" | 2019 |
| P6 | City Government | Policy Draft | Yes | 《有机茶三年行动计划》<br>"Three-year Action Plan for Organic Tea" | 2020 |
| P7 | City Department | Policy Draft | Yes | 普洱市市场监督管理局《普洱市茶产品质量安全全程可追溯体系建设实施方案（送审稿）》<br>Pu'er City Market Supervision Administration "Pu'er City Tea Product Quality and Safety Whole Process Traceability System Construction Implementation Plan (Draft for Review)" | 2020 |
| G8 | City Department | Specifications and standards | No | 《普洱茶冲泡方法》团体标准<br>"Pu'er Tea Brewing Method" Association Standard | 2020 |
| G9 | City Department | Specifications and standards | No | 《普洱茶感官审评方法》团体标准 | 2020 |

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|---|---|---|---|---|---|
| | | | | "Pu'er Tea Sensory Evaluation Method" Association Standard | |
| G10 | City Department | Specifications and standards | No | 仿古茶园建设技术规范<br>Technical specifications for the construction of antique tea gardens | 2020 |
| G11 | City Department | Specifications and standards | No | 普洱茶加工技术规程<br>Pu'er tea processing technical regulations | 2020 |
| G12 | City Department | Specifications and standards | No | 普洱茶生态茶园（Ⅰ类）建设及管理规范<br>Pu'er tea ecological tea garden (Class I) construction and management specifications | 2020 |
| G13 | City Department | Specifications and standards | No | 普洱茶生态茶园（Ⅱ类）建设及管理规范<br>Pu'er tea ecological tea garden (Class Ⅱ) construction and management specifications | 2020 |
| G14 | City Department | Specifications and standards | No | 普洱茶贮存技术规范<br>Technical specifications for Pu'er tea storage | 2020 |
| G15 | City Department | Specifications and standards | No | 栽培型古茶树及古茶园管护规范<br>Management and protection of cultivated ancient tea trees and ancient tea gardens | 2020 |
| G16 | City Department | Specifications and standards | No | 生态茶园（I 类）普洱茶质量控制技术规范<br>Technical specifications for quality control of ecological tea garden (Class I) Pu'er tea | 2020 |
| G17 | City Department | Specifications and standards | No | 生态茶园（Ⅱ类）普洱茶质量控制技术规范<br>Technical specification for quality control of ecological tea garden (Class Ⅱ) Pu'er tea | 2020 |

## Appendix 1.2 – List of samples (news articles from Local state media)

| Source code | Classification | Coded (Yes/No) | Title (original language in Chinese + translated in English) | Published date |
|---|---|---|---|---|
| N1 | Newspaper Article | Yes | 擦亮普洱茶“金字招牌”<br>Polish Pu'er Tea "Golden Sign" | 18/06/2019 |
| N2 | Newspaper Article | Yes | 绿色发展的普洱作为<br>Pu'er': its achievement for green development | 19/06/2019 |
| N3 | Newspaper Article | Yes | 一片叶子培育出的绿色之城绿色发展打开“筑梦空间”<br>A green city cultivated by a leaf, green development opens up a "dream space" | 16/07/2019 |
| N4 | Newspaper Article | Yes | 普洱：生态环保与绿色发展同频共振<br>Pu'er: Eco-environmental protection and green development resonate at the same frequency | 03/07/2019 |
| N5 | Newspaper Article | Yes | 让文化“软实力”成为发展“硬支撑”<br>Let cultural "soft power" become the "hard support" for development | 20/10/2019 |
| N6 | Newspaper Article | Yes | 普洱茶产业保持健康有序发展<br>Pu'er tea industry maintains healthy and orderly development | 12/01/2020 |
| N7 | Newspaper Article | Yes | 普洱市着力打造旅游核心产品<br>Pu'er City strives to build core tourism products | 19/01/2020 |
| N8 | Newspaper Article | No | 机构改革四个强化<br>Four strengthening of institutional reform | 12/07/2019 |
| N9 | Newspaper Article | No | 普洱市档案事业蓬勃发展<br>Pu'er City’s archives sector is booming | 20/06/2019 |
| N10 | Political Activities | No | 为全面脱贫全面建成小康社会奠定坚实基础——在市委四届六次全会上的报告<br>Laying a solid foundation for all-round poverty alleviation and building a well-off society in an all-round way-a report at the Sixth Plenary Session of the Fourth Municipal Party Committee | 20/01/2019 |
| N11 | Political Activities | No | 刘勇率队到国家文物局汇报工作<br>Liu Yong led a team to report to the National Cultural Heritage Administration | 24/06/2019 |
| N12 | Political Activities | No | 聚“政协智慧”全力助推普洱景迈山古茶林申遗<br>Gathering the "Wisdom of the CPPCC" to promote the ancient tea forest in Pu'er Jingmai Mountain | 26/06/2019 |
| N13 | Political Activities | No | 立法保护让普洱茶“越陈越香”<br>Legislative protection makes Pu'er tea "more aging and more fragrant" | 11/07/2019 |
| N14 | Political Activities | No | 澜沧：贴近茶产业开展跨境人民币双语宣传活动<br>Lancang: Close to the tea industry to carry out cross-border RMB bilingual publicity activities | 17/07/2019 |

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|---|---|---|---|---|
| N15 | Political Activities | No | 陈舜率队到国家文物局对接景迈山古茶林申遗工作<br>Chen Shun led a team to the State Administration of Cultural Heritage to connect the Jingmai Mountain ancient tea forest application work | 18/07/2019 |
| N16 | Political Activities | No | 普洱市政府与上海黄金交易所座谈会暨战略合作框架协议签约仪式举行<br>The Pu'er Municipal Government and Shanghai Gold Exchange Forum and Strategic Cooperation Framework Agreement Signing Ceremony Held | 28/07/2019 |
| N17 | Political Activities | No | 刘勇到普洱广播电视台调研时强调抓牢意识形态工作深化精神文明建设<br>When Liu Yong visited Pu'er Radio and Television Station for investigation, he emphasized to grasp ideological work and deepen spiritual civilization | 01/08/2019 |
| N18 | Political Activities | No | 普洱市政府召开 2019 年重点工作第五次推进会议<br>Pu'er Municipal Government held the fifth promotion meeting of key tasks in 2019 | 09/08/2019 |
| N19 | Political Activities | No | “老茶”吐出“新芽”来——普洱市创新金融服务支持茶产业发展纪实<br>"Old tea" spit out "new buds"-Pu'er City's innovative financial services support the development of the tea industry | 19/09/2019 |
| N20 | Political Activities | No | 刘玉珠到普洱调研文物保护利用工作<br>Liu Yuzhu went to Pu'er to investigate the protection and utilization of cultural relics | 25/10/2019 |
| N21 | Political Activities | No | 普洱市“不忘初心、牢记使命”主题教育问题整改完成情况的公告（六）<br>Pu'er City Announcement on the Completion of the Rectification of Educational Issues on the Theme of "Don't Forget Your Original Heart, Keep Your Mission in Mind" (6) | 26/12/2019 |
| N22 | Political Activities | No | 普洱市普洱茶十项标准暨品牌建设新闻发布会在昆明举行<br>The press conference on Pu'er Tea Ten Standards and Brand Building was held in Kunming | 13/01/2020 |
| N23 | Other Activities | No | 海外华文媒体助力普洱景迈山古茶林申遗<br>Overseas Chinese media help Pu'er Jingmai Mountain ancient tea forest inscription | 15/07/2019 |
| N24 | Other Activities | No | 遇见普洱邂逅一场美好 ——“壮丽 70 年奋斗新时代”海外华文媒体普洱行活动纪实<br>Encounter Pu'er, Encounter a Beautiful —— "A New Era of Magnificent 70 Years of Struggle" Overseas Chinese Media's Pu'er Trip | 17/07/2019 |
| N25 | Other Activities | No | “绿色公交车”开进景迈山<br>"Green Bus" Drives into Jingmai Mountain | 15/08/2019 |
| N26 | Other Activities | No | 国庆期间普洱市接待游客 55.81 万人次<br>Pu'er City offers tourism products to 558,100 tourists during the National Day | 10/10/2019 |
| N27 | Other Activities | No | 茶文化景观保护研究和可持续发展国际研讨会举行<br>International Symposium on Tea Culture Landscape Protection Research and Sustainable Development is held | 25/10/2019 |
| N28 | Case Report | No | 翁基：古村落焕发新活力<br>Weng Ji: The ancient village is rejuvenated | 22/07/2019 |

## Appendix 2 – Coding rules

| Rules | Content | Remarks |
|---|---|---|
| **Context units** | 1, For sample P1-P7, there are 1,154 context units/codes found. Main code categories include: *tea, Pu'er tea, tea garden, tea production, protect, resource, administration, environment, regulation, tea culture, green, technology, quality, management*.<br>2, For sample N1-N7, there are 623 content units/codes found, mostly categories are: *tea, Pu'er (tea), green, development, ecology, brand, company, tea industry, environment, economy, infrastructure, (prefectural) city, national*. | |
| **Rules** | 1, Conducting tent analysis in Chinese, the original language of the documents.<br>2, A category of context units is formed based on trial and revise, including: *tea, Pu'er tea, green, development, ecology, economy, administration, industry*.<br>3, The category is furtherly organized with minor changes, to relate to theories used to frame the thesis. | |
| **Text-content correlation** | 1, Context units are generated into codes (English) for analysis, via further sorting process after auto-coding.<br>2, To answer the research questions, analysis is conducted according to the factors required (environment, development, linkages), based on the results of coding. | |