



Economic Diversification for Women's Livelihoods in the Tea Supply Chain: Insights from India and Thailand

Siya Uthai*,^a

^a Chiang Mai University, Thailand

Abstract

Northeast India boasts a long history of large-scale tea estates dating back to the colonial era. Assam is India's largest tea production area and contributes over half of India's tea products. The backbone of this industry is the tea tribe women who are tea pluckers. Despite their crucial role, these women face significant economic, social, and political challenges that need greater empowerment. Meanwhile, tea production in Thailand has expanded significantly because of increasing domestic consumption. This research employs qualitative methods to explore economic diversification and tea supply chains in Northeast India and northern Thailand, with a focus on enhancing women's resilience. Data were collected via in-depth interviews with 27 key informants in Assam, India, and 25 participants in Chiang Rai and Chiang Mai, Thailand, between May 2022 - December 2024. Open coding and manual categorization are employed to organize and interpret narrative analysis based on diversification concepts. The study found that women workers in Assam rely solely on tea plucking, earning low wages due to a lack of educational opportunities and double-burden circumstances, compared to women in Thailand, who have more flexibility through diversified livelihoods. Assam requires multi-stakeholder collaboration in both vertical and horizontal diversification.

Article info

Type:

Article

Submitted:

30/03/2025

Accepted:

19/10/2025

Available online:

20/11/2025

JEL codes:

D24, E24, J15

Keywords:

Diversification

Tea workers

Women workers

Tea supply chain

Managing Editor:

Giovanna Bertella

* *Corresponding author:* Siya Uthai - Faculty of Social Sciences, Chiang Mai University, Thailand. E-mail: Siya.uthai@cmu.ac.th.

Introduction

Northeast India is the area where tea plantations were first established in India following British colonization, which led to the establishment of large-scale tea estates that became significant exporters of tea to the rest of the world. The influx of migrant workers in Northeast India during colonial times consisted of women and children who became tea pluckers in tea estates, particularly in Assam, India's largest tea-producing region. The tea industry in Assam began in 1837 when the British established plantations, recruiting large numbers of impoverished laborers from Bihar, Odisha, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, and West Bengal (Magar & Kar, 2016).

Indian and Assamese investors have taken over the industry, managing their own estates and sourcing tea from over 60,000 smallholders (Das & Mishra, 2018). Recently, the workforce in India's tea industry, which encompasses both permanent and temporary employment, has exceeded 2.4 million people (Sarma, 2019). From 1939 to 1950, Assam's tea industry spurred the creation of the Tea Board. An auction center opened in 1970, and FERA was amended in 1973 to boost Indian ownership. Tea prices rose in 1977-78, encouraging small growers to join production (Magar & Kar, 2016).

Women have long been integral to tea production since colonial times, having been brought in from other places like Bihar and West Bengal to work in Assam's tea estates (Das & Mishra, 2018). They have been key laborers in Northeast India's tea plantations, particularly among the Adivasi tea tribes (Wolf, 2022). Despite their vital role, these women face marginalization in Assamese society due to the intersection of gender, ethnicity, and class, highlighting their ongoing struggle for social inclusion.

With rapid economic growth in India, improvements occurred in women's education and fertility rates, but participation in the female labor force remains low. Societal norms restrict women's ability to work, while legal, cultural, and economic barriers limit job opportunities for women (Fletcher *et al.*, 2017). In Assam's tea industry, women workers continue struggling in tea plantations. With permanent contracts declining, temporary tea workers face worse conditions. Many migrate for better pay, but youth often fall victim to human trafficking (Wolf, 2022). Colonial India revealed intricate and exploitative practices targeting women, particularly in the tea industry, in terms of marriage, labor, and sexual exploitation (Sen, 2010). Assam's tea workers face a harsh reality: low wages, limited mobility, and heavy dependence on estate systems. They pay for housing, rations, and medical care, which eats up much of their income (Kalarivayil *et al.*, 2024). Limited access to anti-poverty social security programs and other social welfare

schemes, including formal financial services, is constrained to cycles of poverty and marginalization (Dutta *et al.*, 2021).

In northern Thailand, tea is a part of traditional cuisine as a snack, known as 'Miang' or fermented tea leaves (*Camellia sinensis* var. *assamica*). Miang is a significant food item in traditional religious ceremonies (Khanongnuch *et al.*, 2017). Chiang Rai Province in northern Thailand occupies Thailand's largest tea plantations, covering approximately 13,600 hectares (Thai PBS, 2020). Tea is a local plant in high mountain forests in northern Thailand, particularly in Chiang Rai, where local tea plants in the same genus of Assam tea are found. Tea production in Thailand has been continuously increasing due to the rising demand in the domestic market. However, labor shortages in Thailand's tea industry, particularly in the sourcing process (Department of Trade Negotiation, 2023), caused many tea enterprises to diversify their business.

Economic diversification is a strategy to build multiple income sources through two main approaches: vertical diversification and horizontal diversification. Efficient diversification can reduce inequality and improve both business profits and laborers' wages (Dominguez & Nkurunziza, 2024). Tea supply chains need vertical diversification as a strategy to reduce reliance on wholesale trade, but provide retail with their own brands. Moreover, the horizontal strategy of investing in other products and services within the tea gardens opens broader markets. The diversification approach encourages community engagement to improve entrepreneurial profits and workers' welfare (Sugiardi, 2024).

The labor situation in the tea supply chain raises questions about how economic diversification strategies can be integrated to enhance the livelihoods of women workers. Differences in supply chain models between Northeast India and Northern Thailand present an opportunity to explore initiatives that promote diversification and empowerment. Previous studies, such as Rajbangshi and Nambiar (2020) on the health vulnerabilities of Indian women tea workers and Dutta *et al.* (2021) on their financial challenges, have provided valuable insights; however, the connection between the global supply chains and tea worker conditions has received less attention. This study aims to apply the idea of economic diversification and supply chains to understand the constraint issues in Northeast India. The integrated management can lift women workers in tea production and initiate diversification of the tea supply chains in Northeast India by case comparison with tea supply chains in northern Thailand, which lacks a study of the aspects of the labor force. Data collection was conducted from May 2022 to December 2024.

1. Women in India's tea industry

In 2024, the rate of tea production in West Bengal was reduced by 20.8% compared to the previous year. The labor issues are linked to the decrease in India's tea production. In Assam, the report found the main barriers to worker development as low income and a lack of education (Dutta, P., 2024). The Assam tea industry, a historical pride, faced challenges in both environmental and economic conditions. Climate change has disrupted the weather patterns in Assam, affecting tea cultivation (Bhattacharjee, 2025). Moreover, the industry struggled with significant economic decline in global exports. Production costs have risen by 20% over the last three years, whereas market prices have tended to decline (Dutta, 2024).

Labor crisis

The Assam tea industry is also experiencing labor shortages because the younger generation is less interested in working in tea gardens due to exploitation and poor working conditions. This trend leads to delays in tea plucking, a vital process for maintaining tea quality. Diversification and skill development programs are necessary to keep younger generations engaged (Bhattacharjee, 2025). The historical legacy of exploitation in India's tea industry, particularly through practices involving marriage, labor, and sexual exploitation, has left traumas that continue to shape the challenging conditions faced by women workers today.

Nowadays, female temporary workers often have to rely on very low wages. Recently, the labor wages of tea workers in Assam have been increased to 232 INR per day for those in the Brahmaputra Valley, while those in the Barak Valley receive 210 INR, excluding other benefits such as housing and medical care (Dutta, 2022). The circumstances constrain them into a cycle of debt and lead to mental health problems. Indian social norms supporting male dominance and normalizing domestic violence as a private family matter exacerbate the lack of support from both law enforcement and communities. Women often depend on religion and faith to relieve abusive situations (Sabri *et al.*, 2022).

Gender role

The Indian tea industry employs approximately 1.2 million people, with women engaged in nearly half of the workforce. Tea plucking is the main task for most female tea workers in India (Dutta, 2022). In Assam, women, largely migrants from other regions like Odisha, West Bengal, and Madhya Pradesh, formed the backbone of the tea industry's labor force during the

colonial period. These workers and their descendants are now known as the “tea tribe,” a population exceeding 5 million people in the region, forming a significant focus of political and social debates, despite not being officially categorized as a scheduled tribe or indigenous groups under Assam’s laws (Sharma, 2018), hence claiming political rights and basic social welfare are difficult.

Primarily, women have been recognized for their significant contributions to tea plantations (BASIC, 2019), particularly in tea plucking, where they are perceived as more skilled in selecting high-quality leaves. Men, conversely, are typically employed in factory tasks, pesticide spraying, and handling heavy loads (Dutta, 2022). In Northeast India, women have 10% higher rates of entrepreneurship than the national average. This phenomenon is pronounced among various hill tribes and within Assamese society, where women have historically played significant roles in market economies. The absence of a dowry system in many ethnic cultures may have contributed to more outstanding economic agency for women, reducing financial burdens in marriage and potentially fostering substantial entrepreneurial opportunities (Saikia, 2020).

Women’s roles in Indian society are limited and constrained by their social, economic, and political empowerment, perpetuating gender inequality. Often the poorest in their families, they disproportionately bear the disadvantages faced by men (Biswas & Mukhopadhyay, 2018). The factors related to women’s empowerment are caste, wealth, urban surroundings, and family form. In addition, jobs in cash flow, education, and media are crucial sources of women’s empowerment. Women in urban areas tend to hold better positions than those in rural areas. Moreover, women from South India are the most empowered, women from Northeast India are less empowered, and the scheduled tribe women are the least empowered (Mishra & Tripathi, 2011).

Tribal societies in Northeast India are diverse, comprising both matrilineal tribes, such as the Khasi and Garo, and patrilineal tribes, including the Bodo, Mishing, and Karbi. In Assam, 95% of scheduled tribes are patrilineal (Mal & Saikia, 2024). Furthermore, the tea tribe group is excluded from Assam’s scheduled tribes, which leaves tea tribe women vulnerable and less empowered due to rights deprivation. Tea tribe women are regarded as inferior by men who often treat them as personal assets. These women, at the bottom of the social hierarchy, endure abuse from both male partners, especially if they object to alcohol spending, and mistreatment from tea company managers. Such incidents are rarely reported by companies, leading to compounded oppression for women at home and work (Bhuyan, 2024). Tea tribe women in Assam face marginalization in both political and social

aspects. Furthermore, they face employment segregation in tea plantations. A sustainable diversification strategy in the tea supply chain is likely to be implemented through initiatives that empower women workers in the tea supply chain, in line with the SDGs' mission for gender equality.

Diversification opportunities

Apart from market challenges, the labor issue, particularly for women workers, is a significant factor in readjusting and reimagining the tea industry's direction for global consumers. Approximately 50% of tea production in Northeast India comes from bought-leave factories, as the government supports local farmers in setting up their own tea gardens. However, the quality has declined due to excessive pesticide usage (Bhattacharjee, 2025). The strategies and sustainable practices are involved in creating value-added products. Rasel *et al.* (2022) stated that agricultural entrepreneurs and on-farm diversification should utilize their farms to create new business ventures such as agro-tourism, farm sales, product processing, care farms, and daycare.

Agritourism is gaining popularity in Thailand's tea plantations, especially in Chiang Rai Province, northern Thailand. The entrepreneurs create activities to diversify their income. Visitors can learn, practice, and enjoy recreational activities on farms (Rasel *et al.*, 2022). Tourism plays a key role in rural development by leveraging local resources, creating direct income, and fostering broader economic growth through local integration. The integrated rural tourism concept suggests combining resource controllers and business activities (Saxena & Ilbery, 2008). Agri-food supply chains are increasingly viewed as structured networks integrating economic and social relationships. The concept of supply chain responsibilities emphasizes balancing profits and social responsibilities through collective action across the supply chain, supporting community well-being, and aligning with sustainable practices (Liu *et al.*, 2022).

2. Research methods

This study employed qualitative research techniques to gain an in-depth understanding of the social relations within tea supply chains. The research sites were selected in two countries, India and Thailand. Northern Thailand's tea plantations initially grew due to domestic demand but faced labor shortages. Chiang Rai's tea enterprises are diversifying into tourism alongside wholesale tea. Given that Chiang Rai's *Camellia sinensis* var. *assamica* shares species with Assam, Northeast India, a region known for its large-scale tea

production and reported labor exploitation. Assam and Chiang Rai are chosen as comparative case studies. Both regions feature prominent tea production and significant female workforce participation. Cross-country qualitative comparison aims for a broader understanding of the global tea supply chain in different models and how to implement diversification in the policy.

Data collection

Documentary research is applied as a guideline to select areas of tea plantations and tea companies before requesting permission to access and conduct interviews. The committee approved the ethical review before the first fieldwork was conducted. Convenience sampling was applied to study the private sector, as many tea enterprises in Assam rejected participation. Tea companies and individuals that declined to participate in this research were excluded. Snowball sampling was added for Chinese entrepreneurs in Chiang Rai to reach the initial participants. Two tea enterprises in Chiang Mai were selected randomly from available documents after completing cases in Chiang Rai. The key informant interview was the main data collection method in this research. The pilot study was conducted in Chiang Rai, northern Thailand, in May 2022, due to travel restrictions imposed during the COVID-19 pandemic. A semi-structured interview technique is applied for data collection in 25 cases in Thailand (8 workers, 7 farmers, 5 company owners, 5 managers). The questions were divided into three parts: (1) the participants' general background, (2) their knowledge, skills, and working conditions in the tea industry, and (3) their opinions on gender roles and the future of the tea business.

Table 1 - Northern Thailand's key informants

Interviewees	Roles	Age	Sex
01	Tea farmer	46-50	F
02	Tea farmer	31-35	F
03	Tea farmer	56-60	F
04	Tea farmer	51-55	F
05	Tea worker	41-45	F
06	YK company owner	31-35	M
07	H company owner	56-60	F
08	WW company owner	66-70	M
09	WP company owner	36-40	M

10	Marketing manager	31-35	F
11	Tea worker	31-35	F
12	Tea worker	46-50	F
13	Tea worker	21-25	F
14	Tea worker	31-35	F
15	Sale manager	41-45	F
16	Tea worker	41-45	F
17	Tea worker	36-40	F
18	Tea farmer	46-50	F
19	Tea farmer	31-35	F
20	Tea farmer	51-55	F
21	Marketing manager	36-40	F
22	PP company owner	66-70	M
23	BK general manager	51-55	M
24	General manager (CM)	36-40	M
25	General worker (CM)	21-25	F

Source: Author's own elaboration.

In Assam, Northeast India, recognizing the local linguistic and cultural context, the researcher engaged an Assamese research assistant to facilitate data collection and an interpreter to bridge potential language barriers with participants. Due to communication limitations between the researcher and tea workers, structured interviews were the primary method used by the Assamese interpreter, who translated them into English for the researcher on a case-by-case basis. The questions were set on a paper sheet divided into three parts: (1) to explore key informants' backgrounds; (2) to assess their knowledge, skills, and working conditions; and (3) to gather opinions on gender roles and perceived limitations within the tea business. Semi-structured interviews were conducted with other participants who can communicate in English. These 27 cases of interviews (20 workers, 2 entrepreneurs, 3 dealers, 1 manager, 1 broker) took place in Jorhat and Guwahati, Assam, during July-August 2023 and December 2023.

Table 2 - Assam's key informants

Interviewees	Roles	Age	Sex
01	Temporary tea worker	21-25	F
02	Temporary tea worker	31-35	F
03	Temporary tea worker	46-50	F
04	Temporary tea worker	26-30	F
05	Temporary tea worker	31-35	F
06	Permanent tea worker	31-35	F
07	Permanent tea worker	36-40	F
08	Permanent tea worker	36-40	F
09	Permanent tea worker	46-50	F
10	Permanent tea worker	41-45	F
11	Tea company manager	46-50	M
12	Local worker	16-20	F
13	Local worker	31-35	F
14	Local worker	51-55	F
15	Local worker	46-50	F
16	Local worker	46-50	F
17	Small tea grower	56-60	M
18	Local worker	21-25	F
19	Local worker	36-40	F
20	Local worker	41-45	F
21	Small tea grower	36-40	M
22	Local worker	26-30	F
23	Local worker	26-30	F
24	Tea broker staff	51-55	M
25	Tea dealer S1	46-50	M
26	Tea dealer S2	46-50	M
27	Tea dealer M	51-55	M

Source: Author's own elaboration.

Field observation was conducted to understand the environmental context, cultural practices, and interactions. This method involved taking field notes and conducting informal interviews with people within the observed environment.

Data analysis

The interview transcripts were translated into English, which the research assistant did for Assam's case. Field notes from informal communication and observation were included for narrative analysis. The narratives based on their actual experiences (Sevilla-Liu, 2023) with related elements through field observation are included for interpretation. The researcher read all transcripts and field notes in English before applying open coding to group the data into descriptive codes. This process involved labeling concepts and organizing them into defined categories (Mohajan & Mohajan, 2022). The dataset reached saturation when no new descriptive codes emerged after a double review of several transcripts and field notes. In the coding process, special attention was paid to narratives that diverged from common themes, ensuring that different viewpoints were not overlooked. Manual categorization was arranged to link key concepts and interpret, analyze, and evaluate the complex meaning from multiple perspectives. Narrative analysis helps to understand individual perspectives from diverse backgrounds, experiences, and environments, particularly those of marginalized groups.

3. Findings

3.1. Tea supply chains

In India's tea supply chains, the large-scale tea producers have their own tea plantation areas. They hire workers in the process of sourcing tea leaf collectors, and most of them are known as the tea tribes, who were born and raised on the tea plantation. No training in any skills from the tea companies, "We learned how to pick tea leaves from the previous generation, parents and neighbors; the tea company provided no training" (permanent workers, August 2, 2023). Women's tea plucking skills, derived from colonial times, have confined generations to subordinate roles within the gardens (Dutta, 2022). Besides tea leaves from their own plantation, tea companies also buy fresh tea leaves from nearby communities. At the factory, only male workers process all collected tea leaves on a shift basis, including nights, due to daily processing demands and quality testing by the tea manager. After the raw materials are transformed into end products for wholesale trade, tea brokers play a key role in coordinating and providing price information and product samples to buyers and dealers who will purchase tea through India's e-auction system in three days a week (a tea broker staff and a tea dealer M, December 6, 2023).

According to state regulations, the wages in tea plantations are the same as those in garden jobs and factory jobs, at 232 INR (3 USD) per day (a

tea company manager, July 30, 2023). In comparison to other sectors in Assam, factory workers earn approximately 400-500 INR (6 USD) per day (Tea Dealer S1 and S2, December 5, 2023). Both permanent and temporary workers (August 1-2, 2023) stated that the wage is paid in cash every 15 days, and the company provides them with the amount of rice and tea leaves every month. Temporary workers gain equivalent wages, but the hiring period is about six months per year, during the peak tea leaf season.

In Chiang Rai, both large and small tea enterprises produce tea in their own factories. Also, small tea growers in some communities collect tea leaves for sale to tea enterprises. The first step begins with raw materials sourced from their own tea plantations. In the case of high demand, tea enterprises buy tea leaves from other sources (YK company owner, September 19, 2024). Large tea enterprises are collaborating with local communities in regions where tea trees naturally grow. This partnership involves providing training to local people on tea planting techniques to ensure a larger supply of tea leaves, thereby satisfying the needs of their dealers (BK General Manager, December 8, 2024). Women are the primary workers in tea gardens, collecting tea leaves as an informal job, and are paid according to the weight of the tea leaves they collect.

Usually, they can collect about 20-30 kilograms of tea leaves per day, while men can collect in lower amounts. The weight of the tea leaves ranges from 11-14 THB (0.40 USD) per kilogram. The price varies depending on the weather. For instance, the price will be lower during high humidity because the tea leaves will have a high moisture content (WP and WW tea company owners, May 13-14, 2022). Two tea workers (October 14, 2022) stated the cause that no men work as tea pluckers, "The tea stalk is sticky and difficult to remove. You must use your fingernails to help pull it out, or some people use nail clippers. However, men usually don't know how to use them". Moreover, the WP company owner (October 19, 2022) mentioned that male villagers who typically work as drivers and carriers get paid 300-500 THB (9-15 USD) per job. The tea enterprise also hired men (mostly migrant workers) as full-time workers for factory jobs to process the fresh tea leaves after they were collected. This reflects gender roles in the working class as women used their hands to work, while men work with equipment that requires physical strength (Alesina *et al.*, 2011).

Tea withering processes must be done before being dried by machine to remove all the moisture. The tea processing in Chiang Rai employs Chinese techniques, separating young tea leaves from old tea leaves to produce different products at varying prices (WW company owner, May 13, 2022). Tea entrepreneurs contact dealers directly (H company owner, September 20, 2022), both in the domestic and international markets, and no tea brokers in Thailand's supply chains.

Table 3 – The tea supply chain management between cases in India and Thailand

Issue	India	Thailand
Type of hiring	Permanent/Temporary	Part-time/full-time
Wage System	Fix rate (3 USD)	Flexible (8-12 USD)
Sources of tea leaves	Own plantation/small tea grower	Own plantation/ small tea grower
Type of trade	Wholesale via e-auction	Wholesale/retail via marketing plan

Source: Author's own elaboration.

3.2. Tea pluckers' livelihoods

Women in Assam's tea plantations work hard under extreme and constantly changing environmental conditions. Tea plucking is a labor-intensive task that requires continuous effort for long hours, leading to exhaustion. Moreover, they receive very low wages compared to other jobs in different sectors (Sharma, 2018; Elks, 2018). According to the tea company manager (July 30, 2023) and permanent female workers (August 2, 2023), they stated that working hours in the tea gardens are set at 8 hours per day, with Sundays being a day off. Women prepare themselves for work before 8 am, and the work in the tea garden typically ends at 4 pm (permanent and temporary workers, August 1-2, 2023).

As observed by the researcher at the tea company, workers can hear the bell ringing at 8:00 a.m., and they must be at the factory. At the factory, the head worker organizes the workers into their designated sections. Women are assigned to work in tea gardens for plucking jobs in specific areas, while men work in both the factory and the gardens. At noon, another bell rings, signaling the start of a one-hour lunch break. The next bell rings again, calling workers back to their afternoon shifts. Finally, at 4 pm, the bell rings to signal the end of the workday. The bell rings symbolized disciplinary power that controls workers instead of a warden watching (Lilja & Vinthagen, 2014).

Women are confined to being only tea pluckers, even though complex processes involve tea production, like spraying, trimming, tree and grass cutting, and various factory jobs. However, those tasks need to work with machines. "When the company brought huge machinery to produce large-scale tea products every day, we did not hire women to work at the factory because the factory's tasks need physical strength that is more suitable for male workers" (the tea manager, July 30, 2023). The conditions emphasize

the segregation of women from machinery skills (Alesina *et al.*, 2011). Therefore, the skills of women in tea gardens are limited, resulting in powerless workers. These conditions force them to accept unfair wages and working conditions.

In Chiang Rai, northern Thailand, women working as tea pluckers live in nearby communities and collect tea leaves as a part-time job, for which wages are calculated based on the weight of tea leaves collected daily (PP tea company owner, March 13, 2024). Tea plucking usually begins in the late morning, after 8 AM, once morning moisture dissipates, until 4 PM, when the final harvest is delivered for processing. There is a company staff check and weight tea leaves. However, Chiang Mai's tea businesses diversify beyond tea, focusing on products like strawberries and vegetables to boost tourism. Migrant workers cultivate these contracted crops on allocated land, selling them back to the company for their income (a general worker, December 10, 2024). Another company trains and employs locals for various gardening tasks, paying them a daily wage (a general manager, December 2, 2024). Livelihood diversification among women workers in Chiang Mai can tackle gender vulnerability in adaptive livelihoods (Helmy, 2020).

Table 4 - Women's livelihoods in tea plantations between cases in India and Thailand

Issue	India	Thailand
Working Hours	8:00 AM - 4:00 PM (8 hours/day, Sunday off)	After 8:00 AM - 4:00 PM (depending on moisture)
Task segregation	Women confined to plucking and excluded from machinery	Women are involved in varied agricultural tasks
Work monitoring	Bell system for the strict schedule	Staff check the amount of tea leaves
Other job opportunities	Limited	More diversified

Source: Author's own elaboration.

3.3. Intersectionality and double burden

In Assam, women workers in the tea plantations face not only economic constraints but also social and political dimensions. Adivasi women are tea tribe workers born and raised in tea plantations for generations. In Chotanagpur, Adivasi groups have received Scheduled Tribe (ST) status,

but not yet in Assam (Sentinel Digital Desk, 2023). Therefore, those Adivasi become marginalized people in Assamese society, and their right to social services and economic rights can be exploited (Sinha, 2022). In Indian society, women's opportunities are limited by their primary responsibility for household and family duties (Nandy & Dutta, 2020). After marriage, they care for their husband's entire family, while unmarried women often face social stigma, "I did get a chance to attend a school, but now I am married. My husband has gone to Chennai for work, and I also dream of leaving Assam someday to build a better life" the 24-year-old local worker (August 3, 2023) who work at the small tea gardens in her communities talked about her intention. Women workers face a 'double burden' of unpaid care work, such as housework, childcare, and family care, and the need to earn daily wages outside (Greenhaus & Beutell, 1985), leaving them little time for education, unlike married men who have greater freedom.

According to the interview, three temporary workers and two permanent workers described their daily tasks as the same: "Every day, I wake up early in the morning at around 4 am (2 of them start at 3 am) to finish the household work at my place and then come here to work" (August 1- 2, 2023). All female workers at Assam's tea company said that apart from tea plucking, they do not have any idea how to work other jobs, as they have no skills at all. "If I do not pick the tea leaves, it is hard to know what else I can do because I did not go to school", A 45-year-old permanent worker (August 2, 2023) referred to schooling. Articles 341 and 342 of India's Constitution protect indigenous rights by granting Scheduled Tribe status, which provides access to education and benefits (National Human Rights Commission, India, 2021). However, Adivasi women in Assam lack this status, limiting their educational opportunities. Social norms require women to marry and manage the home, while poverty forces them into paid work, compounding their disadvantages. These intersectional discriminations are the glass ceiling against women's access to education and employment (Crenshaw, 1991), which confines them to the same position.

Women in northern Thailand seem to have better educational opportunities, despite many of them not obtaining Thai citizenship. Asai, an ethnic woman tea farmer (March 14, 2024), said, "I moved from Myanmar to Thailand when I was 15 years old and studied primary education at Chiang Mai before moving to stay with my husband here." Therefore, her knowledge of Thai enabled her to learn new skills like sewing and tailoring. She and her three neighbors explained, "I face difficulty with jobs that require machinery" (March 14, 2024). The Thai language brought her more job opportunities, but the machinery jobs are not her choice (Alesina *et al.*, 2011). Despite mainly handling childcare and housework, ethnic women in

Chiang Rai found ways to earn extra income from working outside as flexible jobs to support their families alongside their husbands' earnings (Hossain, Md., *et al.*, 2013).

In Chiang Rai's tea plantations, workers often live with their families nearby rather than at the workplace. Sang, an ethnic tea worker, said, "Working without a contract like this is flexible for me as the time that my family has any urgent affairs such as bringing my child or my stepmother to hospital, I can freely avoid working on that day" (October 20, 2022), her two colleagues agreed with this point to work in tea plantation as a part-time job and earn wages supporting their family together with housework responsibilities (Hossain, Md., *et al.*, 2013). Married women face a 'double burden' of unpaid home duties and paid work for family expenses (Greenhaus & Beutell, 1985). As one WW tea company worker explained, "My husband gains monthly wages, which go towards a vast expense such as children's tuition fees, and my daily wages can go to support food expenses" (October 20, 2022). Although female workers face this double burden, informal jobs offer flexibility to balance work and family life.

Table 5 - Intersectional circumstances of women workers between cases in India and Thailand

Issue	India	Thailand
Legal status	Adivasi women, tea tribe workers, have limited access to benefits, education, and social services	Some women migrant workers lack citizenship, but are generally less restricted in access
Education Access	Limited	Better access through the Thai language
Double burden	Severe long hours working and few alternatives	A combination of housework and flexible jobs
Economic constraints	Low wages and a lack of skills	Supplementing family income
Social mobility	Low opportunities, restricted by social, legal, and economic barriers	Higher opportunities via language skills

Source: Author's own elaboration.

3.4. *Economic diversification strategies*

Adivasi women in Assam face difficulty accessing schools, even though some tea companies collaborate with Assam State to build primary schools close to the tea plantations. “Our company provided accommodation, a health care center, and a primary school as the company’s welfare for our workers” (a tea manager, July 30, 2023). Nowadays, government and private efforts aim to improve education for tea tribe workers, but low wages force many children to leave school for plantation work. Moreover, men who own women and their children as assets spend their earnings on alcohol, which women are also involved in, and cause domestic violence (Bhuyan, 2024). In August 2023 interviews, most women shared hopes that their children could pursue education and escape life on the tea estates.

Education has become a key strategy for women workers to diversify their livelihoods. In order to empower them, economic diversification is necessary to apply to the tea supply chains for the mutual benefit of both workers and owners. A 57-year-old Assamese small tea grower (July 31, 2023) built his own tea garden within 30 hectares of his ancestral land. He divided his 6 hectares into various plantations and paddy fields, using land diversification to boost income from multiple crops. As an Assamese living in an Adivasi community, he hires 5-10 daily tea pluckers who are available to work on his tea gardens. “I hire 5-10 workers per day; they are mostly villagers from this community, who are mostly women; sometimes, aged men also request to work here”, the Assamese tea grower (case no. 17) mentioned to labor management. Women in this community have choices; if they have work on their family’s paddy fields, they can reject working in the tea garden. Hence, the tea plucking job depends on their decision.

Besides diversified crops that utilize the entire land for multiple activities to generate income from various sources, the Assamese tea grower is engaged in manual tea processing. This involves transforming fresh tea leaves harvested from their gardens into dried ones for sale to family and friends. Meanwhile, other local small tea growers divided their small land to plant various crops for household consumption, and tea gardens for tea leaf selling because of insufficient budget and knowledge (a local small tea grower, case no. 21, August 4, 2023). Black pepper trees are grown within small tea gardens and large tea estates, providing essential shade for the tea plants. The tea company also sells black pepper as part of its product offerings, diversifying income (a tea company manager, July 30, 2023). Meanwhile, the government initiated a tea tourism project in Sontipur district to promote tea estates as a tourist destination that aims to create more job opportunities for locals (Northeast Today, 2025).

Women workers in northern Thailand rely less on tea plucking because they have gained other skills for alternative part-time jobs. They earn comparable

tea-picking wages to other agricultural jobs, supplementing their income by selling local products to tourists in northern Thailand's tourist season, when tea leaves are scarce. "I weave these bags by myself for sale when I cannot collect tea leaves during the dry season", the researcher said to a 41-year-old tea worker (October 22, 2022) who set her stall in front of YK Tea Company. Women attempt to find livelihood diversification strategies to cope with their vulnerability by earning income from various abilities (Helmy, 2020). Both Thai and non-Thai workers from impoverished families rely on primary education as a foundation for language acquisition. The Thai language provides a crucial foundation for broader job opportunities and livelihood diversification.

Economic diversification is a strategy to enhance communities by expanding their income sources (Sugiardi, 2024). In northern Thailand, many tea enterprises boost their earnings by adding tourist activities alongside tea production. A tea company's sales manager (October 22, 2022) explained, "Our company opens its plantation for tourists to walk along the garden, pick tea leaves, and take photos wearing Akha ethnic dress". The enterprise integrated tourism to earn revenue from entrance fees at the tea garden, dress rental costs, and the sale of tea products in its small shop (Saxena & Ilbery, 2008). WP Tea Company (October 20, 2022) offers an educational tour of organic tea knowledge and the whole process. The WW company (May 13, 2022) opened a Chinese restaurant and small bungalows in the tea garden area for visitors to experience the variety of tea tastes and the mountainous atmosphere. Meanwhile, tea entrepreneurs in Chiang Mai diversified their businesses to capitalize on the city's strong reputation as Thailand's top tourist destination on an agro-tourism strategy (a general manager, December 2, 2024).

Table 6 - Economic diversification strategies between cases in India and Thailand

Issue	India	Thailand
Women's livelihoods	<ul style="list-style-type: none"> – Dependent on tea plucking and subsistence crops – Often leave school for work 	<ul style="list-style-type: none"> – Vary on tea and local product sales during tourist season – Language skills
Land use	Tea gardens intercropped with paddy, vegetables, and fruits	Diversifies with tea and other crops for multiple activities
Agro-tourism	Limited	Widely adopted
Income sources	Land & crop diversification for extra income	Land & crop, product diversification, and integrated with tourism

Source: Author's own elaboration.

In addition, Chiang Rai's tea enterprises invented their signature taste of tea as a kind of 'specialty' tea for selling directly to online markets. To overcome limited land and labor shortages, northern Thai tea enterprises are expanding their market reach to Chinese dealers. Many enterprises produce more premium products, such as organic leaves, aged-tree tea, and Pu-er, according to Chinese buyers' demand (WW Tea Company, October 20, 2022). Therefore, tea prices in Thailand are high, and tea leaf collectors earn at a similar rate to Thailand's minimum wage, which sometimes gets higher. Thus, many tea beverage companies imported tea leaves to mix with domestic tea leaves due to low supply (WP, tea enterprise, May 14, 2022; BK tea enterprise, December 8, 2024). Meanwhile, Assam's tea company manager (July 30, 2023) and two small tea growers referred to the low selling price of tea, especially compared to coffee. The diversification strategy obviously increased tea entrepreneurs' income, while women workers are possibly gain more income through new skill learning and spend more working time. In other words, women are required to allocate their time to income-generating activities.

4. Discussion

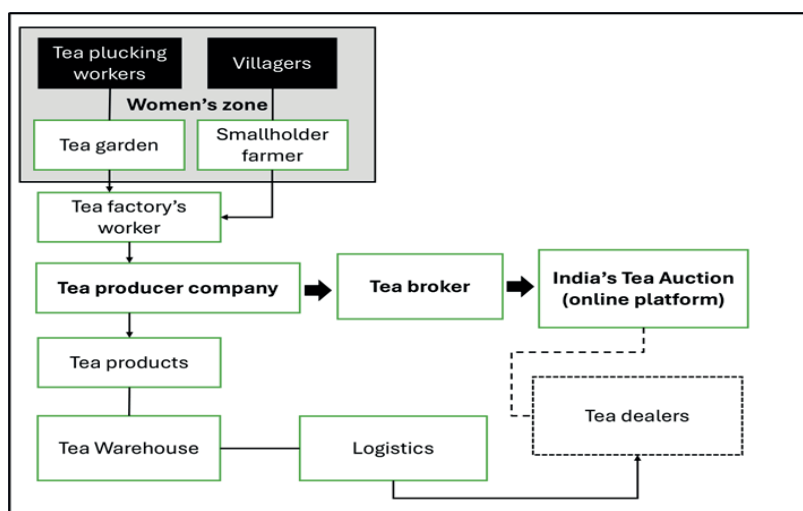
This study highlights how intersectional factors restrict women's roles in Assam's tea supply chains, confining them to the lowest positions (Bhuyan, 2024). Meanwhile, women workers in Chiang Rai faced similar dimensions because they are ethnic and migrant groups, but Thailand has flexible regulations for children's rights in education. Therefore, Thai language skills enable them to pursue diverse livelihoods, reducing their vulnerability (Helmy, 2020). In contrast, women workers in Assam struggle with extremely low wages, forcing their children to leave school for work and trapping families in a cycle of poverty. Similarly, women workers in Chiang Rai earn an income from part-time jobs, and the price rate, based on the weight of the tea leaves, makes their income unpredictable. Access to resources is crucial to women's empowerment, requiring government policy and pro-women programs with community support (Biswas & Mukhopadhyay, 2018).

Limited access to education restricts Adivasi women in Assam from developing skills and exploring other income-generating activities. Without education or skills, they have a heavy dependence on tea plucking, making them highly vulnerable to fluctuations in income due to decisions made by tea companies (Dutta *et al.*, 2021). Additionally, social norms confine women to get married and become their husbands' assets, especially women from poor families who are in 'double burden' circumstances. Empowering them requires addressing these systemic barriers and creating opportunities for

skill training. Compared to the cases in Chiang Mai, companies trained both locals and migrant workers for diverse roles, supporting economic diversification. In Chiang Rai, women workers have become less reliant on tea plucking, adapting to tourism-related jobs (Sugiardi, 2024). Livelihood diversification enhances resilience and reduces vulnerability beyond dependence on the tea supply chain.

Tea entrepreneurs are the key actors in the supply chain to empower their workers, balancing profits and social responsibilities to support social well-being (Liu *et al.*, 2022). Addressing fair wages and transparent practices is essential, especially since low global tea prices keep wages in tea plantations lower than in other sectors, threatening the Assam tea industry's future. Economic diversification benefits both workers and entrepreneurs. In Chiang Rai, tea businesses sustain themselves by branching into tourism, educational tours, restaurants, and specialty premium tea products, creating new sources of income (Rasel *et al.*, 2022). In the meantime, Assamese small tea growers exemplified farm diversification in multiple crops and manual processing for extra income. Tea producers in Assam need to integrate resource management and business activities, encouraging workers to develop multiple skills (Saxena & Ilbery, 2008). Diversifying into other crops and tourism can boost income, while promoting Assam's premium and specialty teas can help establish a unique product identity.

Figure 1 - The tea production process in Assam depends on tea brokers, and women are limited to work only in the tea gardens

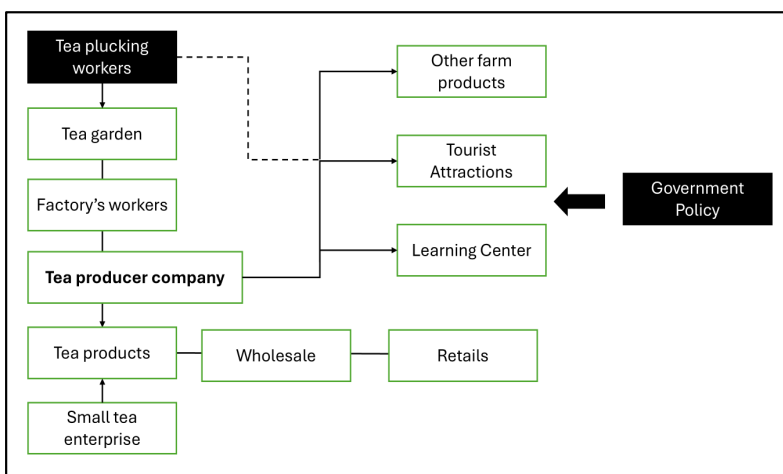


Source: Author's own elaboration.

Figure 1 illustrates Assam's complex tea supply chain, but women workers were confined in the tea garden because of intersectional discrimination. Economic upgrading in value chains is necessary for suppliers, leading to social upgrading of workers (Barrientos *et al.*, 2011). Tea enterprises in northern Thailand have launched economic upgrading and diversified activities that can benefit workers' wages and working conditions. However, workers' social upgrading also means the rights and freedom of collective bargaining (Marslev *et al.*, 2022). Workers can improve their skills more through diversification, but some groups can be segregated. In the tea industry in India and Thailand, women often work less machinery-intensive jobs. Also, married women in northern Thailand were segregated into informal jobs because of the double burden of housework and childcare (Carranza *et al.*, 2023).

Fairtrade certification in the value chain helps promote gender equality because it is perceived to have more transparent procedures (Riisgaard *et al.*, 2010). However, recruitment that segregates women into specific tasks disadvantages women from improving new skills. Women workers in Assam and northern Thailand have less bargaining power. Although women in Chiang Rai earn better wages and have flexible working hours, the tea entrepreneur's decision changes the price of tea leave without a negotiation process. As women gain skills and diversify their work, dependence on the tea industry drops, leading to labor shortages (Marslev *et al.*, 2022). Therefore, the price of tea leaves is higher during tourist season.

Figure 2 - The diversification model for tea producers gaining benefits in various dimensions and workers can gain more income from other jobs in tea companies by support from the government



Source: Author's own elaboration.

Figure 2 illustrates the role of the government in contributing to economic diversification, leading to social upgrading of workers to have multiple skills and choices. Government plays a key role in advancing gender equality, particularly through education. In Thailand, educational opportunities have helped women migrants adapt their livelihoods by the Thai educational system. In Assam, granting Adivasi workers ST status would improve access to education and skill development programs in combination with the economic diversification of tea producers. Although Assam plans to promote tea tourism, the state needs better training and infrastructure (Sarmah & Upadhyaya, 2024). The government is the primary contributor to linking external stakeholders and investing in the infrastructure to create various economic activities, including women's engagement in policy decisions. Diversified skills can bring about social upgrading that improves resilience and welfare among women workers (Sugiardi, 2024).

This study is subject to some limitations that should be considered in data collection, which may affect results. As the research was designed for cross-country analysis, collecting data during the COVID-19 pandemic made it difficult to follow the sampling design. Travel restrictions and limited access to the area led to the application of convenience sampling, which may be less representative than intended. Limited timeframe for fieldwork, especially in Assam, most participation requests sent via email are being declined by tea enterprises. The selected tea producers were joined only by personal contact. Inadequate engagement from both the private and government sectors limited the depth of contextual understanding. Also, language barriers further complicated worker interviews, as multiple languages are spoken among local and tribal groups. Interpreters struggled with direct translations, so the interview questions were set to accommodate effective communication, which may affect the information gathered. The environmental issues related to tea production were not addressed in the analysis due to the complicated communication between researchers and locals through the interpreter's limited subject knowledge. For further studies, collaboration with local researchers and CSOs to leverage their contextual expertise should be considered. Additionally, addressing the impacts of climate change on tea supply chains and necessary adaptation strategies are recommended for future studies.

Conclusions

Assam, India's largest tea-producing region since colonial times, relies heavily on women workers, mainly Adivasi tea tribes forced to migrate during British rule. About half of the tea workforce is female, mostly limited

to tea plucking under poor conditions. In contrast, men take on more diverse tasks, such as factory work and operating machinery, which require greater physical strength. This division limits women's roles and wages in the industry. Although tea workers in Assam earn a daily wage of 3 USD, lower than in other sectors, women's opportunities are restricted due to being marginalized and the lack of Scheduled Tribe (ST) status, limiting access to education and social services.

The double burden of balancing household duties and childcare while working outside the home discriminated against women in access to education and skill development. In northern Thailand, ethnic women are the main workforce in tea gardens, paid by the weight of leaves collected. Many, lacking Thai citizenship, access educational opportunities and work informally in tea production to balance domestic duties and earn extra income. In Assam, women are limited to tea plucking, leaving them vulnerable to income fluctuations and low wages due to market pressures. Social norms around marriage and gender roles further restrict their access to education and employment.

Livelihood diversification through education access is a key strategy for empowering women. Economic diversification and responsible management are important for both business and social upgrading. Tea entrepreneurs play a vital role in improving working conditions and wages, but challenges remain in gender segregation and limited bargaining power. Promoting shared responsibilities and eradicating glass ceiling barriers in employment requires action from the government in policy implementation in collaboration with the stakeholders and women's groups. The significant action from the government to support women is the improvement of labor rights and wages, at least to be equal with other industries. The policy needs to address accessible and inclusive education for girls in both the formal and informal systems. And the government initiative in Sontipur can be expanded upon to work with other local communities to gain benefits for all units in the tea supply chain.

Acknowledgment

This research is a part of 'Biodiversity, Ethnicity, and Local Wisdom: From Northern Thailand to Northeast India Project', which was funded by Fundamental Fund, Chiang Mai University, and Thailand Science Research and Innovation (TSRI). The ethical review no. 65/060 was approved by the Chiang Mai University Research Ethics Committee.

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Siya Uthai

Faculty of Social Sciences, Chiang Mai University, Thailand

239 Huai-Kaew Rd., Muang Chiang Mai, 50200, Thailand

E-mail: siya.uth@cmu.ac.th

She is an Assistant Professor in the Department of Social Science and Development. She holds a Ph.D. in Southeast Asian Studies from Humboldt University of Berlin (2015). Her research focuses on food security, intersectionality, civil society in organic food networks, and the global food chain.