

From the Legacy of Historical Conflicts to Community Wildfire Management in Chiang Rai Province, Thailand

Nathaporn Thaijongrak, Supanat Pana, Chudech Losiri, Wuttichai Boonpook, Asamaporn Sitthi, Pakorn Meksangsouy

Srinakharinwirot University
Email: nathaporn@g.swu.ac.th

Abstract

Chiang Rai Province, located in Northern Thailand, has a multifaceted history shaped by both domestic and international events. Notably, the exile of the Kuomintang 93rd Division and the insurgency of the Communist Party of Thailand during the Cold War have contributed to significant historical conflicts and violent repression in the region. As the most ethnically diverse area in Thailand, Chiang Rai is home to a majority population of hill tribes. These communities rely heavily on forest resources for their livelihoods, leading to conflicts over resource use, particularly in the context of development initiatives aimed at stabilizing the region and preventing potential communist influence. This research investigates the relationship between historical conflicts and their impact on local lifestyles, specifically in the realm of forest fire management within community forests. It aims to understand how the legacies of past struggles inform contemporary practices and governance. The study employs a qualitative methodology, incorporating historical analysis and in-depth interviews with key stakeholders, including community leaders, government officials, and local residents. Research is conducted across various areas in Chiang Rai, focusing on regions supervised by five forest fire control stations to provide a comprehensive understanding of localized practices and challenges. The findings reveal that historical struggles have led to the establishment of community-based management models tailored to address forest fire issues. Each community has developed unique strategies for forest fire management, utilizing local knowledge and technology. Government officials serve primarily as supporters, disseminating policies and providing resources, while local communities retain significant autonomy in managing their forest resources and fire response efforts. This study highlights the importance of historical context in shaping contemporary resource management practices and emphasizes the resilience of local populations in adapting to environmental challenges.

Keywords: Chiang Rai, Thailand, Wildfire Management, Historical Conflicts .

1. Introduction

Chiang Rai Province, located in northern Thailand, spans an area of 11,678.369 square kilometers. It borders the Republic of the Union of Myanmar and the Lao People's Democratic

Republic and features mountainous terrain ranging from 1,500 to 2,000 meters above sea level. Encircled by mountains, Chiang Rai is home to diverse ethnic groups residing both in lowland and highland areas, with over 30 distinct groups in total. Of these, 11 ethnic groups, including the Tai, Lahu, Lisu, Akha, Khmu, Lawa, Kachin, Karen, Hmong, Yao, and Chinese, inhabit the highlands. Each group preserves unique religious practices, traditions, and cultural elements distinct from those of their ancestors.

Presently, Chiang Rai faces significant environmental challenges, particularly concerning smog and wildfire, which local agencies are continuously working to address. These issues have substantial implications for public health, the local economy, tourism, and agriculture. The province, popular among both Thai and foreign tourists seeking to experience local culture and scenic landscapes, has seen a decline in visitors due to health concerns stemming from air pollution. Additionally, campaigns to control burning have impacted local agricultural practices and the lifestyle of residents. The severity of haze and forest fires has led to particulate matter levels (PM_{2.5} and PM₁₀) exceeding safety standards, adversely affecting the respiratory health of local populations.

The prevalence of forest fires in Chiang Rai is attributed primarily to agricultural activities, such as clearing forests for plantation expansion, harvesting forest products, hunting, and burning weeds in fields, as well as waste disposal through open burning (Tiyapairat and Sajor, 2012; Department of National Parks, Wildlife and Plant Conservation, 2020; Sutthinee Dontri et al., 2014). Transboundary pollution from neighboring provinces and countries, including Myanmar and Laos, also exacerbates these issues.

An essential component in managing wildfire risks is public participation; effective policy implementation often depends on active community involvement. The cooperation of various communities is crucial for the successful execution of policies established by central and local government authorities. Additionally, historical conflicts in the region present a compelling dimension to forest fire management, as they influence the attitudes of different community groups toward conservation efforts. Previous studies have largely overlooked the impact of historical factors on resource management and conservation practices in Chiang Rai. Examining the interplay between state authority and local communities in managing and preserving resources offers valuable insights into how historical and social dynamics shape contemporary environmental practices and governance in the region.

2. Research Methodology

The researchers designed a qualitative research methodology, employing secondary document analysis and fieldwork. Data collection involved the analysis of books and relevant research, as well as on-site observations to assess physical characteristics, lifestyle patterns, and in-depth interviews with key stakeholders. Interviews were conducted with representatives from the Forest Fire Control and Operation Division, Department of National Parks, Wildlife and Plant Conservation, Ministry of Natural Resources and Environment, as well as with forest fire volunteers and community leaders. Additionally, the research examined the policies of government agencies and the support provided by the private sector for forest fire prevention.

The study sites were selected based on the operational areas of the Conservation Area Management Office 15 (Chiang Rai), which oversees five forest fire control stations in Chiang Rai Province: the Doi Mae Salong Forest Fire Control Station in Mae Fah Luang District, the Doi Tung Royal Project Forest Fire Control Station in Mae Fah Luang District, the Phu Chi Fa Forest Fire Control Station in Wiang Kaen District, the Khun Chae Forest Fire Control Station in Wiang Pa Pao District, and the Lam Nam Kok Forest Fire Control Station in Mueang District. Submit your manuscript electronically for review.

3. Results

This study investigates the relationship between historical conflicts and their influence on local lifestyles, specifically regarding community forest fire management. The findings are organized into three sections: the historical context of conflicts, conflicts with the state over forest area usage, and the model for community-based forest fire management.

A. The Historical Context of Conflicts

The extension of central state influence from Bangkok to the Lanna region in the 1990s (Saraswadi Ongsakul, 2008) marked Chiang Rai's incorporation into the Siamese nation-state. This integration established a centralized administrative system in which officials from the central government were dispatched to enforce control. According to the collective memory of the Hmong community in Doi Yao-Doi Pha Mon, Chiang Rai Province, this period left deep wounds. Community members recall enduring annual taxation by state officials, which included the compulsory slaughtering of animals to provide food for visiting officials who asserted authority over them. Additionally, state officials would occasionally shoot the community's livestock for entertainment. Young women were subjected to harassment, further eroding trust in Thai state officials and ultimately leading to armed conflicts between the Hmong people and Thai authorities (Urai Yangcheepsucharit, 2015). These events illustrate the historical tensions between the Thai state and Northern ethnic groups, marking the first notable instance of internal conflict in the area.

During the Cold War, this local conflict acquired broader implications, becoming entangled in global ideological struggles between democratic forces, led by the United States, and communist movements, led by the Soviet Union. Chiang Rai, due to its geographic position bordering neighboring states, became a focal point for both domestic and international Cold War dynamics. The ideological conflict within China influenced the region despite Chiang Rai not directly bordering China. The presence of both the Chinese Communist Party and the Kuomintang in Thailand, particularly in Chiang Rai, contributed to the spread of communist ideologies in the region. This development was partly due to Chinese Communist Party members fleeing mainland China and establishing a presence in Thailand.

On December 1, 1942, the Communist Party of Siam announced the establishment of the Communist Party of Thailand (CPT), launching various movements in opposition to the government. The CPT's emergence marked a pivotal moment in Thai political history, as it represented a popular movement based on communist ideology, attracting individuals and groups

who shared similar beliefs with the goal of overthrowing state power—a development viewed as a significant threat to national security. Initially, the CPT’s activities were confined to urban areas. However, due to intense government crackdowns and other external factors, party members were forced to retreat to rural areas, leading the leadership to adopt a “rural encirclement” strategy. This approach involved establishing a base of support among villagers in the countryside to use as a platform for resisting the Thai government. In August 1965, the CPT formally declared an armed struggle, which spread the conflict nationwide as CPT forces and sympathizers in rural areas gained momentum. This expansion entrenched the CPT as a prominent political adversary of the Thai state over an extended period.

Chiang Rai was further implicated in regional political events when, in 1949, China was engulfed in a civil war between the Communist Party and the Kuomintang (KMT). The Communist Party, under Mao Zedong, ultimately prevailed, forcing KMT forces to withdraw to Taiwan. Despite the relocation of the main KMT army to Taiwan, pockets of KMT resistance persisted in remote areas, including Yunnan Province. A segment of KMT troops fled into Burma’s jungles, seeking refuge.

Burma, after several failed negotiations, ordered the KMT troops to withdraw, and by 1953, the Taiwanese government ordered most KMT forces to relocate from Burma to Taiwan. Exceptions were made for the Third and Fifth Armies, which were stationed in Thailand for intelligence gathering and for preparing a potential future return to China. Over time, these soldiers integrated into Thai society, particularly along the Thai-Burmese border, marrying local women from ethnic communities and adapting to their surroundings. Chiang Rai’s proximity to Yunnan facilitated the movement of KMT forces, with the Third Army settling in Chiang Mai Province and the Fifth Army initially attempting to establish farming operations in Mae Ai District. Facing environmental challenges, the Fifth Army ultimately relocated to Doi Mae Salong in Mae Fah Luang District, Chiang Rai Province (Chiyu Wu, 2024).

In the 1960s, thousands of Hmong joined the CPT and resided in its base areas, particularly in the northern mountains, where they fought alongside the Lua people. This led to the establishment of key CPT strongholds in mountainous regions traditionally inhabited by the Hmong, primarily along the borders with Laos and Burma. The initial confrontation between the Hmong and Thai government forces occurred in 1967 in Huai Chomphu village, Thoeng district, Chiang Rai province, where a clash between the Hmong and Border Patrol Police resulted in the deaths of police officers. In response, authorities launched a raid on the village, killing livestock and burning all the houses, sparing only the one used to hold hostages. This devastating incident left many Hmong without homes or resources, driving them to join the Communist Party of Thailand (CPT) (Ian Baird, 2022). The government, intent on suppressing the CPT, allocated extensive resources to forcibly detain and suppress those suspected of communist affiliations, which paradoxically intensified the CPT’s mobilization efforts, allowing it to spread nationwide. As government tactics increasingly focused on violent repression, the CPT’s support base grew, particularly among the Hmong, who joined as both sympathizers and combatants in Region 8 (Urai Yangcheepsucharit, 2015).

The mountainous terrain of northern Thailand, along with its proximity to Laos and Burma, enabled the CPT to establish fifteen strongholds, known as “red zones,” in the 1970s, where they

held significant territorial control. Amid these growing communist influences, the Thai government enlisted the support of the Kuomintang (KMT), who had previously sought refuge in Thailand. In exchange for protection, the Thai government requested that the KMT help prevent communist infiltration and combat the communist-aligned Hmong. The government capitalized on the KMT's expertise in mountain warfare, a skill the Thai military lacked, to maintain security along the border. This partnership required that the KMT refrain from importing weapons or conducting independent military operations within Thailand (Chiyu Wu, 2024).

Over time, the Thai government recognized the KMT's substantial efforts against communism, leading to a shift in policy. Nearly two decades after their arrival, the KMT's longstanding anti-communist actions prompted the government to consider granting them Thai citizenship. The government offered these former KMT soldiers a place to live and work in regions threatened by communist activities, with the hope that they would continue to serve as local defenders against communist influence.

On October 6, 1970, the Thai Cabinet approved a proposal from the Supreme Command and the National Security Council allowing Chinese Nationalist (Kuomintang) troops to remain in Thailand as refugees. While most troops were to stay in their current locations, a portion of around 200-300 soldiers were relocated to Doi Luang, Chiang Rai Province, and 300-500 more to Doi Pha Mon in Chiang Rai. Once their quarters and farms were secure, their families were permitted to join them in these areas, previously occupied by the Communist Party of Thailand (CPT). This relocation required Kuomintang forces, with support from the Thai Border Patrol Police, to engage in combat to clear CPT strongholds.

The operations began on December 8, 1970, and saw fierce battles in the Doi Luang, Doi Yao, and Doi Pha Mon mountain areas. The assault, which began in earnest on December 10, 1970, extended over five years and claimed over 1,000 lives, many due to landmines. These efforts succeeded in dismantling major CPT bases, including Ban Phaya Phithak on the ridge of Doi Yao and the Doi Mon Liap base. After intense fighting, the CPT's district headquarters at Doi Pha Mon was captured by January 3, 1971.

In 1980, Prime Minister's Office Order No. 66/1980 marked a strategic shift, transitioning from armed conflict to a development-oriented approach that emphasized building rapport between government officials and rural communities. The government's new focus was to counter communist influence by promoting economic development and improving local livelihoods. This policy shift encouraged people to settle, work, and contribute to local prosperity, which ultimately diminished the influence of communist insurgents, forcing them to abandon the region.

Despite these efforts, many Hmong who had aligned with the CPT felt they had been denied justice and remained marginalized within Thai society. Their struggle continued until 1981, when the government issued an amnesty policy in 1982, offering former CPT members Thai citizenship and the right to live in Thailand in exchange for their loyalty. This pledge prompted many Hmong fighters to lay down their arms and join in national development efforts.

By late 1985, the Thai government declared a definitive victory over communist insurgents, effectively ending the revolution grounded in “people’s war” tactics. Kuomintang soldiers, who had been instrumental in counter-insurgency operations, were then allowed to retire from military duty. In recognition of their support, the government granted citizenship to most of the Kuomintang soldiers and their families, allowing them to lead normal lives on Doi Mae Salong.

B. Conflict with the State in Using Forest Areas

Ethnic communities residing in the highlands, often referred to as hill tribes, are characterized by their distinct agricultural practices, which differ markedly from those of lowland communities. The production methods employed by these highland communities are heavily influenced by topography and traditional ecological knowledge. Their subsistence farming techniques are closely aligned with natural cycles, leading to the development of a rich cultural relationship with the forests, shaped by various belief systems. For instance, the Lahu community observes the Molewe ceremony, a ritual dedicated to honoring deities for the protection of crops and the well-being of the villagers. This ceremony is conducted in the most fertile regions, often at the highest mountains, where towering trees signify the sacredness of the land. During this ceremony, the forest area is strictly protected; activities such as logging, foraging, hunting, and the release of domesticated animals are forbidden, underscoring the cultural reverence for these natural spaces. The Hmong community shares similar traditions, viewing certain forest areas as sacred and off-limits for resource extraction (Sombut Nuchniyom, 2003).

However, many ethnic groups in northern Thailand, including the Hmong, Akha, Yao, Lisu, and Lahu, have faced significant health challenges over the years. Historically, foreign missionaries encouraged these communities to cultivate opium as a means of pain relief, leading to opium becoming a significant commodity and the primary source of income in the region. Concurrently, the Kuomintang army promoted opium cultivation to finance its military operations. In 1959, the Thai government declared opium an illegal crop and initiated efforts to suppress its cultivation. In exchange for military and economic support, the Kuomintang army agreed to stop opium cultivation and relinquished 40 tons of raw opium to the Thai government for destruction.

Furthermore, the Thai government enforced stricter regulations through the National Reserved Forests Act of 1964, which imposed clear restrictions on the use of community forest areas. This legislation placed reserved forest lands under the jurisdiction of the Royal Forest Department, while conservation areas fell under the National Parks Department's oversight. Law enforcement in these areas became increasingly stringent, coinciding with the rise of the Communist Party of Thailand (CPT) and its base in forest regions. In response, the military undertook management initiatives aimed at stabilizing these areas to counteract communist influence. The army transitioned from a forceful suppression approach to one centered on development, designating many forest areas as military zones to dismantle CPT strongholds. In regions that were challenging to access, the military resorted to controlled forest burning to clear land (Thanawat Rungruangtantisuk, 2019).

In collaboration with the monarchy, the army implemented various land development projects, notably the Royal Project, which sought to transform forest lands into agricultural zones for the northern hill tribes. This initiative aimed to replace opium cultivation and shifting agriculture,

ultimately leading to significant changes in the lifestyles of the hill tribe communities in Thailand.

Following the era of conflict over resource use, communities developed management methods rooted in local wisdom to care for their forest areas. In Wiang Pa Pao District, for instance, the tradition of "weaving bamboo to be fence" emerged. Bamboo is abundant in many regions and is an excellent material for creating barriers. In the context of forest fire management, woven bamboo fences can serve as firebreaks, helping to contain and control the spread of fires. By creating barriers, communities can protect agricultural lands and residential areas from encroaching flames. Elders in the community weave bamboo structures, which children observe and replicate, fostering a collective effort to create firebreaks. This method not only raises awareness about the significance of forest fire management but also instills a sense of ownership among community members. The practice of weaving bamboo reflects the artistic traditions and craftsmanship of local communities. It often carries cultural significance, symbolizing unity and collaboration among community members as they work together to create something functional and beautiful. By utilizing local contexts, such as demonstrating the abundance of resources like mushrooms and bamboo shoots, these practices help educate villagers on the importance of preserving their forests. Public sector policies should align with the villagers' wisdom and lifestyles to enhance understanding and compliance.

C. Conflict with the State in Using Forest Areas

Research indicates that the majority of forest fires are attributed to human activities, including farming, animal husbandry, and foraging for forest products. Many farmers resort to burning as a method for weed control, while intentional burning can arise from local conflicts or negligence, such as the improper disposal of burning cigarette butts. The cultivation of corn, incentivized by government price guarantees, exacerbates forest fire issues, as farmers often burn residual land to prepare for new crops. Furthermore, the geographical proximity to neighboring countries contributes to complications, as open burning can extend beyond borders, leading to jurisdictional conflicts and challenges in management. The steep terrain in many areas complicates access for fire control efforts.

To address these challenges, the government has outlined comprehensive guidelines for forest fire control, emphasizing the importance of understanding local fire causes and developing targeted prevention strategies. However, due to the historical context of conflicts, officials often face difficulties accessing communities, which fosters suspicion and distrust. As a result, forest fire control has become a community-led initiative, supplementing government policies. The community-driven approach consists of several key steps: Forest Fire Prevention Management: Each community develops its own prevention strategies based on local needs and historical knowledge. Fire Extinguishing Preparation: Communities prepare for potential fires by training volunteers and organizing equipment. Fire Detection and Extinguishing: Local leaders coordinate efforts to detect and extinguish fires promptly.

Case Study: Lam Nam Kok Forest Fire Control Station : Ban Huai Chomphu

In Ban Huai Chomphu, overseen by the Lam Nam Kok Forest Fire Control Station, the population primarily consists of Akha, Yao, Shan, and Chinese ethnic groups engaged in farming

activities such as coffee, corn, lychee, and tea cultivation. The community has established a collaborative process for preventing forest fires, which includes: Utilizing loudspeakers to request cooperation in reducing agricultural burning, Educating locals on prevention methods and emergency response, selecting volunteers from the community to undergo training for fire management and creating firebreaks in vulnerable areas to minimize fire risk.

Despite these efforts, challenges persist due to insufficient resources. The community often lacks adequate equipment from government agencies and local administrative organizations, necessitating creative solutions during fire incidents. Additionally, the budget for fire extinguishing efforts is limited, compelling communities to manage responses independently. To further reduce the incidence of forest fires, community leaders in Huai Chomphu District work diligently to promote the practice of rotational burning and incentivize villagers to adopt fire-free livelihoods. This includes setting up markets for agricultural products, thereby creating alternative income opportunities that do not contribute to forest fire risks.

Case Study: Lam Nam Kok Forest Fire Control Station : Wawi Subdistrict

The situation at the Lam Nam Kok Forest Fire Control Station in Wawi Subdistrict, Mae Suai District, Chiang Rai Province. The community's reliance on burning for agricultural practices, such as clearing land for corn and managing forest products, underscores a traditional method that can lead to unintentional forest fires. The cultural norm of burning for farming and hunting must be balanced with the need for sustainable land management. Local leaders play a crucial role in mobilizing community efforts to reduce burning. By utilizing loudspeakers to disseminate information and rally community cooperation, they actively engage residents in discussions about the risks and impacts of uncontrolled burning. Training programs for volunteers are conducted within the villages, ensuring that knowledge is tailored to the specific conditions and experiences of local residents. This grassroots approach empowers individuals and builds resilience against fire incidents.

During the burning season, volunteers are organized by village headmen to patrol the area closely. This proactive strategy enhances community vigilance and quick response to any fire outbreaks. The enforcement of laws, particularly during the 60-day burning ban, helps regulate practices and mitigate risks associated with forest fires. The recruitment of villagers to assist in monitoring reinforces community responsibility and collective action. The introduction of a real-time application developed by the central government to track forest fire areas is a significant advancement. This technology aids in timely fire suppression efforts and improves coordination between local volunteers and forest fire control officials. The challenge of nighttime burning illustrates the adaptive strategies employed by some community members to evade detection. Volunteers face heightened difficulties in monitoring and suppressing fires during these hours, prompting the need for strategic responses.

To address the issue of rotational burning, the community is encouraged to shift toward planting economic crops such as tea, coffee, and rubber. This transition not only provides economic benefits but also fosters a sense of pride in local agriculture, motivating residents to prevent forest fires to protect their investments. The village headman's perspective on cultivating tea as

a valuable crop aligns with the broader goals of sustainable development, combining environmental stewardship with economic viability.

The efforts in Wawi Subdistrict exemplify a comprehensive community-driven approach to forest fire management that combines education, technology, and sustainable agricultural practices. By addressing the root causes of burning and fostering a sense of shared responsibility, the community is taking meaningful steps toward reducing the incidence of forest fires while promoting economic growth.

Case Study: Doi Mae Salong Forest Fire Control Station : Doi Mae Salong

In the area supervised by the Doi Mae Salong Forest Fire Control Station, located in Mae Fah Luang District, the region is home to four hill tribe groups: Akha, Lahu, Lawa, and Chinese. This area is responsible for overseeing approximately 312,000 rai and is integral to the Doi Tung Development Project. Volunteers undergo training to equip them with the knowledge and tools necessary for effective fire suppression. Collaboration between community members and forest fire control officers ensures a united approach to monitoring and extinguishing fires. The community utilizes public address systems and digital platforms, like the Line application, to disseminate information, issue warnings, and mobilize efforts to combat forest fires. Doi Mae Salong employs real-time applications developed by the central government to monitor fire incidents, facilitating efficient coordination with firefighting authorities.

Communities actively engage in creating firebreaks to protect agricultural areas from fire spread. They also collect fuel materials like dry leaves and grass, which can be repurposed as fertilizer, promoting both waste management and agricultural sustainability. Local rules regarding burning periods are established to instill awareness of the consequences of illegal burning practices. The community enforces stricter penalties than those set by government regulations, which enhances compliance and effectiveness in fire control.

Recognizing the economic benefits observed in other regions, community members have shifted from growing corn to cultivating crops like tea, coffee, and rubber. This transition not only increases economic returns but also enhances community vigilance over fire risks, as residents become more invested in protecting their livelihoods.

Doi Mae Salong exemplify community-led initiatives in forest fire management, blending local knowledge with modern technology and practices. Through collaboration, education, and the promotion of sustainable agricultural practices, the community is effectively addressing the challenges posed by forest fires while fostering a deeper connection to their land and resources.

Case Study: Doi Tung Royal Forest Fire Control Station: Doi Tung

The Doi Tung Royal Forest Fire Control Station, located in Mae Sai District, Chiang Rai Province, oversees fire management for 18 villages. The success of forest fire management in this region can be attributed to strong collaboration between station officers and local communities, which emphasizes the importance of controlling and preventing forest fires to protect their livelihoods. Doi Tung has benefited from royal development projects that have enhanced local capacities. Community members have engaged with various operations promoted by the Royal Project, fostering a sense of pride and commitment to improving their environment.

The station facilitates training and educational sessions for local residents on forest fire prevention and management. This empowers the community to take an active role in protecting their resources. Volunteers and networks dedicated to forest fire prevention have been established. Community rules and regulations regarding burning practices have been implemented, reflecting local values and desires to safeguard their environment. Positive relationships between forest fire control officers and community members are pivotal. Officers participate in local activities and engage with residents to better understand their needs and concerns, enhancing cooperation.

Communities collaboratively set burning dates, coordinating with central agencies prior to the official burning ban announcements. Continuous data collection since 2012 has informed strategies and allowed for adaptive management. Community members regularly maintain firebreaks by clearing weeds and debris, creating barriers that help contain fires and protect agricultural areas. A community fire suppression network is organized to monitor the area, especially from February onwards when burning is prohibited. Residents take turns patrolling their designated areas in collaboration with the forest fire control officers. Monthly community meetings with officers foster open dialogue, allowing residents to voice concerns and receive guidance. Communication through telephones and radios ensures swift coordination during fire incidents. Individuals in the community responsible for causing fires face penalties, reinforcing accountability and the importance of adhering to community regulations. Given the proximity to Myanmar, Doi Tung often experiences fire spread from neighboring areas. The community proactively engages in pre-burning practices to minimize the potential for widespread fires.

The village committee plays a crucial role in promoting economic crop cultivation, leading to significant changes in local agricultural practices: Community members have shifted from traditional crops like upland rice and corn to more lucrative options such as tea and coffee. This transition reduces the incentive to burn fields, as the economic stakes tied to these crops encourage better land stewardship. Collaboration with Mae Fah Luang University provides residents with agricultural education, ensuring they possess the necessary skills and understanding to manage new crop types effectively.

The Doi Tung Royal Forest Fire Control Station exemplifies a successful model of community-based fire management through collaboration, education, and empowerment. By fostering strong relationships and adapting agricultural practices, the local population is not only mitigating forest fire risks but also enhancing their livelihoods through sustainable practices. This integrated approach serves as a model for other regions facing similar challenges.

Case Study: Khun Jae Forest Fire Control Station: Wiang Pa Pao District

The Khun Jae Forest Fire Control Station, located in Wiang Pa Pao District, Chiang Rai Province, oversees an expansive area that includes Khun Jae National Park and additional forest reserves, totaling approximately 208,750 rai (334 km²). This area is prone to cross-border forest fires, especially due to agricultural practices such as burning to clear land for corn and cassava cultivation. The presence of diverse wildlife also leads to human incursions for hunting, further complicating fire management efforts.

Volunteers from local communities are trained in fire suppression techniques and equipment usage. The collaboration with forest fire control staff enhances knowledge sharing and builds community resilience. Community leaders emphasize the collective responsibility for fire management, fostering a sense of duty among residents to protect their environment, even in the absence of financial support. A significant network of around 50 volunteers from local villages actively participates in fire management. These volunteers, primarily from villages located in the park and surrounding buffer zones, are integral to the fire suppression efforts.

Community members are organized into shifts to ensure constant monitoring and rapid response during the critical fire season from February to April. Utilizing local wisdom, communities collaborate with forest officials to create firebreaks. A traditional practice, “Bamboo Weaving,” is employed to form protective barriers against fire spread. The community adheres to central government policies during the burning period, with local leaders enforcing strict regulations to prevent burning. Awareness campaigns inform residents about the penalties associated with illegal burning practices, emphasizing the importance of compliance during prohibited periods.

Following a forest fire, communities are encouraged to plant cash crops, such as rubber trees, which are less susceptible to fire. Rubber trees cannot be exposed to flames as this would prevent latex flow, incentivizing farmers to prioritize fire prevention. The cultivation of Miang (a traditional tea) in the area exemplifies a commitment to fire-free practices. The Miang community demonstrates a strong culture of mutual care and responsibility towards forest management.

Effective communication strategies, including mobile units and coordination through the Line application and radio, enable swift responses to fire incidents. This is particularly crucial in remote areas with limited phone coverage. Continuous contact among volunteer networks facilitates quick mobilization of resources and personnel to respond to emerging threats. Innovations such as straw balers and other agricultural tools are introduced to support sustainable practices, allowing the community to manage resources effectively and monitor their environment.

The Khun Jae Forest Fire Control Station exemplifies a proactive approach to forest fire management through community engagement, training, and the incorporation of local knowledge. The collaborative efforts between community members and fire control staff, coupled with innovative practices and strict adherence to regulations, contribute significantly to mitigating fire risks in this ecologically sensitive area. By fostering a culture of responsibility and cooperation, the Khun Jae community serves as a model for effective fire management in forested regions.

Case Study: Phu Chi Fa Forest Fire Control Station: Por Subdistrict

The Phu Chi Fa Forest Fire Control Station oversees a critical area known as the Doi Yao – Doi Pha Mon – Doi Pha Chi Security Development Project, which spans approximately 187,500 rai across the Thoeng, Khun Tan, and Wiang Kaen districts in Chiang Rai Province. This region is characterized by its diverse ethnic communities, particularly in Por Subdistrict, where up to seven different ethnic groups reside. The station faces unique challenges, including cross-border

forest fires from neighboring Laos, necessitating a robust community engagement approach to forest fire management.

The Phu Chi Fa Station conducts training sessions to empower local residents with knowledge about fire prevention and suppression. A volunteer network, comprising individuals under 60 years of age for operational effectiveness, collaborates closely with the Forest Fire Control Office. Community members are encouraged to participate in fire management, creating a sense of ownership and responsibility for their environment. Policies from the Forest Fire Control Station are tailored to fit the community's knowledge and cultural context. Communication occurs in local dialects, ensuring that all residents understand and engage with the fire management strategies effectively. Educational efforts address changing environmental conditions, including global warming, fostering a proactive approach to fire management.

The community has established a patrol unit tasked with rapid response during the burning season. Quick access to fire locations is crucial; if a fire is not contained within 15 minutes, the risk of expansion increases significantly. Volunteers are trained extensively to ensure they are ready to respond effectively to fire incidents. Each village has implemented rules to control forest fires, with strict penalties for agricultural plots that ignite during the burning ban. Offenders may face repercussions, including restrictions on registering as farmers or probation from community leaders. After the burning ban, community members are required to create firebreaks before burning, subject to inspection by village committees.

The community adopts a rotational burning approach to minimize smoke and air quality issues. Different villages burn in rotation to manage emissions effectively. Leaders actively promote the planting of perennial trees (e.g., rubber, longan, mango) and cash crops (e.g., onions, cabbage) that do not require burning. This shift not only reduces fire risk but also enhances economic stability. Community leaders advocate for agricultural tourism as a viable income source, such as visiting local strawberry farms. This initiative helps diversify the economy while encouraging environmental stewardship. The Phu Chi Dao tourism area has contributed to reducing corn production and associated smoke from burning practices, showcasing a successful model of integrated land use. Efforts are underway to educate villagers about the health impacts of pesticide use and the benefits of sustainable agricultural practices. This education encourages a shift towards safer, environmentally friendly farming methods.

The Phu Chi Fa Forest Fire Control Station exemplifies a successful model of community-driven forest fire management. Through education, volunteer engagement, and adaptive strategies, the station has created a resilient framework for addressing the complex challenges of fire management in a culturally diverse and ecologically sensitive area. By fostering a collaborative spirit and promoting sustainable practices, the community is not only protecting its environment but also enhancing livelihoods and promoting long-term ecological health.

4. Discussion

The intricate history and ongoing dynamics of ethnic communities in Chiang Rai Province provide a unique context for understanding forest fire management. Historically, these

communities have navigated a complex relationship with the Thai state, shaped by colonial legacies, wartime experiences, and ongoing struggles for identity and autonomy.

Many ethnic groups in Chiang Rai, such as the Akha, Lisu, and Chinese, have lived in the region long before the establishment of centralized governance. Their historical presence has been intertwined with the land, characterized by shifting cultivation practices and deep respect for forest resources. This relationship contrasts sharply with the state's perspective, which often frames these communities as outsiders posing threats to national security and environmental integrity.

Following the end of the Cold War, efforts by the Thai state, including royal initiatives, sought to integrate these ethnic groups into the national framework. However, the transition has been fraught with tension, as the image of ethnic communities as "destroyers" persists despite their evolving roles as co-developers of the Thai nation. This duality complicates their position within Thai society, leading to instances where these communities assert autonomy in forest fire management.

In response to the increasing threat of forest fires, ethnic communities have established village committees focused on conservation and sustainable resource management. In Doi Wawi, for example, community members have created regulations that delineate areas for residential use, community forests, and agriculture. This model reflects a holistic approach to managing fire risks while recognizing the necessity of traditional practices.

The geographical challenges of Chiang Rai—characterized by high mountains and remote forests—have further necessitated localized governance. The physical inaccessibility of many areas has historically limited state power, compelling community leaders to take charge of resource planning and fire management. The rotational burning system adopted by villages allows for sustainable agricultural practices while balancing the need for resource conservation.

The complex interplay between government authority and community autonomy is evident in forest fire management practices. While the government has implemented policies, such as a 60-day burning ban, communities often create their own systems to navigate these regulations. The Wan Ching Pha system, for instance, facilitates controlled burning prior to strict prohibitions, allowing communities to manage agricultural practices effectively.

Despite historical tensions, community involvement remains crucial in forest fire control efforts. In areas like Phu Chi Fa, where past conflicts between the Communist Party and state forces have bred distrust, community leaders play a pivotal role in mediating relationships with forest fire control officers. Efforts to rebuild trust are essential, as officers must clarify their role as protectors of the forest rather than enforcers of punitive measures.

The case of Chiang Rai Province underscores the importance of recognizing the agency of ethnic communities in forest fire management. Their deep-rooted connection to the land and resource management practices can provide valuable insights into sustainable practices. Moving forward, fostering trust and cooperation between the state and local communities will be crucial for developing effective strategies that balance environmental conservation with the rights and needs of ethnic groups. By embracing a collaborative approach, both parties can work toward a shared

goal of preserving the forests while respecting the cultural heritage and livelihoods of those who inhabit them.

5. Conclusion

The historical conflicts in Chiang Rai Province have significantly influenced the development of localized forest fire management models tailored to each community's unique conditions and practices. These models leverage the intimate knowledge of local landscapes that residents possess, enabling more effective responses to fire incidents compared to external officials.

As these historical tensions have gradually eased, the established community-based management systems have continued to thrive. Key components of this approach include:

- **Village Committees:** These groups play a crucial role in decision-making, regulation enforcement, and mobilizing community resources for fire prevention and response.
- **Rotating Burning Practices:** Communities have adopted rotational burning strategies that allow them to manage agricultural needs while minimizing the risk of uncontrolled fires.
- **Volunteer Networks:** Local volunteers and patrolling teams provide the frontline defense against forest fires, ensuring rapid response and community involvement in monitoring and extinguishing fires.
- **Community Accountability:** Internal regulations and punishments for those who start fires during prohibited periods help maintain order and foster a culture of accountability among community members.

The contemporary challenges of forest fire management highlight the need for cooperation between community members and fire officers. With vast areas to oversee and limited resources, fire officers often rely on local communities to act as the first responders to fire incidents. The prevailing belief among residents is that timely access to fire sites is essential for effective suppression, leading to the establishment of mobile units that can quickly reach affected areas.

In this context, the role of fire officers evolves from direct management to one of coordination and support. Their responsibilities include:

- **Providing Resources:** Fire officers assist communities by coordinating budgets and supplying necessary equipment and tools for fire management.
- **Building Networks:** They facilitate connections among various stakeholders, enhancing communication and collaboration in fire suppression efforts.
- **Disseminating Information:** Officers serve as vital conduits for relaying government orders and policies to communities, ensuring that local practices align with broader fire management strategies.

Ultimately, empowering communities to manage their own fire suppression efforts while providing them with the necessary support creates a synergistic relationship that enhances the effectiveness of forest fire management. This collaborative approach not only respects the

traditional knowledge and practices of local residents but also fosters a sense of ownership and responsibility, ensuring a more resilient and sustainable response to forest fire challenges in Chiang Rai Province.

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