e-ISSN: 3047-857X
Proceedings of the International Symposium on Management (Volume 22, 2025)

Thailand-China Rubber Industry Cooperation Under the Belt and Road Initiative: Opportunities and Challenges

Luo Yun*, Sunthan Chayanon, Wijittra Srisorn

College of Politics and Government, Suan Sunandha Rajabhat University, Bangkok, Thailand
**Corresponding author. Email: yun.lu@ssru.ac.th*

ABSTRACT
The Belt and Road Initiative (BRI), proposed by China in 2013, has facilitated extensive economic and industrial cooperation between China and Southeast Asian countries, including Thailand. As the world's largest producer and exporter of natural rubber, Thailand plays a crucial role in China's rubber industry supply chain. This paper examines the dynamics of Thailand-China rubber industry cooperation under the BRI framework, analysing key projects, economic benefits, and challenges. Utilizing secondary data from government reports, academic research, and industry analyses, this study highlights how infrastructure development, investment flows, and trade agreements under the BRI have strengthened bilateral rubber industry collaboration. However, issues such as price volatility, environmental concerns, and geopolitical influences pose significant challenges. The paper concludes with policy recommendations to enhance sustainable cooperation in this sector.

Keywords: *Belt and Road Initiative, Thailand-China relations, rubber industry, economic cooperation, trade.*

1. INTRODUCTION

The Belt and Road Initiative (BRI), introduced by China in 2013, represents a strategic platform for deepening regional connectivity and promoting infrastructure-led economic integration across Asia, including Southeast Asia. Thailand, as a central player in this region, has emerged as a significant partner in China's BRI ambitions due to its geographic proximity, export-oriented economy, and resource endowment—particularly in natural rubber production. As the world's largest producer of natural rubber, Thailand supplies approximately 56% of its exported rubber to China, aligning with China's status as the top global consumer, especially in tire and industrial product manufacturing (Muenthaisong & Leemanonwarachai, 2016). This complementarity has been further strengthened through infrastructural and institutional channels under the BRI. Notably, the China-Laos-Thailand railway has been designed to enhance logistical connectivity, reduce trade frictions, and improve market access for Thai commodities such as rubber. Chinese enterprises have also invested in rubber processing and manufacturing facilities in Thailand, fostering local value addition. A notable example is Z Rubber Company, which represents a growing trend of Chinese industrial presence in Thailand's rubber economy (Dong, 2024). These developments also align with Thailand's national economic vision under the Eastern Economic Corridor (EEC), which aims to modernize the country's industrial base. From a policy standpoint, Thai authorities have experimented with several interventions to stabilize the domestic rubber industry and leverage BRI-driven demand. Using a computable general equilibrium (CGE) model, Pinitjitsamut and Duangmanee (2024) demonstrated that policies such as import tax increases and mandates for domestic rubber usage can stimulate GDP growth and employment, albeit with potential price inflation. Their findings underscore the importance of strategic regulation in maximizing benefits from cross-border trade and foreign investment in the rubber sector. Nevertheless, bilateral cooperation also faces challenges. One critical concern is the social sustainability of Chinese industrial ventures in Thailand. Cultural mismatches and differences in labour management styles have affected worker morale and productivity in some enterprises (Dong, 2024). Moreover, while large-scale investments may promote economic growth, they also risk reinforcing asymmetries between host and investing countries if not carefully managed (Kosaikanont, 2019). Beyond economic dynamics, broader geopolitical considerations are at play. As China and Thailand coordinate under the BRI, both nations must navigate regional sensitivities, balancing national development goals with concerns around sovereignty, labour conditions, and long-term sustainability (Meng, 2023). This paper explores the evolving Thailand-China cooperation in the rubber industry under the BRI. It aims to address the following research questions: (1) How has the BRI facilitated Thailand-China cooperation in the rubber industry? (2) What are the economic benefits and challenges of this collaboration? (3)

What policy measures can enhance sustainable rubber industry cooperation? Drawing on academic research and policy evaluations, the study contributes to understanding how infrastructure, trade, and regulation intersect in shaping a more resilient rubber economy between Thailand and China.

2. THAILAND-CHINA RUBBER TRADE AND INVESTMENT UNDER THE BRI

2.1 Trade Dynamics

Thailand and China maintain a deeply interlinked rubber trade relationship, grounded in mutual economic complementarities. Thailand, the world's largest producer of natural rubber, exports a significant share of its production to China, which is the largest global consumer, primarily for tire manufacturing and industrial use. The Belt and Road Initiative (BRI) has acted as a catalyst in deepening this trade relationship by enhancing logistics, reducing transaction costs, and strengthening institutional frameworks. A critical development has been the enhancement of transport corridors such as the China-Laos-Thailand railway. This infrastructure reduces the time and cost of moving rubber and rubber-derived goods across borders, thereby increasing the competitiveness of Thai exports in the Chinese market. By integrating physical connectivity with economic cooperation mechanisms, the BRI facilitates a smoother flow of goods and services and encourages industrial upgrading (Lu, Sun, & Chen, 2018). Additionally, institutional arrangements like the ASEAN-China Free Trade Area (ACFTA) have significantly influenced trade flows. The agreement eliminated tariffs on a large array of goods, including natural rubber and rubber-based products. Tonsakunthaweeteam (2024) employed a gravity model to assess the impact of the ACFTA and found that while the agreement facilitated trade creation, it also led to export diversion—indicating that while Thailand increased trade with China, its exports to non-ASEAN countries declined marginally. The study concluded that ACFTA enhanced Thailand's rubber export values, but future benefits would depend on maintaining a comparative advantage through product quality and cost efficiency. Despite these benefits, trade imbalances remain a concern. Thailand primarily exports raw or semi-processed rubber, while importing high-value-added rubber goods from China. This trade asymmetry reflects a broader structural challenge in Thailand's export strategy, which the BRI's industrial policies aim to address by encouraging deeper integration of supply chains (Praisakuldecha, 2017). Furthermore, there is growing interest in exploring trade facilitation beyond tariff reduction, such as streamlining customs procedures and enhancing mutual standards recognition.

2.2 Chinese Investments in Thailand's Rubber Sector

Beyond trade, the BRI has accelerated Chinese investment in Thailand's rubber processing and manufacturing sectors. These investments are pivotal in moving Thailand up the value chain—from being a raw material supplier to a producer of high-end rubber goods. The Zhongce Rubber (Thailand) Co., Ltd., a major state-owned Chinese firm, has established a presence in Thailand as part of its global expansion strategy. According to Kosaikanont (2019), this investment exemplifies the "Go Global" strategy of Chinese capital under the BRI and reflects efforts to build local production bases to serve regional and global markets more efficiently. These investments are often situated in strategic zones such as the Eastern Economic Corridor (EEC), a flagship Thai initiative that overlaps with BRI goals. The EEC provides incentives like tax breaks and infrastructure support to attract foreign investment in high-tech and value-added industries, including rubber-based manufacturing. This alignment allows Chinese firms to benefit from both host-country incentives and home-country support, while Thailand benefits from technology transfer, employment creation, and export expansion. However, the influx of Chinese capital has sparked discussions around labour conditions and socio-economic sustainability. Dong (2024) examined employment practices in Z Rubber Company and found a gap between Chinese managerial approaches and Thai employee expectations. The study revealed that work enthusiasm among Thai workers was influenced not only by wages but also by cultural compatibility, work environment, and opportunities for advancement. These findings suggest that while economic outcomes are important, social integration and human capital development are also essential for the long-term success of Sino-Thai industrial cooperation. Moreover, the benefits of Chinese investment are not uniformly distributed across Thailand. While regions like Rayong and Songkhla have seen increased investment in processing plants and logistics hubs, rural rubber-producing areas still struggle with infrastructure deficits and price volatility. This disparity calls for a more inclusive investment strategy that strengthens upstream value chains and farmer cooperatives (Pinitjitsamut & Duangmanee, 2024). Environmental implications also deserve scrutiny. The expansion of rubber plantations and processing zones raises concerns about deforestation and water usage. Although these issues are not always directly linked to Chinese investment, the intensification of production to meet export demands—driven in part by BRI market access—necessitates robust environmental governance. In summary, Thailand-China trade and investment in the rubber sector under the BRI is a multi-dimensional process. It spans physical infrastructure, institutional cooperation, capital flows, and social integration. While the economic benefits are substantial, realizing long-term mutual gains

will depend on addressing structural trade imbalances, improving labour-management relations, and implementing sustainable development practices.

3. CHALLENGES IN THAILAND-CHINA RUBBER COOPERATION

While the Belt and Road Initiative (BRI) has accelerated Thailand-China cooperation in the rubber sector, several significant challenges persist that may hinder the sustainability and equity of this partnership. These include persistent price volatility in global rubber markets, environmental degradation associated with rubber plantation expansion, and geopolitical uncertainties that may complicate long-term strategic planning.

3.1 Price Volatility

Price volatility remains a central concern in the natural rubber industry. As a globally traded commodity, rubber prices are influenced by complex and interconnected variables including crude oil prices, currency fluctuations, climatic factors, and speculative trading. In Thailand, smallholder rubber farmers—who constitute the majority of producers—are especially vulnerable to income instability stemming from these fluctuations. Neupane, Calkins, and Calkins (2013) conducted a detailed study on price behaviour at the Hat Yai Central Rubber Market and found that volatility undermines both producer confidence and long-term investment, particularly in southern Thailand where most rubber production is concentrated. Several empirical models, such as GARCH and its derivatives, have been used to assess price behaviour. Ramli et al. (2019) analysed volatility in the ASEAN-3 rubber markets and confirmed the existence of asymmetric volatility, where negative shocks (e.g., price drops) have more significant impacts than positive ones. The study also found a bidirectional causal relationship between rubber, synthetic rubber, and crude oil prices, highlighting the sensitivity of rubber prices to broader energy markets. Similarly, Sang et al. (2012) emphasized that the volatility of Thai rubber prices is strongly linked to exchange rate movements and crude oil prices. Using VARMA-GARCH modelling, they demonstrated how climatic variables (like rainfall) and energy markets jointly affect price stability, suggesting the need for holistic forecasting tools and diversified income strategies to buffer smallholders against global price shocks.

3.2 Environmental Concerns

Environmental degradation is another pressing issue associated with the expansion of Thailand's rubber industry, especially under pressure to meet Chinese demand. The conversion of forests into monoculture rubber plantations contributes to biodiversity loss, soil degradation, and altered water cycles. Although rubber has lower deforestation intensity than oil palm, its encroachment into ecologically sensitive areas—such as mountainous or conservation zones—has significant long-term ecological implications. While recent policy efforts have promoted agroforestry and sustainable rubber certifications, the challenge lies in their uneven adoption across regions. Moreover, increased investment under the BRI, including from Chinese firms establishing processing and production zones in Thailand, may exacerbate environmental pressures if sustainability protocols are not embedded into bilateral industrial agreements. These risks underscore the importance of aligning foreign investment strategies with Thailand's environmental regulations and land-use planning goals.

3.3 Geopolitical Risks

Geopolitical dynamics also add a layer of complexity to Thailand-China rubber cooperation. The ongoing U.S.-China strategic rivalry places ASEAN countries, including Thailand, in a delicate position as they attempt to balance economic opportunities with national sovereignty and regional stability. While Thailand has shown openness to Chinese investment, it also maintains strategic relationships with other global actors, including the United States and Japan. This balancing act can affect long-term industrial policy and trade dependencies. For instance, rapid alignment with China under the BRI could limit Thailand's negotiating flexibility within ASEAN frameworks or in pursuing multi-aligned industrial cooperation. Moreover, as seen during the COVID-19 pandemic, disruptions in global logistics and shifts in geopolitical alliances can affect export demand and access to crucial inputs, further amplifying the risks associated with over-reliance on a single trading partner. Kosaikanont (2019) noted that Chinese enterprises operating in Thailand—especially those in rubber and related sectors—may face scrutiny not only for their environmental footprint but also for labour practices and strategic intentions. If not managed carefully, such perceptions could lead to societal pushback or policy shifts that disrupt the investment climate. Thus, geopolitical risks must be considered not merely in terms of high-level diplomacy but also in the form of localized economic and regulatory responses.

4. POLICY RECOMMENDATIONS

To enhance the sustainability and resilience of Thailand-China cooperation in the rubber industry under the Belt and Road Initiative (BRI), a multifaceted policy approach is necessary—one that integrates economic upgrading, environmental stewardship, and institutional reform. First, diversifying rubber applications beyond traditional uses is crucial for economic resilience. While raw rubber exports dominate Thailand's trade profile, greater investment in high-value-added downstream industries—such as medical-grade gloves, automotive components, and advanced construction materials—can buffer the economy from price shocks and create skilled employment. Thailand's Eastern Economic Corridor (EEC) offers a strategic platform for fostering such diversification by providing infrastructure, tax incentives, and industrial clustering for high-tech manufacturing. Policy alignment between Thai agencies and Chinese investors should prioritize technology transfer and joint ventures in these advanced segments to accelerate industrial upgrading.

Second, sustainability must be embedded into the entire rubber value chain. As demand increases and plantations expand, environmental degradation—particularly deforestation and biodiversity loss—poses a long-term threat to ecological balance and international reputation. To address this, Thailand and China should collaborate on establishing a bilateral environmental certification scheme grounded in global frameworks such as the Forest Stewardship Council (FSC) or the Global Platform for Sustainable Natural Rubber (GPSNR). Such certifications would incentivize sustainable land-use practices, improve traceability, and cater to eco-conscious markets in Europe and North America. Moreover, policy frameworks must be designed to ensure that smallholder farmers—who make up the majority of producers in Thailand—can access training, finance, and technical support to meet these sustainability standards. Public-private partnerships and donor-backed green finance instruments can play a catalytic role in this transition.

Third, regulatory mechanisms must be developed to stabilize the rubber market and ensure equitable trade practices. The rubber industry is notoriously exposed to speculative trading, crude oil price swings, and demand-side volatility, all of which disproportionately impact producers and intermediaries in developing countries. One approach is to enhance regional coordination through ASEAN-led initiatives that promote price stabilization funds or commodity buffer stocks. Additionally, Thailand and China could establish a bilateral price monitoring and early warning system that leverages big data analytics to anticipate and mitigate extreme fluctuations. This would complement the efforts of local institutions like the Rubber Authority of Thailand (RAOT) and build resilience among smallholders and processors. Furthermore, transparent contract farming arrangements and fair-trade certification can reduce the risk of price exploitation by intermediaries and traders. Policy should also be geared toward digitizing rubber markets—such as through e-auctions or blockchain-based traceability platforms—which would reduce information asymmetry and empower producers in remote areas.

Overall, a combination of industrial diversification, environmental governance, and market stabilization policies will be essential to ensure that Thailand-China rubber industry cooperation under the BRI delivers inclusive, sustainable, and long-term benefits. This integrated approach would not only support bilateral interests but also align with global goals on sustainability, economic justice, and climate adaptation.

5. CONCLUSION

The Belt and Road Initiative (BRI) has undeniably strengthened the strategic and economic interdependence between Thailand and China, particularly within the natural rubber sector. Through infrastructure expansion, most notably cross-border railway projects, and institutional mechanisms like the ASEAN-China Free Trade Area (ACFTA), the BRI has facilitated smoother logistics, reduced trade barriers, and stimulated industrial investment in Thailand's rubber processing capabilities. These developments have not only increased trade volumes but also contributed to localized economic growth in Thailand's southern provinces, aligning with national development strategies such as the Eastern Economic Corridor (EEC). However, while the economic dividends of this cooperation are significant, they are accompanied by structural vulnerabilities that require urgent policy attention. Chief among these is the persistent volatility in global rubber prices—exacerbated by external shocks in energy markets, climate variability, and speculative behaviour—and the environmental degradation linked to unsustainable plantation expansion. Additionally, labour dynamics and geopolitical tensions further complicate the long-term stability of this bilateral partnership. As such, the path forward demands a recalibrated policy framework that balances economic growth with ecological sustainability and social equity. Both Thailand and China must prioritize the diversification of rubber applications into higher-value products to move beyond commodity dependence and foster technological upgrading. Simultaneously, environmental stewardship must become a core pillar of cooperation, with joint certification schemes and support for smallholder compliance with global sustainability standards. Market stability

mechanisms—whether through bilateral price monitoring, risk management tools, or ASEAN-led buffer arrangements—will be equally essential in mitigating volatility and empowering stakeholders across the value chain. Ultimately, for Thailand-China rubber industry cooperation under the BRI to be truly transformative, it must evolve from a transactional trade relationship into a model of sustainable, inclusive, and innovation-driven development. Such a shift would not only secure long-term mutual benefits but also position both countries as regional leaders in responsible commodity governance in an increasingly climate-conscious and geopolitically complex global economy.

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