A Comparative Study on the Traffic Sign Symbol Systems and Regulatory Standards between China and Its Land-Connected ASEAN Neighboring Countries

Shunyan Peng*

School of Traffic Management Engineering, Guangxi Police College, Nanning 530028, China

*Author to whom correspondence should be addressed.

Abstract: The divergence in traffic sign symbol systems and regulatory frameworks between China and its ASEAN land neighbors (Vietnam, Laos, and Myanmar) has emerged as a critical bottleneck for regional transport connectivity under the Belt and Road Initiative. From the perspective of transportation integration, this paper systematically examines the classification logic, visual symbol design, and regulatory standards of traffic signs across the four nations. The paper identifies the structural causes and implications of these disparities through comparative analysis. Empirical findings indicate that historical path dependence, geographical constraints, fragmented governance mechanisms, and cultural cognitive differences are the primary determinants of these systemic variances. These discrepancies impede cross-border drivers' information processing efficiency, leading to elevated accident rates and logistics inefficiencies. To address these challenges, the paper proposes three key strategies: establishing a regional standardization cooperation framework, implementing phased bilingual sign pilot programs, and leveraging advanced technologies for dynamic information signage. These recommendations aim to provide both theoretical underpinnings and actionable pathways for enhancing cross-border transportation safety, optimizing port clearance processes, and advancing the overarching goal of China-ASEAN transport integration.

Keywords: Traffic signs; Regulatory standards; China-ASEAN; Regional integration; Cross-border security

1. Introduction

The connectivity of transportation systems between China and ASEAN countries constitutes a vital component of the Belt and Road Initiative. In recent years, with the implementation of the Regional Comprehensive Economic Partnership (RCEP), cross-border logistics and human mobility have surged, and the total trade volume between

China and ASEAN surpassed 6.4 trillion RMB in 2023. As a result, the transnational highway transportation network has rapidly expanded [1]. However, discrepancies in road traffic signage have emerged as a potential barrier to cross-border transportation efficiency and safety. China adopts the GB 5768-2022 standard, which emphasizes a red-blue contrasting color scheme and a clear information hierarchy. In contrast, ASEAN countries such as Thailand and Vietnam, due to their historical backgrounds, continue to employ signage systems and road conditions inherited from the colonial era. Simultaneously, given the high proportion of motorcycles in their traffic structures, these countries favor yellow/green color schemes and high-density information layouts in their signage design [2]. As illustrated in **Figure 1**, a comparison between the "yield" signs in China and Malaysia reveals significant differences in the conveyed information when indicating right-of-way at intersections. These discrepancies can potentially lead to cognitive confusion among cross-border drivers. According to statistics, in 2024, traffic accidents in the ASEAN region caused by misinterpretation of road signs accounted for 12% of total cross-border incidents [3]. Furthermore, the Global Status Report on Road Safety 2023 by the World Health Organization identifies human error as the leading cause of road traffic accidents, with illegal or improper driving behavior contributing to over 80% of road fatalities [4]. Therefore, studying the differences in traffic signage systems and regulatory standards among countries is not only essential for reducing cross-border traffic accidents, but also a necessary precondition for advancing regional transportation integration between China and its neighboring ASEAN countries.

(a) Chinese road traffic yield signs   (b) Malaysian road traffic yield signs
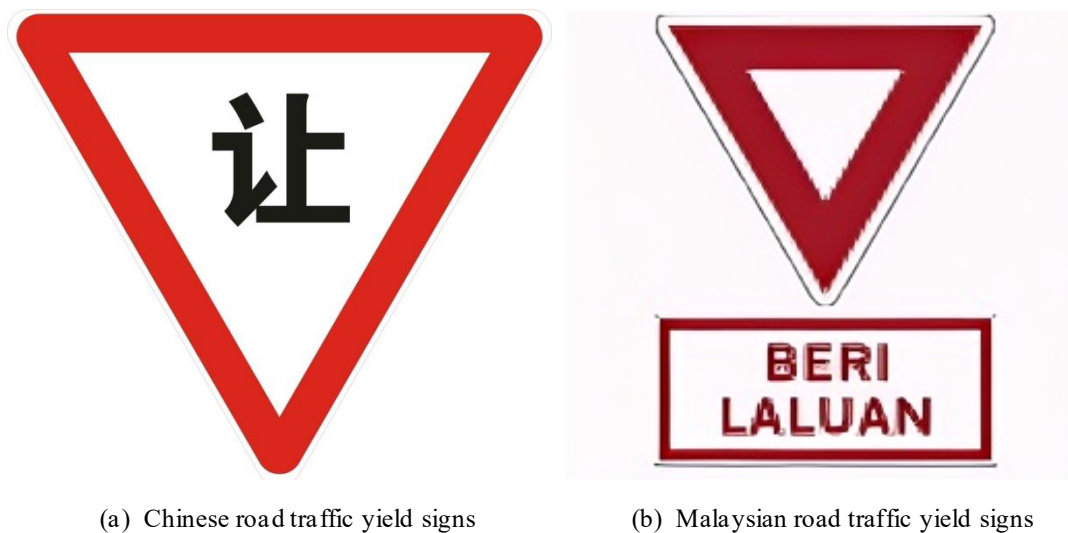
Figure 1. Comparison of road traffic signs between China and Malaysia

As early as 1961, the Vienna Convention on Diplomatic Relations provided a foundational framework for the standardization of traffic signs across different countries. However, significant implementation discrepancies have arisen due to localized adaptations by individual nations [5]. Later, the 2008 adoption of the Technical Specifications for Interoperability of the EU Railway Signaling System effectively reduced the barriers to cross-border railway transport within the European Union, enhancing operational efficiency and laying the groundwork for a pan-European railway network, thereby establishing a standardized framework for transportation interoperability in Europe [6]. Following the development of the European railway system, the United Nations and the Economic and Social Commission for Asia and the Pacific (ESCAP) proposed the construction of the Trans-Asian Railway (TAR),

designed to connect Singapore with Istanbul, Turkey, and further extend into Europe and Africa. In December 1995, during the Fifth ASEAN Summit, then-Prime Minister of Malaysia, Mahathir Mohamad, formally proposed the construction of a railway line extending beyond the Mekong River Basin—from Singapore through Malaysia, Thailand, Vietnam, Myanmar, and Cambodia to Kunming, China. As shown in **Figure 2**, this proposal, known as the Pan-Asian Railway Initiative, was immediately endorsed by ASEAN leaders and the Chinese government [7].
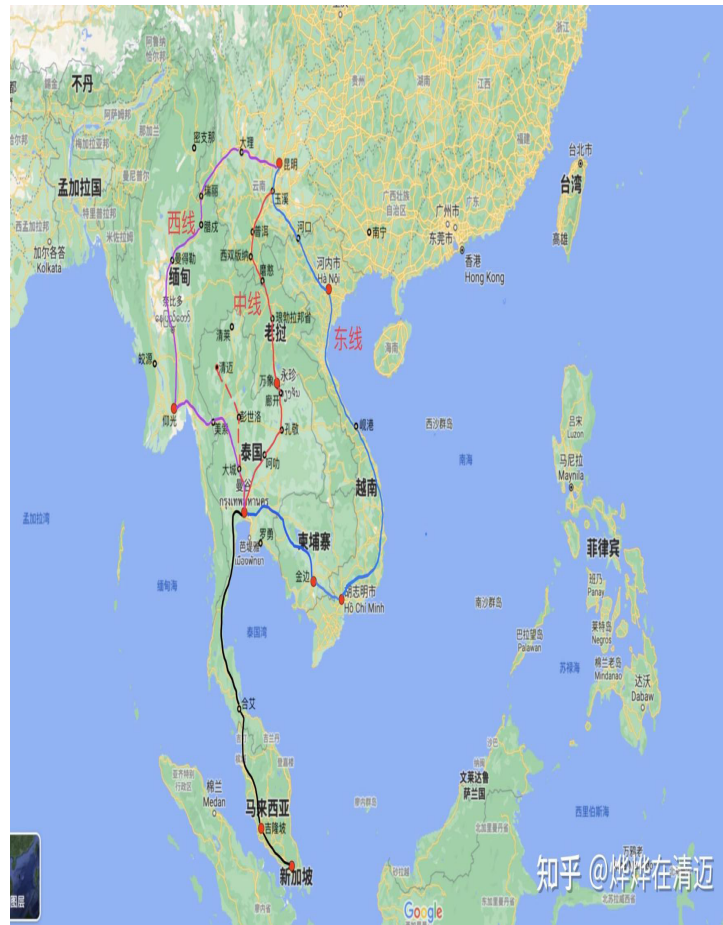
Figure 2. Distribution map of Pan-Asian railway routes

Domestic scholars have drawn on international experience in transportation standardization to explore the significance of standardized traffic signaling systems for cross-border transport, particularly in maritime and railway sectors. For instance, Xiao Bingheng, in the context of China's deepening reform and growing integration into the global economy, advocated for the implementation of transportation standardization across all professional subfields of the industry and outlined key development directions and priorities [8]. Wang Ruzheng et al. highlighted the impact of unified standards on maritime navigation technologies, emphasizing how technical standardization and innovation can jointly enhance the efficiency of maritime transport [9]. Meng Qing and co-authors analyzed the case of France, which led the early efforts in railway standardization, and elaborated on its historical development to provide valuable insights for improving and internationalizing China's own railway standardization practices [10]. Similarly, Yang Zeyun and others examined the current status of international standardization in urban rail transit and pointed out that the effectiveness of domestic standards remains limited, with mutual recognition and interoperability of standards yet to be achieved [11]. Li Huan and co-researchers

investigated the development of transportation standardization along countries participating in the Belt and Road Initiative, calling for stronger alignment with international standardization organizations and the establishment of a coordinated traffic standardization framework tailored to the needs of these participating nations [12].

It is evident that existing research on transportation integration has predominantly focused on Europe, North America, or individual countries, with insufficient comparative analysis concerning the China–ASEAN region. In particular, little attention has been paid to the standardization of road traffic signage in cross-border highway transportation. In response to the current lack of standardization in traffic signs between China and ASEAN countries, this study adopts a transportation integration perspective and selects three ASEAN nations—Myanmar, Laos, and Vietnam—that share land borders with China as the primary subjects of analysis. According to the Manual on Uniform Traffic Control Devices (MUTCD) in the United States, one of the five fundamental principles of traffic control devices is to attract the attention of road users. This principle emphasizes that the form of traffic control facilities—such as shape, size, color, language, installation position, and visual distance—should be designed to capture users' attention and facilitate comprehension of the intended instructions [13]. Based on this principle, this paper conducts a comparative analysis of the traffic sign symbol systems and regulatory standards in China, Vietnam, Laos, and Myanmar from three dimensions: classification logic, visual appearance and color schemes, and graphical symbols and their meanings. The study not only fills a critical gap in regional transportation engineering research but also offers practical and feasible solutions to enhance cross-border safety, logistics efficiency, and intelligent traffic collaboration. It thus holds significant academic value and practical relevance for advancing transportation integration in the China–ASEAN region.

2. Comparative analysis of traffic sign symbol systems in China, Vietnam, Laos, and Myanmar

2.1. Differences in traffic sign classification systems

Road traffic signs are road facilities that convey guidance, restrictions, warnings, or instructions through text or symbols [14]. According to Part 2: Road Traffic Signs of the Chinese national standard GB 5768.2-2022, China classifies traffic signs into seven major categories: prohibitory, warning, mandatory, directional, tourist, work zone, and supplementary signs, forming a function-oriented classification system [15]. Vietnam's current National Technical Regulation on Road Traffic Signs and Markings adopts a three-tier system inherited from France, which includes: priority signs (encompassing prohibitory and warning signs), guide signs (covering direction and distance), and supplementary signs. Laos, based on the Vienna Convention on Road Signs and Signals, follows a Thai-influenced five-category structure, namely: safety warning, driving rules, directional guidance, facility information, and special zones. Myanmar, having been under British colonial rule from the late 19th century to the early 20th century for nearly a century, retains the Commonwealth-style classification system as reflected in its current Myanmar Road Traffic Regulation Manual. Signs are categorized by shape: circles indicate mandatory signs, triangles indicate warning signs, and rectangles or squares indicate informational signs, as shown in **Table 1** [16].

Table 1. Comparison table of traffic sign classification between China and the three countries of Vietnam, Laos, and Myanmar

China	Vietnam	Laos	Myanmar
Warning signs	Warning signs	Safety warning class	Mandatory signs
Sign of prohibition	Sign of prohibition	Driving rules class	Warning signs
Indicator sign	Indicator sign	Direction guide class	Indicator sign
Sign of the way	Sign of the way	Facility description class	—
Tourist area sign	—	Special region class	—
Construction zone sign	—	—	—

The differences in classification lead to reduced efficiency in cross-national drivers' information retrieval, and the variation in reaction times to traffic signs directly affects the emergency braking distance. To study the recognizability evaluation of road traffic warning signs, Zhang Kairan et al. collected experimental data from 34 university students using the E-Prime experimental system, along with 104 questionnaire samples. The data showed that the average recognition reaction time difference between Chinese warning signs and Vietnamese priority signs was 0.8 seconds, as shown in **Table 2** [17].

Table 2. Part of the data on the identification of warning signs in China and Vietnam

China warning signs (part)	Response time/ms	Vietnam priority flags (part)	Response time /ms
	3917		3202
	8129		7234
	3059		2285
	2886		1983

Based on the above evaluation of the recognizability of China-Vietnam road traffic warning signs, a questionnaire was designed to assess the recognizability of certain road traffic warning signs currently used in Laos and Myanmar. The content of the questionnaire is shown in **Figure 3**.

Figure 3. Questionnaire on traffic sign identification on some roads in Laos and Myanmar

Through distributing questionnaires to 150 drivers, the results showed that 118 drivers were unfamiliar with the "Roundabout Driving" indication sign used in Laos, and 53 drivers mistakenly identified the "Wildlife Warning" sign as a "Livestock Warning" sign. This indicates that differences in the classification of road traffic signs between countries can lead to drivers confusing various types of traffic signs.

2.2. Comparison of visual symbol systems

The colors of road traffic signs are crucial elements for conveying information, and different colors produce varying visual effects on drivers. China's current standard, Road Traffic Signs and Markings Part 2: Road Traffic Signs, uses a contrasting red and blue color scheme, which significantly differs from those of the other three countries. Vietnam inherits the French warning colors of yellow and black, with yellow accounting for 62% of signs. Laos adopts a Thai-style green and white color scheme for guide signs, with green comprising 45%. Myanmar retains the British-style red and white prohibition combination, with the red saturation being 15% lower than the Chinese standard, as shown in **Table 3**.

By comparing the prohibition signs, indication signs, warning signs, and guide signs of China, Vietnam, Laos, and Myanmar, the following conclusions can be drawn:

The "No Honking" prohibition signs across the four countries show high color consistency, all using a white background, black text, and red border color scheme, with no significant differences.

For the "Turn Left" indication signs, China uses a blue background with white text; Laos and Myanmar are consistent with China, also featuring blue backgrounds and white text. However, Myanmar's indication signs differ slightly in arrow style design details compared to China. Vietnam's "Turn Left" indication sign, by contrast,

uses a yellow background, black text, and red border, which clearly distinguishes it from the other three countries.

Comparing the "Reverse Curve" warning signs, China uses a yellow background, black text, and black border; Vietnam uses a yellow background, black text, and red border, differing from China in border color. Laos employs a white background, black text, and red border, with a background color significantly different from those of China and Vietnam. Myanmar uses a yellow background, black text, and black border; although its background color matches China's, the border color logic aligns more with Chinese warning signs. Nevertheless, the overall graphic design style differs considerably.

For general guide signs, China primarily uses a blue background, white text, and blue border; Laos and Myanmar use green backgrounds with white text, clearly distinguishing them from China's blue scheme. Myanmar explicitly features green backgrounds with white text. Vietnam's guide signs show no obvious difference from China's.

Table 3. Comparison of the color meanings of traffic signs between China and the three countries of Vietnam, Laos, and Myanmar

	China	Vietnam	Laos	Myanmar
Sign of prohibition				
Indicator sign				
Warning signs				
Sign of the way				

2.3. Differences in graphic symbol recognition

Similarly, based on the comparison of traffic sign color meanings between China and the three countries of Vietnam, Laos, and Myanmar in **Table 3**, the differences in the recognition of graphic symbols on road traffic signs among the four countries can be analyzed. Due to differences in design logic and functional emphasis, the graphic symbols of traffic signs in these countries exhibit cognitive differences in element selection and

information presentation, reflecting each country's localized understanding and regulatory characteristics of traffic information transmission. The specific conclusions are as follows:

Comparing the prohibition signs for "No Honking", the overall cognitive consistency of graphic symbols among the four countries is high. All use a horn symbol with a red diagonal slash to intuitively express the prohibition of honking. However, there are slight differences in details: Laos features a more delicate line style for the horn, while Myanmar's horn outline is simpler. The core elements and the graphical expression of the prohibition logic converge, resulting in minimal cognitive interference.

Comparing the "Turn Left" indication signs, China uses a circular blue background with a white arrow, where the arrow's curvature clearly points left. The graphic is simple and intuitive, emphasizing the directness of the indication function. Vietnam uses a triangular yellow background with a black curved arrow that combines the left turn indication with a slight warning of road curvature, so the symbol conveys both directive and mild cautionary meanings. Laos and Myanmar both use blue backgrounds with white arrows, but Laos's arrow features a standard left-turn curve, while Myanmar's arrow is straight. These differences in the dynamic expression of "turning" may cause cognitive deviations regarding the turning angle.

Comparing the "Reverse Curve" warning signs, China employs a yellow background with a black border featuring a "lightning-shaped" pattern composed of continuous zigzag lines, emphasizing the danger of sharp turns through strong visual impact. Vietnam uses a yellow background with a red border and an "L"-shaped arrow, focusing on conveying the reverse curve information via the arrow's directional change. Laos uses a white background with a red border enclosing an "N"-shaped arrow, presenting a simpler directional guide that weakens the sense of danger. Myanmar uses a yellow background with a black border in a diamond shape; the internal arrow depicts a "hairpin bend" style, offering a more three-dimensional spatial expression of the reverse curve, which forms a cognitive difference compared to the flatter symbols of the other three countries.

Comparing general guide signs, China uses rectangular signs with blue backgrounds and white text, presenting multi-directional road information through a combination of "information blocks and arrows", emphasizing integrated information display. Laos and Myanmar use green backgrounds with white text: Laos indicates road branches with simple arrows, while Myanmar adds textual annotations (such as place names and distances) on the green background, focusing more on basic directional guidance. Vietnam's graphic symbols differ little from China's but tend to incorporate "warning elements" into their design habits, forming potential cognitive differences with the more functionally singular expressions of China, Laos, and Myanmar.

2.4. Differences in regulatory standards

Differences in regulatory standards for road traffic signs refer to the variations among countries or regions in the design, usage rules, legal basis, cultural background, and other aspects of traffic signs. These differences arise from complex causes, often closely related to historical traditions, laws and regulations, traffic management models, cultural habits, and levels of technological development. The aforementioned study has outlined differences in classification, graphic symbols, colors, and shapes of road traffic signs. Here, the analysis focuses primarily on two aspects: the standardization process of road traffic signs and regional coordination.

2.4.1. Adoption level of international standards

China's road traffic signs are deeply aligned with international standards such as United Nations conventions and promote intelligent developments like LED active luminous signs through the latest GB 5768.2-2022 standard.

Vietnam, in recent years, has adopted the Chinese standard gauge for the China-Vietnam railway project, partially aligning its signage system; however, its turning-related signs retain local characteristics consistent with its national strategy of "core unification, peripheral autonomy." Laos and Myanmar have introduced Chinese standards through the Pan-Asian railway networks, including the China-Laos and China-Myanmar railways. Yet, in road signage, they maintain regional coordination achievements—for example, Laos and Myanmar use green-background guide signs consistent with neighboring Thailand.

2.4.2. Impact of regional cooperation

Under the framework of China-ASEAN "Belt and Road" regional cooperation, the construction of regional transportation connectivity promotes the standardization of cross-border transport infrastructure through multilateral coordination mechanisms, focusing on harmonizing road guidance signage systems and traffic information color schemes among member countries. This standardization process aims to establish a unified paradigm for cross-border traffic visual recognition, improving the efficiency of transnational transport coordination and facilitating the integration of regional economic factors. However, historical colonial influences—such as Vietnam's meter-gauge railways and Myanmar's British-style left-hand traffic rule—still constrain their standardization progress and require gradual mitigation through regional connectivity.

2.5. Multilingual labeling standards

The addition of foreign languages on road traffic signs primarily serves to assist international travelers and expatriates, enhance the city's international image, and promote traffic safety and order. As shown in **Figure 4**, taking the "Airport Expressway" guide sign as an example, a comparison of multilingual labeling on road traffic signs among China, Vietnam, Laos, and Myanmar reveals that all four countries use the English word "AIRPORT" for multilingual airport signage.

(a) China

(b) Vietnam

(c) Laos

(d) Myanmar

Figure 4. Comparison of airport signs in China, Vietnam, Laos, and Myanmar

3. The causes and suggestions for differences in traffic sign symbol systems and regulatory standards among China, Vietnam, and Laos

The traffic sign symbol systems and regulatory standards of China and its land-bordering ASEAN neighbors—

Vietnam, Laos, and Myanmar—differ significantly in terms of classification logic, visual symbol design, and administrative mechanisms. These differences stem from a combination of factors, including historical colonial legacies, geographical constraints, traffic management models, and cultural cognitive habits. A systematic analysis of these underlying causes and the proposal of coordinated pathways are essential for advancing regional transportation connectivity and reducing cross-border safety risks.

3.1. Cause of difference

3.1.1. Historical path dependency

Vietnam, once a French colony, has inherited the French-style "three-tier" classification system for traffic signs—priority signs, guidance signs, and supplementary signs—as well as the traditional yellow/black color scheme, forming a path-dependent institutional inertia. Myanmar, influenced by its British colonial history, retains Commonwealth-style signage, classifying signs by shape: circular for mandatory signs, triangular for warning signs, and square for informational signs, using low-saturation red and white color schemes. China, in contrast, has developed a function-oriented classification system through independent standard iterations. Laos, influenced by neighboring Thailand, predominantly adopts green and white color schemes.

3.1.2. Differences in road conditions and traffic environments

In Laos, mountainous terrain accounts for a high proportion of roads, with over 8% of roads having a slope greater than 40%, leading to the creation of distinctive warning signs for steep grades and sharp curves, such as the red-bordered white "N"-shaped reverse curve sign [18]. In Vietnam, motorcycles comprise over 70% of the traffic volume, significantly influencing road traffic flows. As a result, signage design tends to favor high-density layouts and warning colors such as yellow and green to accommodate complex traffic environments. Myanmar, with an underdeveloped road network, focuses signage design on basic functionality and relies heavily on textual annotations to compensate for limited graphic symbol recognition.

3.1.3. Differences in administrative mechanisms and standardization processes

China implements a closed-loop traffic sign management system encompassing "standard-setting, design, and acceptance", closely aligned with international norms and promoting the application of intelligent signage. In contrast, Vietnam, Laos, and Myanmar have fragmented administrative structures, with multiple agencies overseeing signage without unified coordination in standard development and enforcement. Vietnam's railway system partly adopts Chinese standards, yet its road signs retain strong local characteristics. Moreover, China actively promotes cross-border transportation standardization through the Belt and Road Initiative, while the standardization process in Vietnam, Laos, and Myanmar remains constrained by regional coordination challenges, such as Vietnam's meter-gauge railways and Myanmar's British-influenced left-driving rules.

3.1.4. Cultural cognition and design logic differences

Chinese traffic signs emphasize simplicity and clarity, while Vietnam incorporates more warning elements, and Myanmar and Laos tend to rely more on textual annotations. China's use of red and blue contrast colors balances warning and guidance functions; Vietnam's yellow and green palettes are adapted to the high-visibility needs of tropical climates; Laos follows Thailand's green and white scheme, reinforcing regional coherence.

3.2. Suggestions

The complexity of the traffic sign systems in the four countries stems from the combined effects of historical inertia, geographical diversity, fragmented administrative structures, and cultural-cognitive differences. This systemic divergence not only hampers cross-border transportation efficiency and safety but also poses a contradiction to the regional integration goals envisioned under the China-ASEAN Belt and Road Initiative. Therefore, it is imperative to adopt multidimensional coordination strategies that balance standardized unification with localized needs, and to establish a framework for mutual recognition of traffic signs based on the principle of seeking common ground while respecting differences. Such an approach aims to reduce accident risks, enhance logistics efficiency, and promote regional economic integration. Specifically, the following measures can help bridge these differences:

3.2.1. Promote regional cooperation on traffic sign standardization

Establish a China-ASEAN Traffic Sign Standardization Committee to prioritize the harmonization of sign classifications, colors, and graphic symbols on major cross-border highways. Given that all four countries use red-bordered white backgrounds for prohibition signs, this combination can serve as a regionally adopted universal design. Drawing on the EU's experience with railway signal interoperability, a Technical Specification for Cross-Border Road Traffic Signs between China and ASEAN should be developed to clarify mutual recognition rules for core signs.

3.2.2. Implement a phased, differentiated transition plan

Pilot bilingual signage (native language + Chinese/English) at major ports and cross-border highways in Vietnam, Laos, and Myanmar, with gradual extension to the national road networks. For legacy issues such as Myanmar's British-style driving rules, regional cooperation funds should support infrastructure upgrades to progressively align with Chinese standards.

3.2.3. Enhance cross-border driver training and public awareness

Develop multilingual traffic sign recognition training programs and integrate them into cross-border freight driver certification systems. Leverage smart navigation platforms such as Amap and Google Maps to provide real-time alerts on cross-border signage differences, reducing cognitive confusion.

3.2.4. Empower with technology and facilitate data sharing

Promote the use of LED variable message signs that can dynamically change language and design based on vehicle nationality. Establish a China-ASEAN traffic sign database to enable online access and comparison of sign designs, legal standards, and regulatory frameworks across countries.

4. Conclusion and prospect

4.1. Conclusion

This study finds that the differences in traffic sign systems between China and Vietnam, Laos, and Myanmar are essentially a composite reflection of historical institutional inertia, cultural-cognitive tensions, and fragmented regional governance. Colonial legacies have solidified material manifestations of power relations through technical standards, while geographical environments and localized practices have generated a body of situated knowledge,

leading to deep-seated contradictions between the pursuit of standardization and localized resistance. The rising incidence of cross-border accidents and the decline in logistics efficiency not only highlight conflicts among technical norms but also reflect the insufficient provision of regional public goods and the spillover of social costs. In essence, this pattern of divergence represents a microcosm of broader regional social fragmentation, underscoring the dual challenges of institutional coordination and cultural trust in the process of regional integration.

4.2. Prospect

Looking ahead, traffic sign standardization should serve as an entry point for advancing China-ASEAN integration—from physical connectivity to institutional convergence and people-to-people exchange. First, a flexible institutional framework should be established by forming a regional standard negotiation committee that adopts a gradual model of harmonizing core signage while retaining localized features, drawing lessons from the EU's open coordination mechanism to balance normativity with flexibility. Second, cultural trust must be deepened by developing a transnational traffic sign education system, piloting symbol-integrated designs at border crossings, and transforming standardization into a medium for constructing regional identity. Third, fairness-oriented technological governance must be embedded by ensuring localization compatibility when promoting dynamic variable message signs, and by building open-access databases and mechanisms for public participation to avoid technological dominance. Fourth, regional governance experimentation should be expanded by involving non-bordering ASEAN countries such as Thailand and Cambodia, exploring pathways for ASEAN-wide standard formation, and facilitating the transition of economic corridors from shallow connectivity to deep social integration. This process is not only a practical manifestation of modernizing regional governance capacity but also contributes to a Chinese approach to inclusive governance under the paradigm of coexistence in diversity and coordinated evolution—ultimately transforming road connectivity into a shared destiny.

Funding

Disclosure statement

The author declares no conflict of interest.

References

[1]   Zhong ZL, 2024., Market Research and Industry Outlook Report on the Global and Chinese Road Traffic Sign Industry (2025–2030). Industry Research Network, Beijing.

[2]   Zhong DTH, 2024, Supply and Demand Analysis and Development Outlook Report on China's Traffic Safety Sign Industry (2025–2030 edition). 51 Industry Report Network, Beijing.

[3]   Ministry of Emergency Management of the People's Republic of China, 2025, 2024 National Safety Production and Natural Disaster Report. Ministry of Emergency Management of the PRC, Beijing.

[4]   World Health Organization, 2024, World Report on Road Traffic Injury Prevention. People's Medical Publishing

House, Beijing.

[5] Huang Q, 2002, Characteristics and Significance of the Vienna Convention on Diplomatic Relations. Journal of China Foreign Affairs University, 2002(2): 1–6.

[6] UIC & UIRR, 2021, 2020 European Combined Transport (CT) Development Report. Luoge Network.

[7] Zhang M, 2023, A Study on China's Participation Models in the Construction of the Pan-Asian Railway Project, thesis, Guangxi University.

[8] Xiao B, 1999, Several Issues in the Development of Traffic Standardization. Transportation Standardization, 1999(4): 7–10.

[9] Wang R, Zhang L, Qu C. 2014, On the Promotion of Standardization to the Technological Advancement of Navigational Aids, research paper, Yantai Navigational Aids Department of Shandong Province.

[10] Meng Q, Gu X, Sheng T, et al., 2020, Current Situation and Implications of Railway Traffic Standardization Development in France. China Standardization, 2020(12): 250–255.

[11] Yang Z, Pan J, Xu T, 2021, Development Status and Research Analysis of International Standardization Work in Rail Transit. Standards Science, 2021(S1): 251–255.

[12] Li H, Lu C, Zhang P, 2021, Survey on the Standardization of Urban Rail Transit in Countries along the Belt and Road. Standards Science, 2021(S1): 256–259.

[13] National Technical Committee for Information and Documentation Standardization, 2022, Road Traffic Signs and Markings—Part 2: Road Traffic Signs (GB 5768.2-2022). China Standards Press, Beijing.

[14] Shi Y, 2024, Research on Driver Gaze Target Detection Method Based on Visual Selective Attention, thesis, University of Electronic Science and Technology of China.

[15] National Technical Committee for Information and Documentation Standardization, 2022, Road Traffic Signs and Markings—Part 2: Road Traffic Signs (GB 5768.2-2022). China Standards Press, Beijing.

[16] Qi A, 2022, Research on Traffic Sign Classification and Recognition Based on Deep Learning, thesis, Northeastern University.

[17] Zhang K, Wang R, 2016, Evaluation of Recognition Performance of Road Traffic Warning Signs. Journal of Safety and Environment, 16(1): 6–9.

[18] Zhang Y, 2015, Understanding the State from the Border: An Anthropological Study of Rubber Plantation among Hani/Akha people in the China-Laos-Myanmar Border Area, thesis, Yunnan University.