

Policy Innovation of Green Transport in the Beijing-Tianjin-Hebei Region from the Perspective of Collaborative Governance

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Abstract: Since the Beijing-Tianjin-Hebei coordinated development strategy was elevated to a national strategy, transport integration has taken the lead in making breakthroughs, and infrastructure connectivity has been basically achieved. However, the problem of transport carbon emissions has not been resolved in tandem. In July 2026, Beijing, Tianjin and Hebei jointly released regional collaborative local standards for carbon puhui accounting, unifying the accounting methods for cross-regional transport emission reductions. Taking these two standards as an entry point, this paper draws on collaborative governance theory and examines the current status, problems and improvement paths of cross-regional collaboration on green transport in Beijing-Tianjin-Hebei from three perspectives: coordinating organization, rules and procedures, and participation incentives, combined with economic data and policy practices of the three regions. The study finds that the shortcomings constraining further collaboration mainly lie in the institutional dimension. Breakthroughs need to be made in strengthening the binding force of collaborative carriers, phasing in unified rules, and improving benefit-compensation mechanisms.

Keywords: Collaborative governance, Beijing-Tianjin-Hebei, green transport, cross-regional governance, carbon puhui.

1. Introduction

In 2014, Beijing-Tianjin-Hebei coordinated development became a national strategy, and transport integration was identified as the area to take the lead in making breakthroughs. Over the past decade, the Beijing-Zhangjiakou High-Speed Railway, Beijing-Xiongan Intercity Railway, and Tianjin-Daxing Airport Intercity Railway have been opened to traffic one after another. The regional railway and highway network has been significantly densified, and the issue of basic connectivity has been largely resolved. However, infrastructure connectivity solves the problem of access, but does not directly address the carbon emissions generated by transport. Beijing-Tianjin-Hebei has a large motor vehicle fleet, strong demand for port bulk cargo transport, and frequent cross-regional freight traffic flows between the three regions. Transport pollution does not follow administrative boundaries, and a single province cannot solve the problem at its root.

This contradiction becomes even clearer when placed in specific scenarios. For example, a new energy freight truck from Hebei transporting goods into Beijing will simultaneously face issues such as mutual recognition of emission standards, charging facility layout, and attribution of emission reductions. These issues fall under the jurisdiction of different departments in the three regions, lacking unified institutional arrangements, and policy coordination is poor. In July 2026, Beijing, Tianjin and Hebei jointly released two regional collaborative local standards: Technical Specification for Emission Reduction Accounting of Carbon Puhui Projects — Oil-to-Electricity Passenger Vehicles and Technical Specification for Emission Reduction Accounting of Carbon Puhui Projects — Hydrogen Fuel Cell Vehicles. For the first time, the accounting methods for cross-regional transport emission reductions have been unified, providing

quantifiable and mutually recognized technical rules for green transport collaboration [1]. An important reason why these two standards reached consensus first in the scenarios of oil-to-electricity passenger vehicles and hydrogen fuel cell vehicles is that they both belong to incremental reform: the former guides existing fuel vehicle owners to replace them with new energy vehicles, while the latter opens up entirely new technology pathways. Neither directly touches the existing interest patterns of the three regions. In contrast, unifying emission standards for freight vehicles would directly change the cost structure of logistics enterprises in the three regions, making coordination much more difficult. Collaboration always starts from the easiest point, which in itself shows that institutional innovation cannot bypass interest distribution.

From the perspective of existing research, the achievements can be roughly divided into three categories: The first focuses on the interconnection of transport infrastructure, with an emphasis on the planning level. The second studies the institutional mechanisms of collaboration, arguing that coordination and management of cross-regional transport services, as well as the division of powers and responsibilities, remain shortcomings [2]. The third examines green transport policies, with scholars pointing out that insufficient institutional guarantees and imperfect investment and financing mechanisms constrain the advancement of collaboration [3]. Abroad, for example, the European Union promotes low-carbon transport transition through unified emission standards and carbon trading systems, while the Tokyo metropolitan area relies on multi-level coordination institutions to integrate transport and environmental management. However, due to significant differences in administrative systems between China and other countries, their experience can only serve as a reference for design ideas. Overall, existing studies mostly treat green transport as one

aspect of transport integration. Research specifically discussing the opportunities and obstacles in light of collaborative carbon puhui standards is still relatively scarce. Taking the two 2026 carbon puhui accounting standards as an entry point, this paper examines the current status, problems and improvement paths of cross-regional green transport collaboration in Beijing-Tianjin-Hebei from the perspective of collaborative governance. This approach on the one hand tests the applicability of collaborative governance theory in specific policy tool scenarios, and on the other hand provides a reference for the three regions to improve collaborative rules and advance benefit compensation.

2. Theoretical Perspective and Research Methods

This paper addresses a typical cross-regional public issue. Carbon emissions generated by transport have obvious cross-border externalities, and cannot be resolved through territorial management alone. Multiple administrative entities need to collaborate through institutionalized governance, which falls precisely within the explanatory scope of collaborative governance theory. Regional public governance theory further points out that effective cross-regional governance requires three conditions: first, a coordinating organization with clear powers and responsibilities; second, clear and unified rules and procedures; third, the ability to mobilize the enthusiasm of all parties. Based on this, this paper extracts three analytical dimensions — "coordinating organization, rules and procedures, and participation incentives" — as the analytical framework for the entire paper.

In terms of methods, this paper mainly adopts the literature research method and policy text analysis method, sorting through public policy documents, statistical data and pilot cases from the three regions. It also uses the PEST framework to examine the macro environment facing green transport collaboration, and SWOT analysis to assess the strengths,

weaknesses, opportunities and threats of tripartite collaboration. The results of both tools are then compared with specific practical data to identify the underlying problems.

3. Current Status and Problems of Green Transport Collaboration in Beijing-Tianjin-Hebei

3.1. Macro Environment Analysis

From the policy perspective, top-level support is substantial. The Outline of the Beijing-Tianjin-Hebei Coordinated Development Plan established the orientation of taking the lead in breakthroughs in transport integration. In December 2025, seven departments including the Ministry of Ecology and Environment issued the Action Plan for Building a Pilot Zone for a Beautiful China in Beijing-Tianjin-Hebei Region, proposing to promote the "road-to-rail + new energy vehicle" transport model [4]. The Special Working Group for Transport Coordination has also held consecutive meetings to advance cooperation. However, these policies are mostly advocacy-oriented with few hard constraints, leaving considerable flexibility in implementation across the three regions.

Economic disparities are even more tangible (Figure 3-1). In 2024, Beijing's per capita GDP was approximately 228,000 yuan [5], Tianjin's about 132,000 yuan [6], and Hebei's approximately 64,000 yuan [7] — more than a threefold gap between the regions. Beijing has the financial capacity to subsidize new energy public transit, while Hebei relies more on provincial finance and central transfer payments. Implementing higher standards would directly raise compliance costs for local enterprises, which is an important reason why many policies are "loud in announcement but slow in implementation."

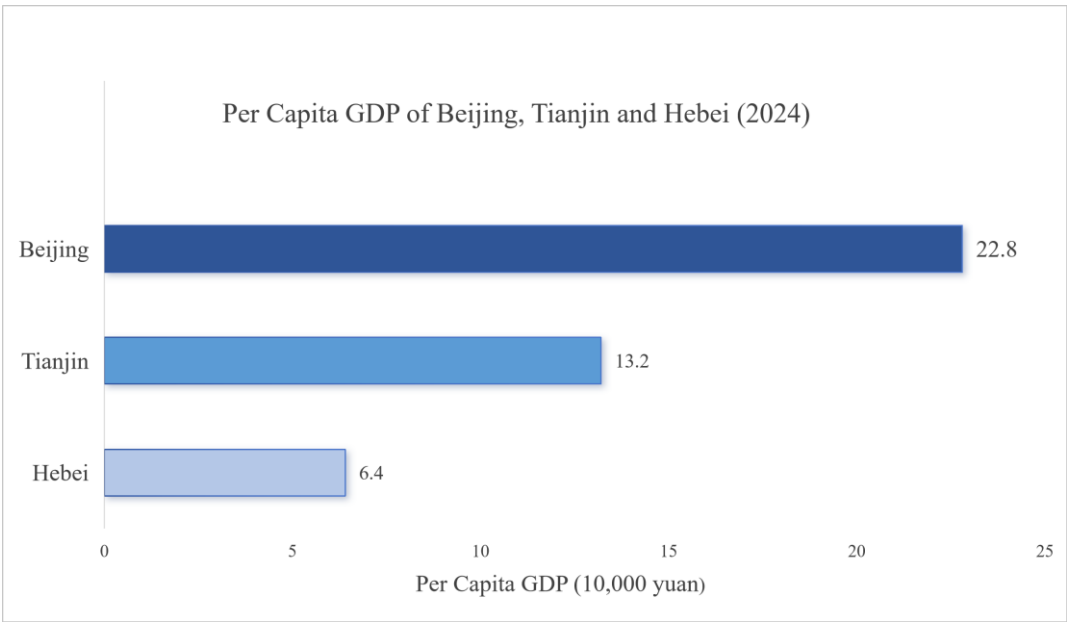


Figure 3-1. Comparison of per capita GDP among Beijing, Tianjin and Hebei (2024)

Social and technological conditions are relatively favorable. Commuters from the three northern counties of Langfang traveling to Beijing alone exceed 200,000 people [8]. Commuters value travel time, and advocacy alone is unlikely to change habits. At the same time, years of joint air pollution

prevention and control have significantly improved air quality, and public environmental awareness is rising, providing a social foundation for promoting green travel. Technologically, new energy vehicles and hydrogen fuel cell heavy-duty trucks have reached conditions for large-scale deployment. Beijing's

MaaS platform can already account for emission reductions across multiple green travel modes, and the technical

conditions for carbon puhui are basically mature (Figure 3-2).

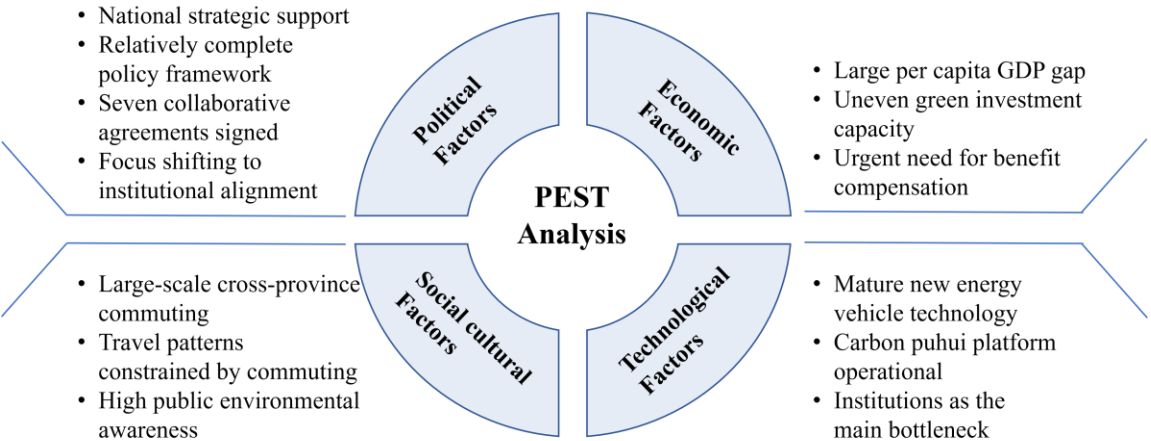


Figure 3-2. PEST Analysis of Green Transport Collaboration in Beijing-Tianjin-Hebei

3.2. Assessment of Collaboration Status

In terms of strengths, national strategic support provides central-level coordination and special funding guarantees. Regional railway and expressway densities rank among the highest nationwide. Beijing has accumulated pilot experience in carbon puhui, new energy vehicles, and slow-travel system construction that can serve as references for the other two regions.

However, weaknesses are equally evident. Development across the three regions is uneven, with per capita GDP differing by several times. Beijing prioritizes emission reduction outcomes, while Hebei also needs to consider whether local industries can bear transition costs. Diverging

demands make negotiation more difficult.

As for opportunities, the "Dual Carbon" goals have opened a policy window. Carbon puhui standardization enables cross-regional emission reduction contributions to be quantified, changing the previous situation of oral consensus lacking quantitative basis. Challenges are also real: existing collaborative carriers are mostly flexible deliberative bodies, lacking binding mediation mechanisms when interest disputes arise, and fiscal gaps cannot be eliminated in the short term.

Overall, hardware, technology and consensus are basically in place. The real shortcoming lies in institutional development (Figure 3-3).

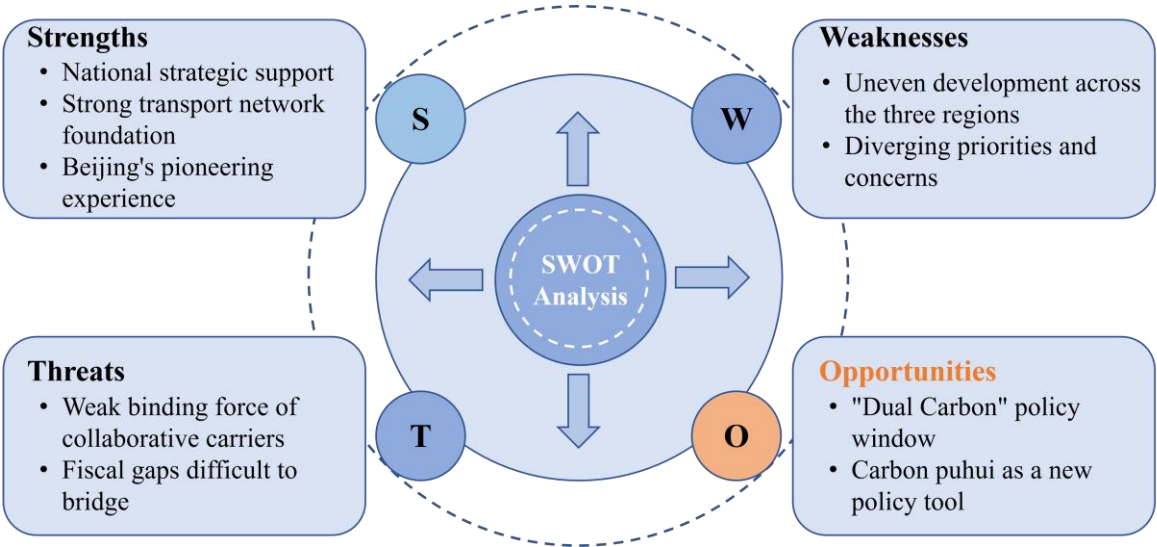


Figure 3-3. SWOT Analysis of Green Transport Collaboration in Beijing-Tianjin-Hebei

3.3. Practical Progress and Hidden Risks

Table 3-1 shows the practical progress of the three regions

in recent years in infrastructure, transport vehicles and other fields.

Table 3-1. Major Progress and Data of Green Transport Practices in Beijing-Tianjin-Hebei

Field	Main Practices	Data Performance	Unresolved Issues
Infrastructure	Rail transit network; issued the first cross-regional Green Highway Evaluation Guide	Beijing-Zhangjiakou, Beijing-Xiongan, Tianjin-Xiongan high-speed railways opened	Some Hebei high-speed rail stations still rely on private cars for access; lack of unified rules for stock renovation
Transport vehicles	Public transit electrification; jointly released carbon puhui accounting standards for hydrogen fuel cell vehicles	94.4% of Beijing's clean energy and new energy public transit [9]; unified accounting standards for emission reductions [1]	Subsidies and restrictions implemented by jurisdiction; insufficient renewal momentum in Hebei
Passenger travel	MaaS carbon puhui pilot; accounting standards for oil-to-electricity passenger vehicles	Over 5.7 million registered users, cumulative issuance of over 460,000 tons of emission reductions [10]	Rules for registration, trading, and benefit distribution not yet implemented
Freight transition	Road-to-rail for bulk cargo; new energy heavy-duty truck zero-carbon pilots	Pilots launched at Tangshan Port and Huanghua Port [11][12]	Fragmented pilots; benefits spill over, while costs are mainly borne by Hebei
Slow-travel transport	Bicycle dedicated lanes and urban greenway construction	Beijing's Huilongguan-Shangdi dedicated lane serves as a demonstration case	Cross-city connection collaboration is basically blank

The table reveals a pattern: areas supported by unified rules advance quickly, while areas relying on self-negotiated supporting measures among the three regions get stuck at the "last mile." For example, carbon puhui accounting standards have been unified, but rules for confirming rights, registration and trading of emission reductions have not kept pace. Currently there are only calculation standards, not a complete operating system.

3.4. Problem Diagnosis

First, coordinating organizations have sufficient flexibility but insufficient binding force. Green transport coordination among the three regions mainly relies on special working groups and various joint meetings. These platforms can organize communication and reach consensus, but lack statutory management authority and cannot directly alter territorial policies. When interest disputes arise, there are no dedicated mediation or arbitration channels. Although carbon puhui standards are jointly issued, implementation still depends on each regional department advancing separately. If one region slows down, joint meetings have no means to enforce compliance. Behind this lies differences in performance evaluation orientations: judging from fiscal investment and policy priorities, Beijing values environmental indicators such as air quality and emission reductions, while Hebei must prioritize GDP, employment and industrial competitiveness. Without aligned evaluation indicators, collaboration lacks intrinsic motivation, and joint meetings naturally serve only a "deliberative" function rather than an effective "decision-making" one.

Second, rules and procedures are unified in some areas but fragmented overall. Currently, the three regions have only achieved unified rules in a few areas such as green highway evaluation and carbon puhui accounting. A large number of policies are still formulated separately by each region: Beijing focuses on carbon puhui incentives, Tianjin emphasizes travel facilitation, and Hebei concentrates on port freight decarbonization. Implementation and supervision also have shortcomings: monitoring is conducted independently by each region with inconsistent standards, and data is scattered across different departments, making it difficult to form a regional unified ledger. Although joint enforcement has been established, discretionary standards vary by jurisdiction, reducing effectiveness.

Third, participation incentives are insufficient and costs and benefits are mismatched. This is the most fundamental

problem. Green transport governance has strong externalities, with benefits crossing administrative boundaries. For example, Hebei invests substantial fiscal funds and bears equipment renewal costs to build zero-carbon freight corridors and promote hydrogen heavy-duty truck pilots, but the benefits of improved air quality and carbon reduction largely spill over to Beijing and Tianjin. Carbon puhui standards address how to calculate emission reductions, but do not address "who benefits and who compensates." There is no institutional arrangement for compensation implementation. The cost-benefit mismatch directly weakens Hebei's willingness to advance policies. Localities tend to protect local industries and reduce implementation willingness, which in turn makes consensus difficult to implement.

These three problems are not isolated: insufficient binding force of coordinating organizations makes it difficult to comprehensively unify rules; imperfect rules trigger cost-benefit mismatches and weaken participation incentives; and insufficient incentives in turn make consensus difficult to implement, forming a vicious cycle.

4. Conclusions and Policy Recommendations

Taking the two 2026 carbon puhui collaborative standards as an entry point, this paper examines the current status and problems of cross-regional green transport collaboration in Beijing-Tianjin-Hebei. The overall assessment is that the hardware foundation, technological conditions and collaborative consensus are already in place. The carbon puhui standards mark that collaboration has moved from "being able to calculate emission reductions" to "how to institutionalize them." However, the implementation of these standards is still constrained by three shortcomings: insufficient binding force of coordinating organizations, fragmented rules, and lack of benefit compensation. The main contradiction constraining deeper collaboration is not technological but institutional. Addressing this requires synchronized institutional improvements in coordinating organizations, unified rules, and benefit compensation mechanisms.

Based on the above conclusions, this paper proposes four recommendations. First, strengthen the binding force of collaborative carriers. A green transport collaboration joint meeting can be established on the basis of the existing Special

Working Group for Transport Coordination, involving transport and ecological environment departments from the three regions and key transport enterprises. Agreed collaborative matters should be formalized into consultation minutes and submitted to relevant national departments for record and supervision. Second, use carbon puhui standards as a breakthrough to phase in "unified standards for identical tasks." Accounting methods, monitoring specifications, and environmental baselines must be unified, while subsidy levels and renovation schedules can be differentiated to accommodate Hebei's financial capacity. Unified standards should first be extended to high-frequency scenarios such as trunk freight and port collection and distribution, then gradually cover renovation of existing railway and port facilities. Third, improve data sharing and joint enforcement. A green transport data sub-platform should be built iteratively based on the existing air pollution joint prevention and control platform, with unified data standards, clear sharing responsibility lists, and unified enforcement discretion benchmarks to avoid redundant construction. Fourth, establish a benefit-compensation mechanism. A special fund should be set up, with contributions differentiated by fiscal capacity of the three regions and supplemented by central transfer payments. The actual verified emission reduction contributions should serve as the main basis for fund allocation. At the same time, based on the two carbon puhui standards, pilots for cross-regional targeted trading of carbon puhui should be prudently advanced, so that emission reduction actions are registered, tradable, and compensated.

This paper is mainly based on public policy documents, statistical data and news reports. It lacks field research on policy implementation processes, and its understanding of local bargaining and implementation deviations is not sufficiently in-depth. This is an area that can be supplemented in future research.

Acknowledgment

2025 Hebei Yanzhao Golden-Talent Program (Overseas Returnee Platform) "Research on Green Development Model and Management System of Regional Transport in Beijing-Tianjin-Hebei Region" (Project No.:C2025013)

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