Analysis and Thinking of Urban Transportation Planning against the Backdrop of Multi-planning Integration

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Abstract. In recent years, China has shifted from high-speed growth to high-quality development. At the same time, its urban transportation system is also moving from rapid expansion to intensive and efficient development. Though urban transportation system has entered the stage of relative maturity and stability, some problems are impacting heavily on plan implementation, e.g., poorly-developed planning system, overlapped planning management, theory & practice decoupling and lack of some evaluation steps. In the new situation of multi-planning integration, we propose integrating urban transportation planning into the spatial planning system by focusing on transforming and upgrading transportation planning management, and by streamlining the planning relations, unifying planning system, coordinating planning management, regulating planning compilation and improving implementation mechanism, so that urban transportation planning plays the greater role of strategic orientation in multi-planning system.

1. Introduction
In the traditional planning model in China, plans for the national economy and social development, urban and rural development, land use, ecology and environment, and transportation are made separately, thus lacking coordination. Because plans differ in focal points, targets, technical standards, methods and means of compilation, and because overlapped and even conflicting plans are often seen[1]. The lack of coordination among plans has seriously impacted on efficiency of plans nowadays when resources and environment are facing great pressure.

In recent years, the CPC Central Committee and the State Council of China have emphasized on multi-planning integration, requiring for many times facilitation of multi-planning integration, building spatial planning system, speeding up development of ecology, and rationally allocating natural resources. At the same time, when the Chinese cities are evolving from high-speed expansion to high-quality development, external environment of urban transportation has changed, highlighting resource and ecological constraints, triggering changes in demand-supply characteristics of urban transportation system, and producing evident demands for high-quality service. In light of these factors, the paper studies tactics of urban transportation planning in the background of multi-planning integration, enhances coordination between urban transportation planning and multi-planning in terms of compilation and management, integrates urban transportation planning into the system of spatial planning, ensures the urban transportation planning guides urban space structure and land-use pattern,
implements the philosophy of “transportation steering urban development” and realizes intensive, orderly and high-quality urban development.

2. Current development of urban transportation planning

Up to date, China has not issued a special law for urban transportation planning. The Law of Urban and Rural Planning of the People’s Republic of China requires compiling urban transportation plan as a special part of urban plans. As the non-statutory plan, urban transportation planners should follow such laws and regulations as the Law of Urban and Rural Planning of the People’s Republic of China, the Law of Compiling Urban Plans and incumbent urban policies. They are guided by relevant technical specifications such as Specifications of Urban Road Transport Design and Plan, Methods of Making Urban Transportation System Plans and Guidelines for Making Urban Transportation System Plans. At the same time, the urban transportation plan should stay in line with major national-level plans of infrastructures, regional plans, urban master plans, and urban land-use plans, etc.

2.1. Planning system

Current guiding policies in China mainly specify contents and requirements for urban transportation plans, without regulating the urban transportation planning system. Some cities, based on their own characteristics, study urban transportation planning systems. In general, urban transportation planning system includes two stages and three levels. Two stages refer to the stage of master plan and stage of special plans. Three levels refer to urban transportation development strategic plan, urban long and mid-term transportation system plan and urban transportation recent treatment plan[2]. The urban transportation development strategic plan and urban long and mid-term transportation system plan mainly correspond to urban master plan. However, in practice, the Chinese cities, when making urban transportation plans, try to make a holistic plan to cover all technical contents. The plan that attempts to include all often results in sparse targets, poor revolution of major problems, superficial work and lack of strategic vision.

2.2. Problems and cruxes

After years of practice, urban transportation planning has entered the stage of relative maturity and stability. However, there are still some problems and limitations in the process of making and carrying out these plans, which make it impossible to achieve the expected results when carrying out the plans. First, fail to fully recognize the position and role of the plans, thus resulting in low rate of compilation. Urban transportation plans are often used to replace special transportation plans and transportation improvement plans. Most of the small and medium-sized cities don’t have plans. Second, planning philosophy is decoupled from practice. Planning philosophy emphasizes on people while plans focus on vehicles; though the plans claim to adopt the strategy of public transport priority, measures are not seen in these plans; third, evaluation of plan implementation is not included in the regulated procedure. There are no specific deadlines or content requirements for evaluation. As a result, the plans lack effectiveness and continuity[3].

The crux of the problems are:

- Statutory position lacking. Transportation plans lacking protection of laws, which made their position is much lower than other statutory plans. It is impossible for transportation plans to stay equal to other plans in the multi-planning integration;
- Incomplete planning system and backward planning theories and methods. Urban transportation planning function and relations were ambiguous, and the formulation of planning goals lacks scientific evidence and is often difficult to achieve;
- Separation and overlapping of functions and powers of the existing administrative system. The lack of coordination and management mechanism in urban traffic planning and management affects the connection of urban traffic planning, implementation and management.
3. Requirements of multi-planning integration for urban transportation planning

3.1. Connotations of multi-planning integration
The multi-planning integration refers to connection and coordination of plans for national economy and social development, land use, urban and rural development, ecology and environmental protection, transportation, education and public health, etc. It is an important measure to establish spatial planning system and facilitate establishing regulations for ecology. Within their own power scope, local governments coordinate the various spatial plans to make sure the multi-planning integration has the same spatial parameters in protective space, development borders and city scale, etc. At the same time, on the spatial information platform, they establish control line system, optimize spatial layout, effectively allocate land resources and improve spatial control[4].

3.2. Relevance of urban transportation planning with multi-planning integration
In China’s system of spatial plans, what are related to urban transportation plans are national economy and social development plan (economy plan), land use master plan (land plan), urban master plan (master plan) and environmental protection plan (EP plan). As the upper planning basis, they mainly guide and constrain urban transportation planning and construction at the macro level. Urban transportation planning is often in a passive position to interact and connect with the master plan though they are made simultaneously. There is almost no “reverse feedback” with “economy plan”, “land plan” and “EP plan”.

3.3. Requirements of multi-planning integration for urban transportation planning
Though relevant laws and regulations raise requirements for coordination and connection of plans, they do not specifically regulate how and where the plans get connected. As a result, urban transportation plans are other plans have the following problems: planning laws and regulations differ greatly in system; the plans differ greatly in position; plan management mechanisms are not balanced; planning periods are not balanced; and technical standards are not the same, etc. These problems have great impact on integrating the urban transportation plan into the other plans.

In the situation of multi-planning integration, to facilitate integration of urban transportation plans into spatial planning system, solve current planning problems and improve effect of carrying out the plans, the following requirements are raised for urban transportation planning.

• Unifying the planning system, clarifying the role of plans in various levels, abide by and support urban structure and functions determined by spatial strategic plans, abide by requirements of control line, and handle properly the connection of transportation plans with other plans;
• Coordinating plan management, regulating plan making, coordinating resource allocation and optimization among various systems in urban transportation, unifying the planning periods and basic data processing, and handling duty division and transfer of transportation plans in various levels;
• Establishing mechanism that secures implementation of plans, clarifying duty division and coordination measures to make, carry out and manage the plans. For overlapped contents in both transportation plans and space control of other departments, it is necessary to coordinate them in the guidance of spatial planning.

4. Experience to learn

4.1. Establish a coordinating agency for planning
The laws of the United States required cities with more than 50,000 population to set up MPO, which is the transportation decision-making organization consisting of representatives from local government and transportation groups[5]. MPO is responsible for coordinating and solving transportation development problems in the region, including land use, air quality, energy, economic growth and commerce, etc. By establishing coordinating agency in the region, US establishes mechanism of inter-department negotiations to provide a relatively effective joint decision-making platform for regional
cooperation, breaking the borders among administrative zoning and departmental duties for regional transportation planning, and realizing the multi-planning integrity of plans for economy and social development, land use, population, transportation and environment, etc. in the region.

4.2. Establish management system of “greater transportation”
By making “greater transportation reform”, Japan has established the Ministry of Land, Infrastructure, Transport and Tourism, including the previous Ministry of Infrastructure and Ministry of Land into the core department of greater transportation in the country. The Ministry supervises various means of transportation such as highways, waterways, railways and flights. At the same time, it is responsible for construction, state land and tourism, etc.[6]. The Ministry of Land, Infrastructure, Transport and Tourism consists of the headquarters and external bureaus. The headquarters are composed of internal bureaus and departments, special agencies and local branch bureaus. The external bureaus include Seamen Labor Committee, Japan Coast Guard, Japan High Marine Accidents Inquiry Agency and Japan Meteorological Agency, etc. In terms of department and duty setup, Japan ensures hierarchy management, clarifies hierarchy management of central government and local governments, secures the uniform coordination of the central government and fully mobilizes initiative of local administrations.

4.3. Planning system with clear-cut layers
The developed urban transportation systems in Beijing and Shenzhen are build and operated in an efficient way due to the relatively well-developed urban transportation planning system, which ensures the sub-systems of urban transportation are built and operated in a rational and fact-based way.

   Beijing has set up a four-layer urban transportation planning system, including strategic planning, comprehensive planning, regional planning and special planning, and well corresponding with each stage of the urban master plan[2]. While Shenzhen has gradually established four-level and two-stage urban transportation planning system. Four levels includes holistic planning, detailed planning, comprehensive improvement planning and annual evaluation implementation, and two stages are transportation planning (TP) and transportation improvement planning (TIP), covering the transportation solutions in the whole process[7].

5. Proposals on urban transportation planning in the background of multi-planning integrity
The integration of urban transportation planning and multi-planning is both a technical problem and a institutional issue. In summary, the following proposals are put forward for promoting better integration of urban transportation planning into the spatial planning system:

5.1. Unify planning system and form synergy
Speed up building the urban transportation planning system that has “accurate positioning, clear borders, complementary functions and connection”. Study and formulate the Framework of Urban Transportation Planning System to standardize the urban transportation planning system. Learn to divide the planning levels and contents, keep coordination with the urban planning system, and establish the urban transportation planning system covering four levels of “strategic planning, comprehensive planning, special planning and implementation planning”. According to the framework, each city refines specify planning system suitable for the needs. Improve the top-level design of the plan, and strengthen the coordination between the plans. Horizontally, the structure and working phases of the urban transportation planning system are consistent with urban planning system, and the planning scope, base map, and period are unified. Vertically, adhere to the coordination between subordinate planning and superior planning, and clarify the planning framework, content, depth requirements and key connection points of each level.

5.2. Clarify positioning and rationalize relations of planning
Based on the requirements for the multi-planning integrity, clarify the functional positioning of urban transportation planning, rationalize the interrelationships between urban transportation planning, take
the transportation development strategic planning as the guidance, the comprehensive transportation planning as the basis, and the special planning and implementation planning as support to avoid cross duplication and conflict. The strategic planning determines the situation of the urban transportation system at the macro-strategic level, working at the guideline of all other levels of planning. The in-depth study of comprehensive transportation planning based on strategies, which is the basis for the government to coordinate and regulate transportation resources, support urban social and economic development, and guide various special planning. The special planning is detailed to implement the strategic tasks of the integrated transportation plan for the subsystems. The implementation planning guide the recent transportation construction, construction and renovation, impact assessment, and engineering design.

5.3. Coordinate planning management and regulate planning production
On the one hand, we should improve the institutional mechanisms for the management of urban transportation planning. First, adhere to the combination of comprehensive coordination and departmental linkage, establish a joint conference system and consultation and communication mechanism involving natural resources, development and reform, housing construction, environmental protection, transportation and other departments, and clarify all parties’ duties. Second, determine the legal procedures for public participation, expand the scope of comments, and increase public participation in planning. Besides, we accelerate the establishment of a planning management information platform to ensure the unification of basic data and base maps for urban transportation planning and other spatial planning. On the other hand, we will accelerate the development of national-level urban transport planning laws, regulations, and standard systems. Accelerate the formulation of the "Law of the People's Republic of China on Urban Transport Planning" to ensure the legal status. Revise and improve the existing standards and guidelines for urban transportation planning, clarify and standardize the preparation procedures. Use Internet technology to promote innovation in transportation planning technology and methods.

5.4. Improve mechanism of implementation to secure plans is carried out
In accordance with the principle of “those spearheading the production of plans are responsible for implementing them”, we should strengthen the evaluation of planning implementation, clarify and implement the responsibilities of the entities, establish a dynamic adjustment mechanism, improve monitoring and evaluation of planning implementation, and improve the effectiveness of planning implementation.

First, we propose strengthening planning and implementation evaluation. Adopt the “city government-led, transportation planning + action plan decomposition and implementation” model, incorporate planning implementation evaluation into prescribed procedures, clarify planning implementation evaluation requirements, and quantify planning evaluation results. Second, establish a dynamic planning adjustment mechanism. According to the results of the planning evaluation, set the conditions for planning adjustment and revision, establish a dynamic update system for the planning “making-implementation-adjustment-adjustment”, and set a fixed period for planning evaluation and updating. At the same time, we should improve the planning and implementation of the supervision and evaluation mechanism. The planning and preparation department shall make planning and implementation as an important part of the disclosure of government affairs information, consciously supervise the people's government and the public, and explore the implementation of a mechanism for linking the results of the assessment of planning implementation with the performance of the subject responsible for the assessment.

6. Conclusion
In the new situation of the new era, the development of urban transportation planning should take a long-term perspective and improve the top-level design. We should pay attention to innovation of the policy mechanism and improvement of technological argumentation, promoting the urban traffic planning to
be integrated into the spatial planning system, enhancing the integration of the traffic planning with different resources and realizing coordinated development of traffic with urban development, land utilization and environmental protection.

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References
[1] Yingting, X., Wei, W. (2015). From "multi-plan integration" to the reconstruction of spatial planning system. Urban Planning Forum, 3: 15-21.
[2] Yao, S., Zhang, Z., Kong, L., Xiong, Z. (2016). Beijing Urban Traffic Planning System. Transport Research, 2: 38-44.
[3] Wang, J. (2017). Review and Prospect of Urban Comprehensive Transportation Planning in China. Urban Transportation of China, 15: 18-24.
[4] Wang, G. (2018). Urban Multiple Plan Integration and Urban Transportation Planning Reformation. Urban Planning Forum, 5:19-28.
[5] Shen, S., Wang, X., Liu, Z. (2016) Inspirations of the Regional Transportation Planning System of MPOs to Chinese Syncretic Planning. Comprehensive transportation, 10:85-93.
[6] Lu, X. (2011).Japan's Land Planning Reform Promotes Urbanization Process and Its Enlightenment to China. Urban Studies, 5: 34-37.
[7] Zhang, X., (2016). Innovation and practice of urban traffic planning in Shenzhen. In: 2016 China Urban Transportation Planning Conference. Shenzhen. 2016:838-847.