

Problems and Countermeasures of Urban Rail Transit Construction in China

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Abstract: In the 21st century, the over dependence on cars in China's urban development has led to a series of problems, which have seriously affected the development of contemporary cities. The problem of communication has become the bottleneck of the development of many cities in China. Therefore, the rise of urban rail transit is an inevitable trend. The construction and development of rail transit is an effective way to solve urban diseases, such as traffic congestion, traffic pollution, poor green travel environment and difficult parking. In the period of great development opportunity of rail transit, it is necessary to discuss how to scientifically plan urban rail transit system, promote urban intensive development and improve urban traffic conditions. Combined with the current situation of rapid development of urban rail transit in China, this article analyzes the main problems existing in the development of urban rail transit at present, and puts forward the guiding ideology and main countermeasures for the development of urban rail transit in the future: do what you can and develop steadily to effectively avoid the hidden dangers brought about by blind development; further strengthen the scientific nature of urban rail transit planning and maintain the seriousness of planning; further improve the investment and financing mode of urban rail transit. Some suggestions are also put forward for the key problems to be solved in the near future.

Keywords: Urban Rail Transit; Urban Development; Priority Development of Public Transportation

Introduction

Several Opinions of the Central Committee of the Communist Party of China and the State Council on Further Strengthening the Management of Urban Planning and Construction (Zhongfa [2016] No.6) puts forward the overall goal of urban planning and construction management, that is, to realize orderly construction, moderate development and efficient operation of cities, and strive to build harmonious, livable, dynamic and modern cities with different characteristics, so as to make people's lives better. At present, China's urbanization is in a period of rapid development, and the gathering

power of megacities is constantly increasing, which leads to the continuous increase of city scale. Practice shows that as an important part of urban public transportation, urban rail transit plays an important role in optimizing urban spatial layout structure, coping with urban traffic congestion and promoting healthy and sustainable development of cities with its advantages of large capacity, punctuality, high efficiency, low carbon and environmental protection, and is the focus of the development of big cities in China at present and in the future. In recent 10 years, urban rail transit is experiencing an unprecedented period of vigorous development in terms of

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construction scale and construction speed. The analysis of its development mode in China is not only a summary of the experience and lessons, exploration and practice of urban rail transit in a certain stage of development in China, but also an embodiment of following the inherent attributes of urban rail transit development.

1. Causes of urban rail transit

The emergence of urban rail transit has a special historical background. Its predecessor was the urban rail carriage which came into being in the late 18th century, which was the first public transport tool for human beings to travel on fixed tracks. With the arrival of the industrial revolution, the first subway line was born in Britain in 1863, and the first tram appeared in the United States in 1888. Since then, suburban railways and light rails have emerged one after another, and the types of urban rail transit have become more and more abundant. The reasons for rail transit are discussed as follows.

1.1 A result from the continue-deteriorating “urban illness”

With the development of industrial revolution and urbanization, Britain has not only changed from a country with a dominant rural population to an industrialized country, but also become the most powerful country in the world. However, “industrialization not only disturbs human relations, but also leads to the deterioration of material environment”. British cities in the 19th century have shown a morbid development trend.

1.2 Demands caused by economic and social development

The “urban disease” has become more and more serious, which has affected the economic and social development. In addition, the people’s voice for changing the status quo is soaring, and all social strata have begun to pay attention to these problems.

1.3 Needs from urban spatial structure defects

Urban spatial structure determines urban traffic source, traffic volume, traffic mode and road network structure; the layout of urban transportation system guides the development direction of urban spatial structure.

2. Main problems in the development of urban rail transit in China

2.1 The development speed of exceeded expectation

In 2016, many cities in China entered the rapid construction period of rail transit, with 228 lines under construction in 46 cities, with a total mileage of 5 636.5 km. Among them, the lines under construction in 23 cities exceed 100 km, the lines under construction in 5 cities exceed 300 km, and the mileage under construction in Chengdu, Wuhan, Guangzhou and Qingdao even exceeds that in Beijing and Shanghai. Compared with the mileage of rail transit construction during the 12th Five-Year Plan period, it is predicted in 2017 that the completion year of the 13th Five-Year Plan period will increase by 2-3 times, and 70-80 cities in mainland China will open rail transit with a total mileage of 0.9-12,000 km. Facing the rapid development of rail transit, it is necessary to focus on the possible problems:

(1) The investment is huge, facing the problems of diversification of investment channels, standardization of investment and decompression of financial liabilities;

(2) Large scale, rapid construction, facing safety, sources of construction workers and other issues;

(3) Small and medium-sized cities are faced with different investment, standards and routes from big cities.

2.2 Scientific planning needs to be further enhanced

At present, the preparation of urban rail transit planning can not achieve scientific development and orderly planning, which is highlighted in the following aspects:

(1) Insufficient planning basis and poor connection.

Due to the rapid development of cities in recent years, the master plans of most cities in China are being revised, and the comprehensive transportation plans such as intercity rail transit and railway have also undergone great changes. At present, the overall planning, land use planning and comprehensive transportation planning of many cities are difficult to provide reliable basis for urban rail transit planning. At the same time, due to the fragmentation of the management system, there is a lack of effective coordination between the construction of

urban rail transit and other urban transportation modes, as well as with the planning and construction of external transportation. The planning concept of transportation integration is still relatively weak, which emphasizes the status of urban rail transit unilaterally without considering the balanced and coordinated development of the whole urban transportation system.

(2) Some cities ignore reality and have ambitious planning and development goals.

According to the urban rail transit construction plans submitted to the state for examination and approval, the rail transit planning objectives of cities of different grades and different characteristics are basically the same, most of which are about 50% of all-way travel in the prospective year and about 50% of public transportation in the prospective year, resulting in a relatively large scale of urban rail transit network. At the same time, the planning period is long, and the long-term planning period is generally 50 years left and right, which lacks the support of basic planning data.

(3) Unreasonable planning schemes are common.

The imperfection of planning methods and concepts directly leads to the instability of planning schemes, resulting in constant changes in planning and design schemes, as well as deviations in research and selection of construction projects. Unreasonable and commonly adjustment of local planning, and challenges towards the seriousness of planning, urban rail transit construction follows basic construction procedures and respects construction rules, which can ensure scientific planning, orderly construction and safe operation. However, because urban rail transit is a local self-investment project, and the real estate appreciation brought by urban rail transit is the main source of local fiscal revenue, the network planning and layout and project construction scheme are more interfered by local administration. Therefore, the personal will and preferences of local leaders often determine the final construction scheme, and it is common for urban rail transit networks and project schemes to adjust with the changes of local administrative leaders.

3. China's urban rail transit development countermeasures

3.1 Select a good site

On the issue of hub location, we should insist on the coordination of functions, grades, time sequences and locations. The level of hub should adapt to the level of city center, the construction sequence should keep pace with the level of urban space expansion and function cultivation, and the hub system and urban circle structure should be considered comprehensively in location selection.

3.2 Further maintain the seriousness of the planning

(1) In the planning stage, we should deepen the research depth of line position, station planning and laying method, so as to make the planning scheme basically stable and avoid major changes in the next stage; Basic evaluation should be made on geological conditions, engineering and environmental risks along the planned route to reduce construction risks.

(2) While strengthening the depth of preliminary work, it is necessary to reduce the phenomenon of excessive administrative intervention, improve the examination and approval mechanism of construction planning, strengthen the examination of project feasibility study, make it conform to the planning intention and requirements, and strengthen the supervision of project acceptance and follow-up work tracking and supervision.

(3) The preparation of the plan should strengthen scientific argumentation and report it according to procedures. After the plan is approved, it cannot be changed at will; According to the plan, the situation should be dealt with seriously.

3.3 Varieties of forms of rail transit

Improve the efficiency of rail transit and urban operation through multi-system rail transit and multi-level lines. In the process of urban development to metropolitan area, multi-level rail transit network is the premise to ensure that the travel time of each traffic circle is in an acceptable range, and the coordinated layout of multi-level lines in metropolitan area and metropolitan area rail transit axis belt is the top priority of rail transit network planning.

3.4 Further strengthen the scientific nature of planning

(1) Promote the coordinated development of rail transit and cities, and build an integrated transportation

system. Urban rail transit planning should be based on the overall urban planning and comprehensive urban transportation planning, and strengthen the coordination of network structure and scale with the overall urban planning layout and planning development, pay attention to the integration of regional transportation and urban road transportation, and improve the connection mechanism. Through the planning and construction of urban rail transit, the problem of traffic congestion in big cities should be alleviated, and at the same time, the adjustment of urban spatial layout structure should be effectively guided, the population in the central city should be evacuated to the periphery, and the development of the city towards multi-centers and groups should be promoted.

(2) According to the present situation of urban transportation development and the characteristics of the city, considering the possibility of other modes of transportation development, formulating scientific development goals from the perspective of integration, realizing the concrete embodiment of urban transportation development policy and bus priority strategy, and establishing the rational positioning and role of urban rail transit in the urban comprehensive transportation system.

(3) Attention should be paid to the research on the development mode of urban rail transit. According to the actual situation and demand of the city, the rail transit forms with large, medium and small traffic volume should be reasonably selected to form a rail transit network with an organic connection of subway, light rail and suburban railway.

(4) For planning and guiding rail transit lines, we must adhere to the simultaneous implementation of rail transit construction and land development along the line on the basis of stable planning basis to ensure the operational benefits of urban rail transit lines. In practical work, we should strengthen the scientific prediction of

passenger flow and the research of line functions, so as to avoid the appearance of extra-long lines as much as possible.

4. Conclusion

China's urban rail transit has made remarkable achievements in the rapid development in recent 10 years, and also exposed many problems. If these problems cannot be solved in time and effectively, it will directly affect the healthy and sustainable development of urban rail transit in China. The problems mentioned in this paper need to be solved at the national level, as well as at the local and enterprise levels. Only by top-down, multi-pronged, and establishing a set of perfect development mechanism to standardize and guide the development of the industry, can we truly achieve scientific and orderly development. Throughout the development history of urban rail transit, there is no fixed development model that can be applied to all cities. The key to the development of urban rail transit is to adapt to local conditions. Only by grasping the pulse of urban development, following the law of rail transit development, and finding the combination point between rail transit and urban development can we build a rail transit system that is highly compatible with the city.

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