

Reflections and Suggestions on Promoting Green Travel In Jiangsu Cities Under the Target of Emission Peak

Yusha Wen¹ , Yunbi Zhang¹

¹JSTI GROUP Co., Jiangsu Nanjing, China

*Corresponding author e-mail: wys567@jsti.com

Abstract. Faced with global ecological problems, green, low-carbon and sustainable development has become the general consensus and concerted action of all countries. China 's carbon dioxide emissions strive to peak by 2030 and strive to achieve carbon neutrality by 2060. Transportation is one of the key areas of energy consumption and greenhouse gas emissions. To achieve emission peak and carbon neutrality, the transportation industry is required to vigorously promote the realization of urban green travel. As an economically developed province in China, Jiangsu shoulders the glorious mission. It is necessary to take the lead in urban green travel and effectively serve the "3060" goal.

Keywords: emission peak; urban green travel; sustainable development

1. Introduction

Since industrialization, human society has developed like never before. Development in last two centuries have achieved more than the sum of the previous ten thousand years. Along with rapid economic development, human extraction of natural resources and greenhouse gas emissions have reached unprecedented levels [1]. Currently, global carbon emissions exceed 34 billion tons per year, more than four times higher than in 1950, while global carbon emissions have not yet reached peak. Unchecked resource consumption has brought about a global climate catastrophe. According to a comprehensive report by the World Meteorological Organization (WMO), weather, climate- or flood-related disasters have occurred on average every day for the past 50 years, killing 115 people and causing \$202 million in damage each day. Number of climate disasters has increased fivefold in 50 years. In the face of climate disaster, all countries have formed common interests and a common destiny of intermingling interests and sharing safety and security. In September 2020, China made a solemn commitment that China will strive to reach its carbon peak by 2030 and strive to achieve carbon neutrality by 2060 [2]. The "3060 Goals" not only shows China's firm will to fully promote the new development concept, but also shows China's clear attitude to contribute to the global response to climate change.

2. Urban Green Travel is an Important Area to Achieve Emission Peaking Goals

On October 24, 2021, China's CPC Central Committee and State Council issued a programmatic document to guide the work of dual carbon - "Opinions on the complete and accurate implementation of the new development concept to do a good job of carbon peaking and carbon neutral work". The document clearly sets out the general requirements and explicitly calls for actively guiding low-carbon travel [3]. Led by the green economic and social transition, China is focusing on green and low-carbon development of the energy sector, and accelerating the formation of industrial structures, production modes, ways of work and life and spatial configurations that help to conserve resources and protect the environment. It is fully committed to high-quality development that prioritize eco-environmental protection and green and low-carbon way of life, and ensure that the carbon peak and carbon neutrality will be achieved as scheduled.

On October 26, 2021, the Action Plan for Carbon Peaking by 2030 was issued. The Plan proposes "ten actions to reach the peak of carbon", including transportation green low-carbon action.

The Plan calls for accelerating the formation of green and low-carbon transport modes, ensuring that the growth of carbon emissions in the transport sector remains within a reasonable range, and proposing that by 2030, the proportion of green travel in cities with a resident population of 1 million or more will be no less than 70%.

Green travel ratio refers to the proportion of all travels made by residents using green travel modes such as urban rail transit, public buses and trams, bicycles and walking. Actively guiding low-carbon travel is to vigorously promote green travel, accelerate the construction of urban rail transit, bus lanes, bus rapid transit systems and other large-capacity public transport infrastructure as well as strengthen the construction of bicycle lanes and pedestrian walkways and other urban slow walking system.

3. Analysis of the Current Situation of Urban Green Travel Development in Jiangsu Province

Jiangsu Province attaches great importance to the development of green transportation. As early as 2018, Jiangsu passed the acceptance of the Ministry of Transport, built the country's first "green transportation demonstration province". At present, Jiangsu Province is actively engaged in the creation of national and provincial green demonstration. The province has identified 11 cities as pioneers for green travel, listed five cities as models for "national public transport city", the number of cities created in Jiangsu ranked the forefront of China. In addition, Jiangsu Province has issued "Jiangsu Province Transportation Carbon Emission Reduction Three-Year Action Plan (2021-2023)", "Jiangsu Province Green Travel Three-Year Action Plan (2021-2023)", "Jiangsu Province 14th Five-Year Plan for Green Transportation Development" and other policy documents, all of which emphasize the vigorous development of urban green travel [4].

Although green travel in Jiangsu cities has achieved certain results, there is still a gap compared with the developed cities in China. The percentage of green travel in Jiangsu Province will be 65.7% in 2020, and Beijing has already reached 74%. Among the 11 green travel demonstration cities in Jiangsu Province, only Suqian and Xuzhou have a green travel ratio of over 70%. According to a special survey on green travel done by the Nanjing Municipal People's Government in 2021, 37.6% of people consider convenience and comfort, 33.6% consider speed, 23.2% consider affordability, and 5.6% consider low carbon and environmental protection when choosing transportation. The reasons why respondents do not want to choose green travel are as follows: too far from bus and subway stations (52.0%), unable to find shared bikes and public bicycles (51.2%), too many people on the bus and subway in the morning and evening rush (50.4%), poor bus travel punctuality (40.8%), too many transfers required (37.6%), etc.

4. Foreign Experience Brings Inspiration to the Development of Green Travel Transportation in Jiangsu

Stone from other mountains can grind jade. By studying the "Land Transport Master Plan - A People-oriented Land Transport System" issued by the Singapore Land Transport Authority and the "Seoul Public Transport" issued by the Seoul Metropolitan Government, it is found that the promotion of green travel abroad is mainly reflected in the guidance and regulation of human travel demand in a more environmentally friendly direction from the source. Carbon reduction and carbon neutrality at the travel level are used to achieve sustainable use of environmental resources and sustainable development of society as a whole. The details are as follows.

4.1 In Terms of Planning Concepts and Methods, Foreign Countries Pay More Attention to Human Travel and Emphasize Extensive Stakeholder Participations

Sustainable urban public transportation planning proposed abroad focuses on human travel and emphasizes enhancing the accessibility and quality of urban life and living places, such as Seoul,

South Korea, which proposes to become a city where it is convenient to live without a private car by 2030 [5]. It is due to this concept of emphasizing the needs of human activities as the core of urban transportation planning that foreign plans pay much attention to the joint participation of the public and relevant interest groups throughout the process of preparation. In contrast, the goal of urban transportation planning in both Jiangsu and other cities across the country is more concerned with meeting the circulation capacity of motor vehicles and speeding up their movement. In addition, the planning schemes are developed by transportation planners only through several professional methods.

4.2 In Terms of Evaluation Indicators and Specific Initiatives, Foreign Countries Put More Emphasis on Comprehensive Measures, Focusing on Synergistic Promotion of Small Car Demand Management, Land Use Planning, Etc.

When promoting green travel abroad, setting targets and evaluation indicators will be heavily involved in small car management and slow traffic development, such as the daily traffic volume, the replacement rate, the coverage of bicycle lanes, the length of covered pedestrian linkages, etc. In order to achieve these targets, foreign countries have proposed corresponding initiatives in terms of institutional design and spatial planning. The High Occupancy Vehicle (HOV) system was implemented in the United States, which requires two or more people to be in a vehicle on certain roads during certain periods of time, etc. Singapore proposes to reshape street space by widening walkways, adding cycling lanes, and building more pedestrian corridors to provide more space for "walk and ride" mode. In contrast, when it comes to promoting sustainable development of urban public transportation, the domestic transportation industry, including Jiangsu, has mainly focused on public transportation due to institutional and other reasons. Evaluation indicators are also set with a focus on public transportation, and there is a lack of strength in comprehensive policy.

4.3 In the Development of Public Transportation, Foreign Countries Focus on the Integration of Rail, Bus and Slow-Moving Network, Promoting the Integrated Development of Public Transportation in Concert

In terms of public transportation development, there are several key practices abroad. First, the integration of facilities, including: promote the construction of rail transit network, bus lane network, integrated interchange hub, ensure the right-of-way for slow traffic and site non-motorized parking system construction, key areas and business district pedestrian linkage system. The focus of the facility construction is to build an integrated interchange hub and strengthen the seamless connection of different transportation modes. Second, network integration. To "interchange" as a breakthrough in the design of bus line network. In terms of recognition enhancement, provide a clear and concise line network, similar to a rail transit schematic. In terms of convenient interchanges, improve route coverage and reduce detours. In terms of high-frequency departures, the frequency of departures is increased to reduce passenger waiting time. Third, service integration. Build a three-network integrated travel service platform to provide "one-stop" travel services based on the travel chain. Make full use of mobile Internet and big data to build a smart bus service system. In addition to promoting the integration of rail, public transport and slow moving in terms of facility connection and information sharing, foreign countries also pay great attention to promoting operational integration. Integrating buses into urban subway and light rail systems, allowing operators to mix rail and bus operations. Singapore MRT Limited and Singapore SBS Transit, are multi-modal public transport operators. It is an important initiative that has contributed to the integrated development of public transport in Singapore. At present, Jiangsu Province needs to be further strengthened in the rail transit and bus system connection, the last mile of conventional bus etc.

5. Suggestions for the Development of Green Travel in Jiangsu Cities

5.1 Increase the Investment in Urban Public Transportation

Public transportation has strong public welfare properties. According to the development experience of famous public transport cities such as Singapore and Curitiba, the public welfare of public transport cannot be guaranteed without good financial support from the government. Therefore, the municipal governments of Jiangsu Province need to further improve the subsidy mechanism for the development of conventional public transport. For example, the implementation of the "quota + special + incentive" subsidy mechanism. Develop a cost regulation approach for municipal public transport enterprises. Define the scope of cost regulation, cost revenue classification, the standard value of each cost item, and the program for determining financial subsidies. In addition, it is suggested to carry out higher coordination and support from the provincial government level, break through some institutional constraints. Strengthen the comprehensive development of bus station land, and use the comprehensive development benefits to feedback public transportation [6].

5.2 Improve the Target Index System of Urban Green Travel

Build a more comprehensive green travel indicator system. Build a green travel indicator system covering land use, car management, public transportation development, etc. at the provincial level in Jiangsu. A green travel indicator system covering land use, car management, public transportation development, etc. can be constructed from the Jiangsu provincial level to clarify the province's target value. On the basis of combining with the indicator system formulated by the provincial level, each city defines its own development target value and adds regional characteristic indicators. Guided by goals, with indicators as the key points of assessment, forming the quantitative target requirements for top-down and layer-by-layer implementation.

5.3 Innovate the Diversified Supply of Public Transportation and Improve the Attractiveness of Public Transportation

According to the survey mentioned above, the problem of single supply mode of urban public transport and low service quality is the key to restricting the improvement of public transport attractiveness. It is necessary to continue to learn from the domestic and foreign development experience of customized public transportation in cities to expand the types of customized public transportation. "Customized bus cruises" can be operated in large residential and office building areas, providing a one-minute response and dynamic departure for regional cruising services within the region. Or connect the custom bus system with the company's APP, so that employees can pre-order custom buses through the company's APP and swipe their work badges to take the bus. Community bus also need to implement for meeting the trend of aging society, the elderly life, leisure travel needs.

5.4 Strengthen Comprehensive Measures to Enhance the Competitiveness of Public Transportation and Slow Moving

Improving the share of public transportation trips depends on competitiveness in addition to attractiveness. It is necessary to promote public transportation development by raising the cost of using private cars and limiting the competitiveness of private cars. For example, increasing parking fees, congestion pricing, reducing small car trips, and promoting P+R (park-and-ride) facilities in conjunction with key conventional bus hubs around the central city [7]. Study piloting a "Don't Drive a Day" campaign to reduce residents' reliance on private cars, etc. At the same time, it is necessary to optimize the environment of the public transportation operation and the slow walking system. In terms of improving the road environment for conventional public transport operations, increase the allocation of three-dimensional parking facilities and reduced on-street parking on narrow roads in communities. In terms of optimizing the slow walking system, the town planning

and design concepts are changed. Reshape the street space by widening the walkway, adding cycling lanes, building a beautiful networked walkway system, and increasing the number of road convenience facilities.

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