

# Research on Fiscal and Tax Policies to Promote the Development of Urban Low-Carbon Transportation

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**Abstract:** With the intensification of many cities nationwide fog and haze, the pollution caused by urban traffic has attracted more and more attention. The tail gas emitted by urban transportation is one of the culprits in the formation of severe smog weather. The carbon emissions contained in the tail gas account for a large proportion of the entire society's carbon emissions and show a growing trend. Therefore, urban transportation shoulders inescapable carbon emission reduction responsibility. This article in the current situation of low-carbon transportation-related taxation policies set forth the basis on issues arising in the course of urban transport development was summarized, according to propose fiscal policy recommendations related to low-carbon transport from the government point of view.

## 1. Introduction

With the continuous development of China's social economy, the process of urbanization is continuously advancing, which makes the demand for residents' transportation travel more and more vigorous and shows a trend of diversity, and urban transportation has also significantly improved an essential symbol of China's social and economic development. However, as the economy develops, urban transport accounts for an increasing proportion of energy consumption and total carbon emissions. This undoubtedly aggravated the energy crisis and the global climate deterioration, so the low-carbon development of urban transportation must be urgent. One of the biggest challenges facing the urban transportation system today is to reduce the energy consumption and carbon emissions of urban transport under the basic requirements of urban mobility. Therefore, the construction of low-carbon transportation has gradually become one of the hot issues at home and abroad.

Under the urgent situation of global response to climate change and carbon dioxide emission reduction, the world has seen a trend of energy reform and low-carbon development. Strengthening energy conservation and low-carbon energy structure has become a common choice for major countries' energy strategies. As an important participant, contributor and leader in the construction of global ecological civilization, China actively responds to climate change and promotes green and low-carbon development.

Industry, transportation, and construction are the top three sectors in China in terms of carbon emissions, so their carbon emission reduction space is relatively large. At the same time, as the urbanization process continues to advance, the number of motor vehicles is also increasing, the problems caused by urban transportation are more prominent, and the development of the transportation industry is becoming more and more dangerous. Correspondingly, with the increase of residents' income and the improvement of living standard, the preference for travel comfort is becoming stronger and stronger, which leads to the higher proportion of traveling by private cars, which makes the energy consumption of the traffic industry high, the road congestion is difficult to control, and the exhaust pollution and carbon emission from the traffic field are more serious, so the low carbon development of urban traffic is urgent.

## **2. Urban Low-Carbon Transportation**

Lu Huapu (2009) believes that low-carbon transportation is to focus on reducing greenhouse gas emissions and aims to use a variety of measures to reduce the carbon emissions of the transportation industry. Liu Liya (2010), Cui Dongchu et al. (2014) believe that China's understanding of low-carbon transportation has not yet been defined in a unified manner, but its essence is new transportation characterized by high energy efficiency, low energy consumption, little pollution and small emissions Development model.

The proposal for low-carbon shipping can be traced back to the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change held in Copenhagen in 2009. At that time, the Chinese government proposed the goal of developing a low-carbon economy. On the one hand, it was due to the constant voice of the international community, and on the other hand, it was because our own economic development model needed to be changed urgently.

Urban low-carbon transportation refers to a new type of transportation characterized by “low energy consumption, low emissions, high efficiency, and high intelligence”. Urban low-carbon transport is a brand-new concept, which is in line with the current social sustainable development theme. By improving the urban transportation structure and optimizing the urban transportation system, it emphasizes reducing urban traffic congestion and improving the energy efficiency of the transportation industry. The transportation system minimises the use of fossil fuels, reduces emissions, and alleviates environmental pollution.

## **3. Current Status of Urban Transportation Fiscal and Taxation Policies in China**

### **3.1 Fiscal Policy**

The fiscal policy in the area of transport is mainly directed at transportation. For example, financial subsidies and vehicle purchase tax incentives are given to new energy vehicles and new energy buses; consumption tax is levied on ultra-luxury cars, and vehicle purchase tax is reduced on low-emission vehicles. In addition, there are some regulations to encourage the development of public transportation and rail transportation. For example, urban bus stations and other places are exempt from municipal land use tax.

In short, as China's current fiscal policies related to transportation can be seen, China's relevant economic policies mainly use subsidies. It can be seen that the development of the related transportation fields supported by the state is mainly supported by financial subsidies.

### **3.2 Tax Policy**

#### **3.2.1 Vehicle and Vessel Tax**

Regarding the tax policy for vehicle and ship tax in the transportation field, it is mainly to give preferential treatment for energy-saving and new energy vehicles to halve or exempt vehicle and ship tax.

#### **3.2.2 Vehicle Purchase Tax**

The tax policy on vehicle purchase tax in the field of transportation is mainly aimed at the purchase of passenger cars with a displacement of 1.6 litres or less, the reduction of vehicle purchase tax; the exemption of vehicle purchase tax on the purchase of new energy vehicles; and the exemption of vehicle purchase tax on the purchase of public motor vehicles by urban public transport enterprises.

#### **3.2.3 Consumption Tax**

There are many tax policies on consumption tax in the transportation field, but they are mainly levied on transportation vehicles, such as cars and motorcycles, and accessories related to transportation vehicles, such as car tires and gasoline. In particular, since February 1, 2015, the battery will be included in the scope of consumption tax collection, as well as the exemption of consumption tax on mercury-free primary batteries, solar cells and so on.

### **3.2.4 Environmental Protection Tax**

Regarding the taxation policy of environmental protection tax in the field of transportation, taxation is mainly aimed at pollutants discharged into the environment as taxation objects.

### **3.2.5 Resource Tax**

The tax policy on resource taxes in the transportation field is mainly levied on crude oil, natural gas and mineral resources as taxation objects, and these taxation objects are mainly used as energy in the transportation field.

In short, as we can see from the current introduction of transportation-related tax policies, China's relevant tax policies mainly adopt the preferential tax reduction or exemption method, and the main objects of taxation are transportation. Moreover, there is no direct tax on carbon emissions from traffic, that is, no punitive tax.

## **4. Problems Faced by Urban Transportation in China**

### **4.1 High Energy Consumption**

Industry, construction and transportation are the three major energy consumers, as well as energy conservation and emission reduction. In today's society, urban transport is still dominated by fuel-powered traffic. The grim reality currently facing is that with the continuous development of urban transportation, the fuel consumption it brings is also increasing. The world's oil reserves are continually being consumed, and the energy crisis is sounding the alarm for us.

### **4.2 Serious Environmental Pollution**

One of the main problems in China's urban transportation is the environmental pollution caused by the rapid growth of motor vehicle ownership. For example, a large part of the haze weather is caused by urban traffic, which significantly affects the quality of life of urban residents and poses a severe threat to the health of urban residents. In the 20 century, 70 later years, with the rapid development momentum of the automotive industry, municipal motor vehicle ownership to the exponential growth trend. At the same time, as the rapid development of urban transportation in China, the driving motor vehicles have also brought increasingly severe negative impacts on the urban environment.

With the continuous development of the economy and society, people's income is also increasing, the demand for travel is also growing, the requirements for transportation services are also increasing, and conditional residents are increasingly using private cars as transportation. The number of urban motor vehicles is increasing day by day. It is conceivable that the problems caused by urban transport are so destructive to the living environment of residents. Pollution of the environment also includes the rapid increase in carbon emissions from urban transportation, leading to climate change, which is a global problem.

### **4.3 Contradiction between Traffic Supply and Demand**

Traffic jam refers to the phenomenon that the actual traffic flow exceeds the capacity of the road, and the excess traffic flow cannot be moved and stays on the street, thereby causing passing vehicles to stall or slow down. With the active promotion of China's urban construction, transportation infrastructure construction has also received more and more attention, and the transportation supply capacity of various cities has also been rapidly improved in volume. However, not only has the problem of urban traffic congestion not been alleviated, but it has intensified. It has been plaguing traffic managers and has caused great inconvenience to residents. Traffic demand is unsatisfied mainly, which is closely related to the increasing number of private cars. Besides, the development of urban transportation infrastructure is relatively slow, and the vast contradiction between supply and demand has caused traffic congestion and parking difficulties.

In a certain sense, urban traffic congestion is a product of the automobile society, and it is also a product that is difficult to avoid at a stage of urban development. Traffic congestion is a

phenomenon that is common in large and medium-sized cities in China. The time of traffic congestion is continuously increasing, and the scope is continually expanding. Take the test data of Tongda Automobile Test Station in Yangquan City, Shanxi Province as evidence: In the actual operation of the car, there is an individual relationship between the speed and the hour. Fuel consumption increases dramatically both at low rates and at high speeds, especially at low frequencies, the fuel consumption is even three times the minimum fuel consumption. In China's large cities, the average price during peak hours is generally flat, generally only about 20 kilometres, causing an enormous waste of energy and a large number of exhaust emissions. Therefore, congestion directly leads to an increase in carbon emissions from transportation.

In short, cities are continually building road infrastructure. Still, the number of city vehicles has continued to increase, and the growth rate of the latter is often more significant than the former. This will form a close vicious circle, making urban road congestion and shortage of parking spaces a chronic illness in the city that cannot be effectively cured promptly.

#### **4.4 Public Transportation Issues**

Public transportation is an integral part of urban transport, affecting all aspects of the city, and also the essential element of urban construction. Urban public transportation is closely related to the production and life of the broad masses of people. It is one of the leading transportation tools chosen by the general public. However, in the entire process of social and urban development, while providing convenient services for people to travel, the public transportation system itself has a variety of problems that directly affect the quality of life of urban residents. The main issues are:

First, the infrastructure of urban public transportation is not yet perfect. The buses are overcrowded, especially during the peak hours of commuting, and the passengers in the buses are often too crowded to move their bodies. Some passengers are unable to squeeze onto the bus. This is a widespread phenomenon in some big cities. Sometimes passengers are not allowed to get off midway due to traffic jams and arrive at the workplace by other means.

Secondly, in many large and medium-sized cities, the planning of transportation roads is lagging behind, and the lack of a holistic view and development view makes it impossible for multiple transportation modes to connect fully. For the majority of passengers, the transfer is very inconvenient, the transit time is often stretched, and they will abandon the use of public transportation services. As a result, in the city, private cars, buses and taxis compete with each other to pass, which directly leads to congestion. Sometimes, even special public transport lanes are occupied, resulting in traffic disorder. People's qualities are not so high, and there is no such high awareness to choose public transportation or other environmentally friendly travel methods actively. The government's relevant measures also need to be followed up, and disciplinary and encouraging actions should be taken to guide residents to use public transportation to reduce the use of private cars.

### **5. Fiscal and Taxation Policy Recommendations for the Development of Low-Carbon Transportation in Cities in China**

#### **5.1 Tax Policy**

To develop public transport systems, guidance ranking people choices when travelling by public transport at the same time, reducing residents to purchase and use of private cars employing taxation. By increasing the vehicle purchase tax, when residents purchase more than one private vehicle, the fee is appropriately increased; when setting up an environmental charge, the international ecological tax generally refers to the carbon tax. The carbon tax will have an impact on fuel type and total fuel demand, reducing people's consumption of fuel oil, thereby reducing carbon emissions. At the same time, the carbon tax is more comfortable to collect and manage than the carbon trading system. Therefore, levying a carbon tax with a lower tax rate on transportation fuels can protect the environment, achieve environmental effectiveness, and increase government revenue.

## 5.2 Charge Policy

The government raises the cost of car purchase and maintenance through the introduction of corresponding charging policies. It can be achieved by charging private car owners with fuel charges, environmental control fees and road usage fees, restricting private cars during rush hours in parts of congested areas, increasing bicycle lanes and sidewalks if necessary, meeting people's travel requirements, increasing illegal parking fees, reducing the purchase and use of unreasonable private cars, and keeping the number of private cars within a reasonable range. At the same time, congestion fees can also be charged to make road transportation more smooth.

## 5.3 Subsidy Policy

New energy vehicles are energy-saving, environmentally friendly and have low carbon emissions, which is the future development direction. The development of new energy vehicles to gradually replace traditional energy vehicles can effectively reduce carbon emissions in urban transportation. However, new energy vehicles have a long R & D cycle, high R & D costs, and relatively high sales prices, which affects their development speed. For a while, the government should continue to increase subsidies for new energy vehicles. On the one hand, it gives economic support to the research and development of new energy vehicles and reduces their selling prices; on the other hand, it subsidizes consumers who buy new energy vehicles, encourages consumers to buy and use new energy vehicles, and promotes the use and promotion of new energy vehicles. In addition, traditional vehicles can be converted into new energy vehicles, the government gives moderate subsidies. Through some of the above measures, the ratio of new energy vehicles is constantly raised, and the carbon emissions of urban transportation are reduced.

## 6. Conclusion

As the level of economic development and people's living standards improve, the urbanization process continues to accelerate, and people's demand for private cars has increased, resulting in an increase in carbon emissions in the field of transportation. On the basis of combing the current situation of fiscal and tax policies, in order to make fiscal and tax policies play a better role in restraining carbon emissions, we can consider the introduction of carbon taxes and other taxes directly related to carbon emissions or the collection of related fees, as well as the timely consideration of the role of financial subsidies.

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