
A Separate Environmental Tax for China: A Scheme Design and Its Implement

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Abstract: Construction of Chinese environmental taxation system could greatly promote establishment of an intensive style economic development mode and a sustainable consumption manner, and could provide policy guarantee for an eco-civilization and environmentally friendly society. China has already had the foundation to reform the current tax system to construct a separate environmental tax (SET) which is parallel to other taxes such as resources tax. Based on rich experiences in OECD countries, the challenges of environmental protection and socioeconomic conditions of China, a SET for China was designed, mainly including the systematic framework, function setting, four tax items, tax bases and rates, pollution charge reform, tax collecting model, potential tax income and influences of SET. Under the SET four tax items and bases are designed as emission tax item, polluting product tax item, ecological conservation tax item and carbon tax item. It is expected that the revenue of SET amount to 233 billion RMB¹ yuan and is about 6% of national fiscal income and 1.1% of GDP based on the tax base in 2006. The key affected industries will be that with high energy consumption intensities, such as electricity, material and transportation.

Keywords: Environmental tax, Economic Instruments, Pollution Charges, Environmental Behaviour

Taxation instrument is both the major source of state revenue and the important adjusting mechanism for macro-economy. As early as 1990s', some member countries of OECD had widely carried out the reform of green taxation in order to solve the gradually grievous conflicts between environment and economic development which born active effects^[1-4]. From a comprehensive viewpoint of the research documents on environmental taxation in China, a sporadic and non-systematic state could be seen as a whole, though the number of documents is increasing dramatically in recent years. And most of the researches are focused on specific problems from a selective angle of research^[5-10]. As a result, no systematic framework of reform scenarios on China's environmental taxation has been put forward so far. Based on China's national economic development requirements and policy foundations, this research starts from China's pollution prevention and ecological protection and a separate environmental tax (SET) scheme has been designed within the framework of present taxation. The design and implementation of environmental tax would by no doubt promote sustainable development, the establishment of society with resources saving and environmentally friendly. Meanwhile, it would provide policy guarantee for China's ecological civilization construction.

1. The functional orientation of separate environmental tax

In the conversion of green taxation abroad, mainly three routes are followed: First, new tax items are created for the specific policy purpose of ecological environmental protection. Usually, *ecological tax*, *energy tax*, *carbon tax* are named in different policy fields. Second, redesign the present taxation by *greening*. It means to make the present taxation green by changing the present environmental protection related taxation areas, adjusting taxation rates and so on. Third, increase the green standards of present taxation by changing the income and expanses policies of taxes, for example, removing subsidies which are unfavorable to environmental protection, increasing environmental friendly activities, increasing tax preferences for environmental friendly products. However, no country has designed a tax item under the name of *environmental tax* so far. The separate environmental tax put forward by this research refers to a

¹ US\$ 1= 6.9 RMB Yuan.

new tax item under the present taxation frame and it is in parallel with other taxes such as resources tax, value added tax and so on. And this new tax item is named *environmental tax* (refers to the separate environmental tax in the following). The main policy target of this new tax is to promote ecological environmental protection, and it belongs to a specific behavior tax with the most important function of adjusting environmental protection.

2. The framework design of separate environmental tax

The framework design of environmental tax should first of all ensure the completeness of policy adjustment range which means it should cover the environmental resources exploitation, utilization, protection and improvement of the complete environmental protection process. The policy target should possess the periodic and dynamic nature and be able to effectively restrain the amount of pollution discharge and the activities of ecological destroy so as to promote the economical utilize of resources and energies in the short term. While in the long term, it should be able to change the pattern of economic growth and provide economic incentives for sustainable consumption.

The framework design of SET should adhere to the following five principles, there are respectively the win-win principle of environmental protection and economic development, the equal importance of fairness and efficiency, the common promotion of production and consumption, the principle of control first and income second, and the principle of giving entire consideration to the global environmental problems and domestic key issues of environmental protection. The environmental tax consists of four items including pollution discharge, pollution products, ecological protection and carbon emission. The policy range of each individual tax item is open to expansion and adjustment following the requirement of policy development.

2.1 Emission tax items

Emission tax items aim at discharged pollutants including mainly various kinds of waste gases, waste water and solid wastes. Most of these pollutants are covered in the range of present pollution charge system. Therefore, emission tax actually means to *transform pollution charges into taxes*. Meanwhile, pollutants and emission sources which are not levied at present would be included into pollution tax items. In the near future, sulfur dioxide (SO₂) fee in current pollution charge might be transformed into SO₂ tax. This is for the reason that it is comparatively easier to collect SO₂ emission tax. As the revenue amount collected from SO₂ emission is comparatively large, and SO₂ is a key pollutant controlled in China. Another part focuses on the vehicle emission from which the pollution charge has not yet been collected yet. Because of the great difficulties of monitoring vehicle emission, a tax on vehicle fuel could be collected so as to reduce vehicle emission and improve urban air quality.

The design of key factors of SO₂ tax are : (1) the levied target is SO₂ emitted from the pollution sources; (2) taxpayers include all SO₂ emitters, including industrial enterprises, public institutions, businesses, service trades and other companies (administrative institutions and individual residents may not be included temporarily); (3) the base of tax is the actual emission amount of SO₂. For those pollution sources whose monitoring data are available, the pollution discharge tax should be collected according to the actual monitoring data. While for those pollution sources which cover large areas, emit large amount of pollutants, or which run in small scales and are difficult to monitor, then the pollution discharge tax may be collected according to the sulfur contents in the fuels and related reduction measures. For those pollution

sources whose real emission amounts are difficult to calculate, then the tax could be based on the equipment productive capabilities, real production output and other related indexes; (4) a fixed quota tax rate could be adopted. The general principle is the tax rate should not be too low, it should be high enough to stimulate the taxpayers. The initial tax rate may be as high as 1.2 yuan / kg, which is fixed by the marginal treatment cost of SO₂ reduction.

The design of key factors of fuel tax are: (1) the levied targets include fuel and diesel; (2) taxpayers include the companies, institutions and individuals using vehicles; (3) the tax is based on the quantity of fuel and diesel consumed, that means the actual purchase amount by taxpayers; (4) the tax rate is determined by pollutants discharged by burning fuel and diesel, different tax rates would be carried out for fuels of different qualities. Fuels reached the national standard IV would not be levied contemporarily; those fuels failed to reach the national standard IV would be levied according to the rates of fuel 0.20 yuan per liter, and diesel 0.15 yuan per liter respectively.

2.2 Polluting product tax items ^[11]

Polluting product tax items refer to the tax collection for products which would constitute harmfulness to the environment in the process of utilization, consumption and treatment. The aim of this tax is to reduce the use of products which are harmful to the environment or advocate the use of substitutes which are of low pollution or no pollution. Polluting products mainly include ODS, detergents contained phosphorus, batteries contained mercury and cadmium, fertilizers, throw-away foam dish wares, plastic packages and so on. Polluting products tax can be collected on the basis of price-rate or quota-rate. The tax base is the actual sales volumes or sales of taxied products. Tax-paid products produced and used on one's own instead of consecutive production should be taxed according to the amount of the removed tax-paid products. Tax-paid manufacturing consignment products should be taxed according to after-sale product amount; while the tax-paid imported products should be based on the imported amount ratified by the customs.

The design key factors for polluting product tax items are: (1) tax targets include various products or consumable products which would produce pollution. Fertilizers and farm chemicals would be exempted from tax for the present, considering the great influence the two would produce on agriculture and farmers; (2) the taxpayers are the users / consumers of the above mentioned products; (3) the tax bases include the consume volumes or sales of the pollution products; (4) tax rates are classified according to the products categories and different tax rates varying between 1%-3% would be carried out; (5) the tax could be collected in the process of consumption. When the tax collection is done for sales products or consumer goods, the tax should be handed in to the responsible revenue departments by the sellers quarterly.

2.3 Ecological protection tax items

At present ecological protection tax items focus merely on mining behaviors of mineral resources and the exploitation and utilization of natural conservation. Mineral resources include coal, crude oil, natural gas, mountain rocks, gold mines and so on. The taxpayers are the exploiters of mineral resources. The companies and individuals exploiting mineral resources are directly responsible for the damage of the environment, and to collect tax for mineral resources developing is in agreement with the international "polluters pay principle" and "damagers

compensate principle". The developing and utilizing of the natural conservative areas cover sight-seeing, films and videos shooting and so on. The developers and users of the natural conservative areas are the taxpayers. If the consumers visiting the natural conservative areas are also the beneficiaries of the natural environment, then they are as well the potential or direct damagers to the natural environment. Although this group of consumers is individuals, efficient management could still be achieved by collecting the environmental tax through the sellers of entrance tickets. Therefore, it enjoys a strong feasibility of operation. At the same time, while the individual consumers become the taxpayers, their environmental protection awareness would be raised, so the ultimate goal of environmental protection would be achieved.

The design key factors of tax items for ecological protection are: (1) tax targets include mineral resources such as coal, crude oil, natural gas, mountain rocks, gold mines and the developing and utilizing behaviors of ecological conservation areas; (2) taxpayers include the companies and individuals developing mineral resources, the developers and users of nature conservation areas; (3) the tax bases cover mineral resources exploitation items and the actual amount of exploitation, and the national uniform tax should be implemented; the tax amount extent of developing and utilizing the natural conservation areas should be based on the national criterion degree of the related ecological conservation areas (scenic spots, for example), and the amount should be fixed within the established extent by provinces, autonomous regions or municipality people's governments. (4) the tax rates would adopt the fixed quota rate and be collocated according to the quantities. The initial environmental tax rates of the mineral resources might be 20 yuan/ t for coal, 30 yuan/ t for crude oil, 20 yuan /t for iron ore, 100 yuan / t for smelt copper, 5yuan / t for nonmetallic mines, and 2yuan / per person for nature reserves.

2.4 Carbon tax items

Climate change is the greatest pressure of global environmental problems China faces in the following 30 years. Intentional experiences indicate that collecting energy tax or CO₂ tax would influence the international competitiveness of industries; so many countries have adopted low tax rates for high energy consuming enterprises and encourage energy saving policies. In addition, the technical competence of CO₂ reductions in China is comparatively low. Therefore, difficulties do exist and technical aids and support from developed countries are needed. In view of collection cost and no influence on people's living standards should be brought forth, individuals would not be included at the present stage. And as far as the *tax neutrality* principle is concerned, carbon tax rate might be raised for high energy consumption industries and income tax for these affected companies might be adjusted, or the low-income groups might be subsidized through redistribution of incomes. Low tax rates or tax returns might be implemented to the energy intensive industries. Supports should be given to renewable energies, energy saving and consumption reduction so as to promote the development of low carbon economy and low carbon society.

The design key factors of carbon tax items are: (1) tax targets include fossil fuels producing CO₂ such as coal, oil, natural gas; (2) taxpayers include all the institutions emitting CO₂ into the atmosphere such as state-owned enterprises, collectively-owned enterprises, private enterprises, foreign invested companies, foreign enterprises, share-issuing enterprises, other kinds of enterprises, administrative institutions, public institutions, military units, social groups and other institutes; (3) the tax rates are based on the emission volumes of fossil fuels

and carbon content, such as coal, fuel, natural gas; (4) the design of tax rates should be in accordance with China's national conditions. The tax rates should neither over influence the international competitiveness of China's industries nor affect the living standards of the low-income groups. According to the present market price of CDM in China, the transfer price of CO₂ per ton is around 6 US dollars, so the initial tax rate is designed to be about 20yuan / t C equivalent.

3. Implement Strategy and Supporting Polices for SET

3.1 The implementing road map

The implementing of separate environmental tax should follow the strategies of easy first difficult later and gradual progress. The emission tax, polluting products tax and ecological protection tax which are easier to be implemented should come first in environmental taxes while carbon tax might start from a low rate and wide collection range. Dynamic regulations are required following the mature of the conditions and the carbon market price fluctuations both home and abroad. Meanwhile, related environmental charge items should be brought into the unified framework of environmental taxation. Table 1 shows the establishment routes of separate environmental tax for China.

Table Proposed Road Map for Separate Environmental Tax in China

Stages	First stage (2009-2011)	Second stage (2012-2015)	Third stage (2015-2020)
Expanding targets for environmental tax	Establish the framework of environmental tax, initiate sulfur tax, COD tax and other emission taxes; polluting product taxes would be collected from energy products and other products easily leading to environmental pollution; initiate ecological protection tax; led in carbon tax; pollution charges would be integrated into tax reform framework, the overlap section of emission tax would be rationalized. Environmental tax management regulations would be publicized.	Continuously improving various environmental tax items; expanding the tax ranges of polluting products tax, emission tax; carbon tax to be considered with prices of CDM both home and abroad, dynamic adjustments of carbon tax ranges and rates will be made considering related social and economic factors; promote the publicizing of the law of environmental taxes.	Persistently promote the perfect of various items of environmental tax, strengthen the implementation of carbon tax, expand policy areas, and prepare for after the Kyoto Protocol. Continuously improving and gradually establishing environmental taxation.
Major objectives for this stage	Establish the framework of environmental tax. Introduce four types of environmental tax items.	Perfect the design of the four items of environmental taxes. Expand policy areas and increase the level of taxation.	Basically establish the environmental taxation which is favorable to sustainable development.

3.2 Administration of collection

It is suggested that the following three models of administration of collection be used for environmental tax scheme: (1) note verified by the environmental protection departments and tax collected by the taxation departments; (2) both note and tax collection by the environmental protection departments and finally audited by the taxation departments; (3) all collecting affairs by the taxation departments. Different items may take different models. Items like pollution fees transformed into taxes, for example the sulfur tax, may choose the first or the second model,

gradually the third model may be followed. The fuel oil tax and polluting product tax may take the third model while the ecological protection tax and carbon tax may choose the second or the third model.

3.3 The use of revenue funds

The environmental tax should mainly be used for the environmental protection. It is suggested that the environmental tax be included in the special public budget for environmental protection. Only in this way can it not be deviated from the initial designed objectives of environmental tax. The environmental taxes are suggested to be shared tax by the central and local governments in the proportion of 8:2 between the local and central governments. Environmental protection funds should be established at all levels of financial departments and special funds should be used for environmental purposes. As far as the particularity of carbon tax is concerned, a transitional period from the central tax to the local tax is required. At the initial stage, the central tax should be shared with the local tax and gradually the local tax would become the sole tax. It is mainly for the reason that carbon tax revenue can be used by the central government to increase the energy efficiency, develop low carbon techniques, and cultivate the national carbon market. The policy target orientation strengthening of carbon tax items can be hoped to quicken rapidly the research and develop progress of the nation's low carbon technique and energy efficiency improvement as a whole. The environmental tax revenue is suggested to be used for supporting the energy saving and emission reduction and the development of renewable energies in the areas such as electricity generated by coal, iron and steel industry, non ferrous metal industry, construction materials industry, so as to reduce the influence on these industries caused by the collection of environmental tax.

3.4 The establishment of supporting measures for SET

In the short run, it is suggested to the State Council that the legal status of the environmental taxes should be established by designing *Regulations of Administration of Environmental Tax Collection*. In the long run, it is suggested to the National People's Congress that *The Environmental Tax Act* be established and publicized so as to fully ensure the authority of this policy. The general international practice could be adopted, that means the strategies of advanced notice and gradual progress should be implemented in order to mitigate the impact of environmental taxes on industries, and increase the public acceptance. Meanwhile, coordination with on-going laws and regulations should be taken into full consideration. What's more, the expropriation and management capacity building of the environment departments and revenue departments should be strengthened. The measures of tax collection coordination and protection such as the liaison system between the taxation departments and industrial and commercial departments, technical supervision departments should be established and improved. The connection between environmental taxes and pollution charges should be fully considered and the transform from pollution fees into taxes should be timely advanced.

4. The revenue of environmental taxes and influence analysis

According to incomplete estimation, if the above mentioned environmental taxes are fully implemented and collected, then it is estimated, based on the tax base of 2006, the gross national environmental tax revenue would reach 233 billion RMB, which makes up 6.0% of the total government fiscal revenue and 6.7% of the tax revenue respectively. It also makes up 1.1%

of the GDP of 2006. Suppose that the environmental taxes be initiated during the eleventh five years (2006-2010), then the gross income of the environmental taxes during the eleventh five years would be equal to 76% of the investment requirement for environmental protection during the eleventh five years which is estimated according to 1530 billion RMB. It would provide a large amount of funds for environmental protection.

In an overall view, to initiate emission tax items, meanwhile to eliminate relevant pollution charges and reduce income taxes, the policy of *one addition and one reduction* would bring little change to tax burden as a whole. The orientation and contents of the present taxation reform, including the transition of value added tax, the uniform business income tax and other tax reduction measures, makes certain *tax burden* room for the new environmental tax. While the initiate collection of the ecological protection tax, pollution products tax and carbon tax would increase the general tax burden. Besides, the environmental tax would bring a comparatively heavier tax burden for electricity generated by coal, iron and steel industries, non ferrous metal industries, construction material industries, which would cause an impact on their competitiveness. To a certain extent, it would also raise the prices of manufactured goods, energies, raw materials, as well as the prices of consumer goods. But, it would be favorable to the establishment of a good international environment image for the Chinese government, for the raise of the environmental protection awareness of the whole society, and for the increase of environmental management efficiency and the development of new technologies for pollution control.

In order to avoid the negative impact brought forth to the economic development by high tax burden, the other tax items should be reduced accordingly in the framework design of the environmental taxes. The present tax level would be generally maintained, which would be favorable to the taxpayers to accept the environmental taxes. Thus the environmental taxes would be implemented smoothly.

5. Conclusion

The introduce of environmental taxes is a certain option for the implementation of scientific outlook on development and the construction of ecological civilization. The related departments of Chinese government should seize the favorable opportunity of the present social economic development and the implementation of scientific outlook on development, quicken the establishment of separate environmental tax based on the principles of *the neutrality of the overall tax burden* and *the synchronism of the reform of taxes and charges*. Finally a green finance and taxation system should be established to promote sustainability of society, economy and environment.

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