



# 包容性增长与碳税

Inclusive Growth and Green Tax

# 包容性增长中的减排政策选择 Inclusive Growth and Carbon Tax

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## 摘要 Abstract

利用各省历年的二氧化碳排放、二氧化硫排放、GDP 和能源价格数据，运用现代计量经济学估计方法，我们研究了实施碳税的收益（二氧化碳减排）、附带收益（二氧化硫减排）以及相关成本（GDP 下降）。与此同时，我们还评估了环境税的规模、税负对经济增长的影响、税收与收入分配等政策制定者考虑碳税时面临的决策背景。以上述两部分研究为基础，并借鉴国际上其他国家征收碳税的经验，我们提出了二氧化碳减排的四种政策选择，在比较各种政策效果的基础上，我们建议以改革消费税的方式实施碳税改革。

On the basis of provincial data on carbon dioxide and sulfur dioxide emissions, GDP, and the energy price index, and using modern econometric methods, we examine the benefit (carbon dioxide emissions reduction), collateral benefit (sulfur dioxide emissions reduction) and related costs (reduction in GDP) of carbon taxes. We also offer an assessment of the scale and burden of environmental taxes on economic growth, as well as what strategic premises underlie the deliberations about carbon taxes by makers of policies regarding taxation and income distribution. Building on the basis of research on these two topics, and borrowing from international experiences in carbon taxes, we put forward four options for carbon dioxide emission reduction policies. And through comparison among the four, we suggest that carbon tax reform start with that of the consumption tax.

# 摘要报告 Summary Report

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中国如果按照国际要求进行大幅度减排也是困难重重。首先，从能源和二氧化碳排放关系角度看，中国的经济处于高速增长阶段，对能源的需求非常大，这就意味着，减排必然影响中国的就业、投资以及经济增长。其次，我国的二氧化碳排放呈现出地域集中、产业集中的特点，这就为减排带来了极大的困境。从产业结构来看，最多的金属冶炼行业的排放就占到全部排放的 30%，且排名前几位的都是基础性上游产业，如果通过碳税或提高电价等方式控制这些产业的碳排放，对这些产业本身及其下游产业的影响是非常巨大的。从地区分布角度看，中国各省的二氧化碳排放集中度高，前三位占全国排放的 33%，前五位占 50%。第三，从能源结构的角度看，我国的煤使用比例世界最高，煤资源特别丰富而且价格低廉。如果转而使用石油或天然气作为基础能源，那么，需要从其他国家大量进口能源物质，国家的能源安全受到威胁。

It would be a tall order for China to reduce its GHG emissions by as much as has been required internationally. First, from the point of view of the relation between energy and carbon dioxide emissions, China is currently experiencing rapid economic growth, and as such has a large demand for energy. This means that mitigation efforts would necessarily affect employment, investment and economic growth in China. Secondly, carbon dioxide emissions in China are characteristically unevenly distributed across different regions and different economic sectors, compounding the difficulties of any mitigation efforts. From the point of view of industrial structure, the metals smelting and rolling industry alone accounts for 30% of the country's total GHG emissions. Indeed, the top emitters are all upstream industries that are economically foundational, providing input for other industries. So if the carbon emissions by these industries are restricted by means of the imposition of carbon taxes and higher electricity prices, it would have a ripple effect, with large consequences for not only these industries themselves but also those downstream from them. From a regional point of view, carbon dioxide emissions in China tend to be highly uneven among provinces, with the three largest emitters accounting for 33% of the national total, and the five largest for 50%. Thirdly, in terms of the structure or energy sources, the representation of coal in China's total energy source package is larger than in any other country. Coal is both abundantly and cheaply available. If we shift the primary source of energy from coal to oil or natural gas, it would entail the need to import large amounts of energy source from other countries, which would threaten the energy security of the nation.

整体来看，最优的减排策略是通过国内的体制改革来转变中国经济增长的高能耗模式，但同时不对国内经济增长、就业和投资产生过大的负面影响。这里涉及到国内政策改革和国际谈判策略问题。从国内政策改革来看，相关体制改革的最重要部分，就是能源、资源价格改革及相关财税体系改革。从政策角度看，如果能够明确地分析出碳税的减排效果与经济影响，就有助于政府决定通过怎样的能源、资源的价格改革，包括对高能耗产业征税（如碳税），给企业直接的价格信号，最有利于企业走上节能减排的道路；考察通过哪些财税体制改革组合，一方面利用资源税来补充政府税源，同时有效利用这些税收进行节能减排的投资和技术研发等。这样的研究及其体制改革建议与政策，都将有利于中国经济从“黑色经济”、“褐色经济”向“绿色经济”的重大转变，对中国走上经济、社会乃至环境可持续发展有重要意义。从国际谈判策略来

看，只有通过上述扎实的实证分析，明确知道相关税收政策和财政体制改革对减排和经济增长的影响，才能够有助于政府在国际谈判中明确我们自己的底牌并且采取主动行动参与国际减排努力，并树立负责任大国的形象。

Overall, the optimal emissions reduction strategy is to transform China's highly energy intensive model of economic growth through domestic institutional reform, without too much negative impact on domestic economic growth, employment and investment. This concerns issues such as domestic policy reforms and international negotiations strategies. From the point of domestic policy reforms, critical to reform of the relevant institutions is energy and resource price reforms and reform of associated tax system. From the policy perspective, it would be helpful if the impact of carbon taxes on carbon emissions and on economic impact can be determined, for then the government can better decide what energy and resource pricing reform measures to undertake, how to tax (through carbon taxes, for example) highly energy intensive businesses, and to send signals directly to businesses in general so as to encourage them to reduce their carbon footprint. [We need to] study what some of the different compositions of tax reform measures are, such that on one hand resources taxes can be used to supplement the government tax base while on the other hand the receipts of these taxes can be used effectively towards investment and R & D in energy conservation and carbon emissions reduction. This research, along with the suggestions and recommendation it issues in for institutional reform and policies will facilitate China's shift from a "black economy", to a "brown economy" and then to a "green economy". As such, it would have great significance for China's efforts to shift towards an economically, socially and environmentally sustainable developmental path. So far as international negotiations strategies are concerned, concrete knowledge of the impact relevant policies and institutional reform measures would have on emissions reduction and economic growth such as would be obtained through such studies is most helpful to the government, which would be steadfast in its own stance, proactive in its negotiations strategies regarding mitigation, and by doing so, establish the image of a great country that takes its international obligations seriously.

## 一、环境税的中国现状与国际比较

### I. Current Status of Environmental Taxation in China and International Comparison

虽然中国目前并没有开征专门以环保目的的税种，但中国的税收中已经包含了与环境资源相关的税种，在税制中采取了不少鼓励环保的措施。按照 OECD 对环境税的定义，这些税种和税收措施属于环境税的范畴。

Even though nominally environmental taxes do not yet exist in China, existing tax items do already include some that implicate the environment. Through these, the tax codes contain considerable number of measures meant to help protect the environment. According to the definition of environmental tax adopted by the OECD, these tax items and measures fall into the category of environmental taxes.

2007 年中国与环境有关的税收收入占国内生产总值的 2.41%，高于 OECD 成员国的平均水平（2006 年，OECD 成员国加权平均值为 1.71%和算术平均值为 2.36%），与德国（2.40%）和法国（2.05%）环境税收占国内生产总值的百分含量接近，远远高于美国（0.86%）和墨西哥（0.58%）的百分含量。

In 2007, receipts from environmentally-related taxes accounted for 2.41% of GDP, which was higher than the average for OECD countries (for which the weighted mean was 1.71% and the arithmetic mean was 2.36% in 2006), and closer to the figures for Germany (2.40%) and France (2.05%), and much higher than the US (0.86%) and Mexico (0.58%).

在环境税税收占总体税收收入比例图中，可以看到中国所占的百分数（12.04%）接近 OECD 成员国平均水平（2006 年，OECD 成员国加权平均值为 5.38% 和算术平均值为 6.63%）的两倍，远远高于德国（6.74%）、法国（4.64%）、美国（3.05%）和墨西哥（3.18%），仅次于土耳其（14.89%）。

From the chart showing the proportion of receipts from environmentally-related taxes out of total tax receipts, it can be seen that the percentage for China, 12.04%, is almost twice as much as the average for OECD countries (the weighted mean being 5.38% and the arithmetic mean 6.63% in 2006), much higher than Germany (6.74%), France (4.64%), the US (3.05%), and Mexico (3.18%), and slightly lower than Turkey (14.89%).

中国在环境税的具体征收过程中，国家配套有相关的减免政策以及税收优惠等，除此之外，还有一些相关的补贴政策。但是，由于要兼顾其他的政策目标，因此有些制度是对环境有利的，有些制度的实行却与保护环境背道而驰。

In regard to the collection of environmentally-related taxes, the Chinese government has offered matching policies and reduced tax rates, plus some related compensation policies. However, having to attend to other policy goals at the same time, while some of these tax measures do benefit the environment, others have turned out to do quite the opposite.

## 二、碳税减排效果

### II. The Mitigation Effects of Carbon Taxes

和二氧化碳这类影响全球的污染物不一样，二氧化硫等对本地产生危害。伴随二氧化碳减少而减少的二氧化硫就可以看做是 CO<sub>2</sub> 减少的附带收益（Co-benefit）。因此，在 CO<sub>2</sub> 减排带来直接收益不明显的情况下，估计二氧化碳减少带来的附带收益对中国政策制定者具有重要意义。

Unlike carbon dioxide, whose effects tend to be global on scale, sulfur dioxide is a pollutant whose impact is largely confined locally. Since reduction in carbon dioxide emissions helps bring down the emissions of sulfur dioxide as well, the second can be considered a collateral benefit of the first. Therefore, when the direct benefits of mitigation efforts aimed at carbon dioxide fail to materialize, the implications of these efforts for the collateral benefits may nonetheless be of great significance to Chinese policies makers.

由于二氧化碳和二氧化硫的“伴生”特点，即排放二氧化碳的同时伴随着二氧化硫等污染气体的排放，反过来，如果制定相应的政策，减少二氧化碳的排放，会导致化石燃料使用量的下降，进而导致以二氧化硫为代表的其他污染气体排放量的减少，这样一来，二氧化硫减排就可以被看做是二氧化碳减排的附加收益，而这种附带收益，就可以称为二氧化碳减排国际性联合政策的重要激励。

Due to the “co-dependency” between carbon dioxide and sulfur dioxide, that is, since reduction in the emissions of one correlates with reduction in the emissions of the others, it means that policies intended to reduce carbon dioxide emissions would have the effect of reducing the need for fossil fuel. This would in turn lead to a reduction in sulfur dioxide and related emissions, which are collateral benefits of mitigation efforts nominally targeting at carbon dioxide. And these collateral benefits constitute an important incentive in international policies to reduce carbon dioxide emissions.

通过对二氧化碳附带收益的估算，中国政府可以通过改变对待两种污染气体的智力策略，以达到更经济、更有效的治理目标。例如，采用碳税或者碳交易体系来控制二氧化碳排放，会促进企业对燃料燃烧效率和技术的改进，这样一来，在减少二氧化碳排放的同时，就会同时减少二氧化硫的排放，节省下大量用于脱硫的生产技术和政府投入。政府可以通过将二氧化碳减排成本，与二氧化碳减排附带收益之间进行权衡，来达到最优的二氧化碳减排量。

On the basis of estimates of the size of the collateral benefits in terms of sulfur dioxide emissions reduction, the Chinese government can improve their mitigation efforts both economically and substantively by adjusting their strategies for the two kinds of pollutants respectively. For example, carbon taxes and carbon trading can encourage businesses to improve their energy use efficiency through technological improvement. The results are reduction in carbon dioxide emissions and concomitant reduction in sulfur dioxide emissions. This implies large amounts of savings on desulfurization technologies and government investment. The government can arrive at the optimal target for carbon dioxide emissions on the basis of analysis of both the cost of reducing carbon dioxide emissions and the benefit of reducing sulfur dioxide emissions.

我们采用新的模型，利用中国的数据进行了估算，每吨二氧化碳排放量的减少，短期会伴随 0.0006 吨二氧化硫排放的减少，而长期，二氧化硫排放的减少量达到 0.01。每吨二氧化碳排放减少的附带收益，短期为 11.77 元，长期为 196.16 元。

With the new model applied here, we have performed an estimation using the data for China, and the result is that for every ton of carbon dioxide emission that is reduced, the concomitant reduction in sulfur dioxide emissions is 0.0006 ton in the short-term, and 0.01 ton in the longer-term. In monetary terms, the collateral benefit of each ton of carbon dioxide emission reduced is RBM 11.77 in the short-term and RMB 196.16 in the longer-term.

经济越发达的地区，减排的成本越高，而经济越不发达的地区，二氧化碳减排的成本越低。从减排成本的角度而言，为保证减排成本的最小化，应该选择经济发展落后，产业结构偏向重工业的地区进行减排。但是这就会导致一个不公平问题，也就是，减排的成本由落后地区承担，而发达地区却不用承担减排成本。

Mitigation measures tend to be more costly in regions that are economically more developed, and less so in regions that are economically less advanced. In the interest of cost minimization, therefore, regions that are economically less developed and those with a large presence of heavy industries should be chosen to have mitigation measures implemented. But this would lead to inequity, where the costs of mitigation are borne by regions already poor, and avoided by those already richer by comparison.

从减排效率的角度而言，为保证在最小的对经济实体的扭曲程度下（也就是能源价格加幅最小），应该选择减排绝对力度较大的地区，也就是产业能源偏重，或者基础排放量比较大的地区。

With respect to the issue of effectiveness, in order to minimize distortion of the economy (that is, to minimize the upward pressure on energy prices), the choice of location for implementing mitigation measures should be those regions with the greatest emissions reduction potentials, namely, regions that feature a large representation of the energy industry or those with a high level of base emission rate.

因此，最好的策略应该是，减排成本和减排效率进行权衡，选择减排成本

较小、减排效率较高的地区，进行重点减排，而减排成本，由全国其他地区分摊。这样就可以做到效率成本的整体兼顾。

Therefore, the best strategy should be to do a cost-benefit analysis in order to determine the least costly and most effective places for implementing mitigation measures. The cost of implementing these measures at those places would be, however, spread out across the country. This would ensure a proper balance between the pursuit of low cost and that of high effectiveness.

### 三、碳税改革的财政体制背景

#### III. The Fiscal background for Carbon Tax Reform

一直以来，有关中国公共部门的大小，以及宏观税负高低的争论不时见之于各种场合。例如，中国官方的国家税务总局认为中国的宏观税负在国际上仍属较低水平。但是，若按照 OECD 公共部门收支定义，中国的公共部门规模要大得多，宏观税负也重得多。以 2007 年为例，若按中国的定义，中国的宏观税负只有 20.1%；若按照 OECD 定义，则宏观税负高达 27.2%。这个数字低于北欧的传统福利国家，但已经超过韩国和墨西哥，非常接近美国和日本了。

For a long time, there have been constant debates about the appropriateness of the size of the public sector in China, as well as the tax burden on the macroeconomy. For example, The Bureau of Taxation, which is a government agency, contends that compared with other countries in the world, tax burden in China is on the low end of the spectrum. However, by OECD's criterion, China's public sector is much bigger than is officially claimed, and the tax burden heavier as well. Take the year 2007, by our own criterion, China overall tax burden was 20.1%, but 27.2% according to OECD criterion. While this the latter number is lower than what it is for north European welfare states, it is already higher than the numbers for South Korea and Mexico, and is very near those for the US and Japan.

和国际上其他国家相比，中国的收入结构也较为独特。间接税（增值税和营业税）占政府收入的主要部分。个人所得税所占比重较低。例如，增值税和营业税合计所占我国政府总收入的比重高达 48.3%，远远超过美国的 18.3%和 OECD 平均值的 32.3%。而个人所得税占美国政府收入的比重高达 34.7%。我国的这一比重为 4.7%，不仅远远低于美国，也比 OECD 平均值 24.6%低了很多。

Compared with other countries, income structure in China is also unique. Indirect taxes (Value Added Tax and Corporate Tax) make up for the bulk of the government's tax receipts, of the total of which personal income tax accounts for a relatively small percentage. For example, in China VAT and corporate taxes together account for 48.3% of the government's tax income, which is much higher than in the US, which is 18.3%, or 32.2%, the average for OECD countries. By comparison, personal income tax accounts for 34.7% of the US government's tax receipts. That number is 4.7% in China, which is lower than not only the US, but also the average for OECD countries, which is 24.6%.

在“十二五”期间，财政体系在促进经济增长的同时，需要考虑预防和治理经济波动、改善收入分配以及预防和治理环境污染等。这三个新因素使得我们在考虑政府收入规模、收入结构、支出规模和支出结构，以及中央和地方之间的财政关系上有了新的权衡。“十二五”期间的财政体制改革需要在多目标之下进行权衡。

During the period covered by the 12th Five-year Economic Plan, the fiscal system is charged with

the task of not only promoting economic growth but also taking preventive measures in anticipation for economic turbulence, as well as mitigating income inequality and preventing and redressing environmental pollution. These last three objectives change our calculation when considering the size and the composition of both the government's income and its layout, and the fiscal relationship between the central and the local governments.

在新的环境下，财政体制的职能要发生较大的变化。从单一促进经济增长为核心，向兼顾经济增长、经济波动、收入分配以及污染治理等多重任务转变，财政体制在“十二五”期间在总量和结构上都需要做出重大调整。

In this new environment, the function of the fiscal system will likely undergo considerable changes. The centrality of the goal of promoting economic growth will gradually give way to an approach in which economic growth, prevention against economic turbulence, income redistribution and pollution management and other objectives all receive their share of policy attention. During the 12th five-year plan period, the fiscal system will be subject to significant adjustment with respect both to overall size and composition.

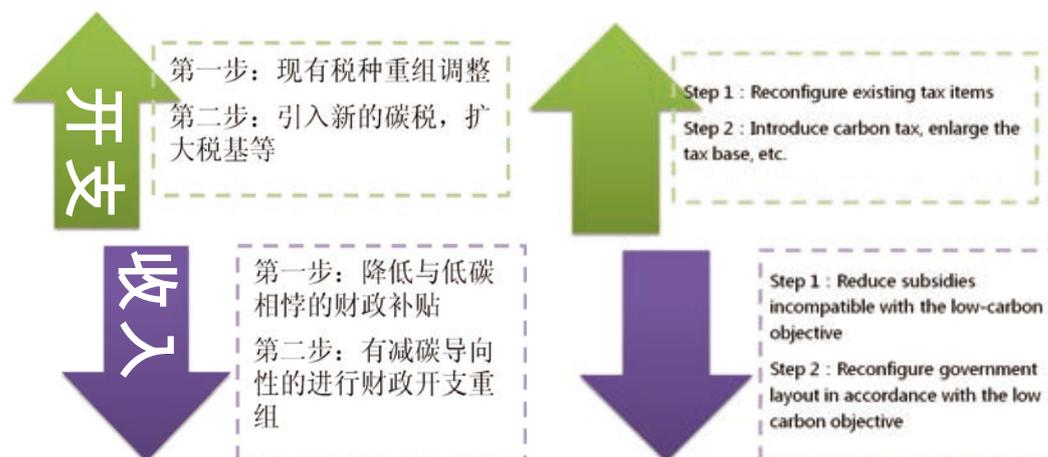
#### 四、碳税原理和国际经验

#### IV. The Underlying rationale of the Carbon Tax and International Experience

观察发达国家，特别是欧盟 1990 年后的绿色税收改革，可以发现如下改革路径：

An examination of what developed countries have gone through would reveal that, especially after the green tax reform of 1990 in the EU, the following several paths can be discerned.

低碳财政改革路径 Low Carbon Fiscal Reform Roadmap



大部分征收碳税或能源税的国家都采取通用的做法可以为我们所借鉴：

We can borrow from other countries' experiences with carbon tax and energy tax, which have tended to have the following features in common:

- (1) 碳税只是减排政策包裹中的一种工具
- (1) Carbon tax is but one of many instruments in a package of mitigation measures

(2) 是财政政策的一部分，替代对其他能源的税收，并且减少传统税种带来的扭曲性影响（劳动力和资本）

(2) It is a part of the fiscal policy, and substitutes for other types of energy taxes, and mitigates the various kinds of distorting effects traditional taxes can have on labor and capital

(3) 采取逐步采用的方法（phased-in），并考虑通货膨胀根据时间调整

(3) The adoption of the carbon tax is done through gradual phase-in, open to adjustment to accommodate inflation

(4) 对能源密集行业和国际竞争激烈的行业给予免税额及免责条款

(4) Offer of tax relief or liability exemption to highly energy-intensive as well as internationally competitive industries

欧洲各国引入碳税和能源税的经验对于我国制定合理的碳税制度至关重要，碳税的税率，征收部门，其他税种的改革空间，一些部门的特别税条款等等，解决这些矛盾和冲突才能最小化碳税征收的成本，最大化其收益。

The experiences of European countries in their implementation of the carbon tax and energy tax are of great significance to our own efforts to design a sensible and rational carbon tax system. The right tax rate, the identity of the government agency to collect it, reform of other types of taxes, and special tax privileges enjoyed by some agencies and industries must all be properly considered so as to minimize the cost of the carbon tax while maximizing its benefits.

## 五、减排政策设计原则

### V. Principles Governing the Design of Mitigation Policies.

(1) 收入中性原则 The Principle of Revenue Neutrality

税收中性（revenue neutral）即为总税赋不变，当引入碳税或能源税的同时，减少其他税种的税率，或将税收补贴到一些特定的部门。

Revenue neutrality refers to the fact that total tax revenue remains constant, that is, while the carbon or energy taxes are introduced, the rates of other types of taxes are reduced accordingly, or alternatively, receipts from the new taxes would be applied towards certain special departments or sectors in the form of subsidy.

(2) 竞争力影响中性原则 The principle of neutrality with respect to competitiveness

征收碳税的一个关键性的问题就是它可能会对企业的国际竞争力造成一定的影响，这也是碳税和其他环境税实施的一个巨大的阻力，而国家低碳政策越显性化，也就是说，越采用这种直接征碳税的方式，遇到的企业阻力就会越大。

One of the key issues concerning the carbon tax is the likelihood that it would hurt businesses in international competition. This is the very reason the carbon tax and other environmental taxes have faced enormous odds in their passage. Moreover, the more blatant a country's mitigation policies become, that is, the more reliant a country becomes on such direct measures as taxation, the more opposition from businesses there will be.

碳税对国际竞争力的影响是由很多因素决定的，例如，碳税征收的环节，再例如，国际间的合作即多个国家同时实行相同的方法，这样一来，国际竞争力相对不变。

The impact of the carbon tax on the international competitiveness of businesses is a function of many a factor, including the exact location in the economic materials flow where the tax is collected. But also, should many countries agree to implement the same measure simultaneously, then this implement in any country would leave their relative competitiveness unchanged.

### (3) 分配效应中性原则 The Principle of Income Distribution Neutrality

除了考虑低收入人群的影响外，碳税作为一种对能源征收的税种，同样也会对经济部门中的企业和能源开采和供应商有影响。碳税收入的重新分配十分重要，影响到碳税能否真正实施，甚至提高碳税的效率。

Besides the low-income populations, the interests of businesses in the energy source extraction and supply industries would also be affected by the carbon tax, which is a type of energy tax. Receipts from this tax must be appropriately allocated, for this is critical to its sustained implementation, and even to increasing its effectiveness.

## 六、中国减排政策设计

### VI. The Design of China's Mitigation Policies

#### (1) 中国碳税现状 Current Status of the Carbon Tax in China

根据上述碳税的定义，中国的碳税包括交通燃料，还包括煤炭，天然气的增值税和资源税，以及液化石油等的增值税，另外，还有各产业的间接碳税。

On the basis of the above definition of carbon tax, Chinese taxes that fit it include transportation fuel, VAT for coal and natural gas, and resource tax, as well as VAT for liquefied gas. In addition, there are also other forms of indirect carbon taxes paid by corporations.

表：中国碳税情况  
Table1. Current Status of China's Carbon Taxes

Item			
直接碳税 Direct Carbon Tax	税基 Tax Base	税种 Tax Type	税率 Tax Rate
	柴油 Diesel fuel	消费税 Consumption Tax	0.3 元/升 RMB 0.3/liter
		增值税 VAT	17%
	无铅汽油 Unleaded gasoline	消费税 Consumption Tax	0.2 元/升 RMB 0.2/liter
		增值税 VAT	17%
	含铅汽油 Leaded gasoline	消费税 Consumption Tax	0.5 元/升 RMB 0.5/liter
		增值税 VAT	17%
	轻质油 Light oil	消费税 Consumption Tax	0.2 元/升 RMB 0.2/liter
		增值税 VAT	17%
	煤炭 Coal	增值税 VAT	27% (13%)
资源税 Resource Tax			
焦炭 Coke	增值税 VAT	17%	
天然气 Natural gas	增值税 VAT	13%	

		资源税 Resource Tax		
	航空煤油 Jet fuel	增值税 VAT	免征 Exempt	
	石油液化气 Liquefied petroleum gas	增值税 VAT	13%	
	煤气 Gas	增值税 VAT	13%	
总计 Total	200.77 亿人民币 RMB 20.077billion			
间接碳税 Indirect Carbon Tax	发电 Electricity Generation	增值税 VAT	821.73	
	供电 Electricity Supply	增值税 VAT	737.93	
	购买汽车 Car purchase	车辆购置费 Vehicle purchase fee		876.88
		增值税 VAT		372.84
		消费税 Consumption Tax		332.04
	购买游艇 Yacht purchase	增值税 VAT		
		消费税 Consumption Tax		
	购买摩托车 Motorcycle purchase	增值税 VAT		25.56
消费税 Consumption Tax			15.92	
使用交通工具 The use of transport vehicle	车船税		68.16	

## (2) 足够强度的减排效果 Adequate mitigation effects

适宜的税率。税率太小，不能达到低碳减排的目标，而税率过大，则对市场的扭曲程度太过严重，对某些产业或地区将造成致命的打击；

Appropriate tax rate is important. When the rate is too low, it would be insufficient for achieving emissions reduction targets, but if it is too high, it would excessively distort the market, dealing a fatal blow to certain regions and industries.

精细的税种设计。要考虑的问题包括，对能源物质征税，是应该征收从量税还是从价税或者复合征收？对生产环节还是消费环节征税可以起到最好的减排效果？

Careful selection of the taxed items. Here the issues to be considered include, so far as taxing energy sources is concerned, whether the rate should be based on quantity used or price paid, and whether it is production or consumption that should be taxed if optimal effect is to be obtained.

## (3) 在保证减碳力度的同时，最小化税收成本 Minimization of the cost of the carbon tax while ensure adequate mitigation effects

税收成本主要包括推行成本与实际征收成本。推行成本即在新的税种或税制改革之前，遇到的各方阻力，显而易见，由于低碳税制改革存在降低企业竞争力以及影响收入分配的潜在后果与负面影响，其推行必然会受到利益相关方的反对。

The cost of tax collection mostly includes the cost of advocacy and the cost of actual collection. The cost of advocacy has mainly to do with what it takes to overcome oppositions before it is actually passed and goes into effect. Obviously, because carbon tax reform can potential detract from the competitiveness of businesses and has consequences for income distribution,

stakeholders would certainly try to block it.

实际征收成本即在制定征收税目的环节中，产生的成本。一般而言，在其他税收不变的情况下，新设立一种税目，会产生比较大的税收成本，因此，要解决这个问题，主要应该考虑以下的几个因素：

The actual cost of collecting the tax includes the various costs associated with the identification and design of the tax items. Generally speaking, when other taxes remain intact, the introduction of a new tax item tends to entail a large tax collection cost. Therefore, to address this problem, the following issues must be given due consideration:

(a) 税制设计，即在税种选择时候，可以选择已有的税种，进行调整，这样一来，征收成本较低，或者在新设置税目扩大税基的情况下，对原有的税费进行合并简化，以从整体上控制税收成本过大；

(a) When selecting the types of items to be taxes, we may opt for categories that already exist, and make necessary adjustment in the specific items in that category to become taxable. This way, the cost of collection is kept low. Alternatively, if the introduction of the new tax item involves increase of the tax base, some recombination, reconfiguration and simplification of preexisting taxes might be undertaken in order to keep the total cost of tax collection from burgeoning.

(b) 合适的税基选择。

(b) Proper choice of tax base.

在税种设计的时候，要以尽可能小的成本对政府行为进行监督，保证专款专用。

When the types of taxes are considered, government conduct must be subject to monitoring at minimal cost. This is to prevent misuse of special-purpose funds.

(4) 改革现有补贴等财政开支方式。好的保持企业竞争力且保护环境的方法，是国家对某些产业或困难人群进行定向补贴。

(4) Reform of the current system of government subsidy. A good way of maintaining the competitiveness of businesses and to protect the environment at the same time would be through appropriate subsidization targeting certain sectors or needy populations.

## 七、减排政策方案及比较

### VII. Comparison among different Mitigation Policy Schemes

(1) 各种方案内容及优劣比较 Content, advantages and disadvantages of the different policy schemes

Table2. Different schemes and their key content

方案 Schemes	内容 Content
1	直接提高消费税率，对于化石燃料在原有的税率基础上，提高税率 Directly increase the consumption tax rate, and increase the tax rate for fossil fuels
2	改革增值税体系 VAT reform



平稳增长、改善收入分配和促进污染治理多个目标。因此，我们有必要从包容性增长的框架中对上述各个方案进行评估。

Carbon dioxide emissions reduction policies do not stand in isolation from other policies. Their evaluation must take into account not just the proposal's projected mitigation outcome, its collateral benefits and impact on GDP, but also its implications for the other policy objectives policy-makers may also have. China has gone beyond the single-minded pursuit of economic growth and has entered a new era in which a plurality of national objectives, including sustained growth, equitable income distribution and pollution abatement are pursued simultaneously. Therefore, it is necessary to evaluate each of the above schemes from the point of view of the inclusive growth framework.

上述四个方案各有优劣。例如，若从促进经济增长、减缓经济波动的角度看，增值税重组的方案效果最好。但是，该方案治理污染的效果又是四个方案中效果最差的。从减少二氧化碳排放的角度看，碳交易方案效果最好。但是该方案在其他三个目标方面，效果又是最差的。尽管在治理污染的效果不是最优的，方案 1 在其他三个指标方面却又有很好的表现。例如，除了在促进经济增长以及减缓经济波动排名第二之外，方案 1 是为当前收入分配改革提供了新的政策工具。不仅如此，所有方案中，方案 1 是从操作的角度看，最为可行。

Each of the above-mentioned schemes has both advantages and disadvantages. For example, restructuring of VAT is best if one's primary interests are to promote economic growth and to check economic fluctuation. However, it is also the worst one in terms of its effects on pollution abatement. In terms of carbon dioxide reduction, cap-and-trade is the best one, but it also comes in last in terms of the other three policy objectives. Although Scheme 1 is not the optimal choice in terms of pollution abatement, it does quite well by the other three criteria. For example, leaving aside the fact that Scheme 1 ranks no. 2 in its effect on promoting economic growth and reducing economic fluctuation, it offers a new policy instrument for income distribution reform. Moreover, of all four schemes, Scheme 1 is the most feasible.

综合来说，我们认为方案 1，即重组消费税的方案是最为可取的。

In general, our research team deems Scheme 1, the restructuring of consumption tax, the most feasible approach.

For full research report, please contact [changcethinktank@gmail.com](mailto:changcethinktank@gmail.com).