

**Environmental Economics**  
**— Using Carbon Tax to Reduce CO<sub>2</sub> in Asia —**

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## **II . Introduction**

In recent years, countermeasures against global warming are being discussed at the meetings of the Conference of the Parties (COP) and the Intergovernmental Panel on Climate Change. But the situation has not improved. So we propose using the carbon tax to reduce CO<sub>2</sub> in Asia. We suggest introducing the carbon tax in each region in Asia in order to counter global warming, in this way we hope to reduce the emissions of CO<sub>2</sub>, which is responsible for the culprit of global warming.

### **III. Current Condition**

#### **1. Economic Growth and Limit of the Earth**

If the world continues its economic growth based on mass production and mass consumption as it has done until now, the earth will reach its limit and collapse. So we must review our society of mass production and mass consumption and create a more sustainable society. The scale of the global economy has increased more than sevenfold in the past fifty years, from 5.3 trillion dollars to 36.5 trillion dollars. For everyone in the world to maintain today's economic level, 2.2 hectares of land per person are needed. The United States has the highest nominal Gross Domestic Product (GDP) in the world. For the American people to maintain today's standard of living, 9.6 hectares of land per person are needed. If we calculate the ecological footprint, we are already consuming 1.3 times the area of the earth. If everyone in the world lives like an American, we will need 5.3 times the area of the earth.

#### **2. Global Warming—Climate Change and CO<sub>2</sub> Emissions—**

##### **i . Scientific Knowledge of Global Warming**

There is no doubt about global warming. The rising temperatures of the atmosphere and the oceans, the melting of ice and snow in many areas, and the rise in sea levels around the world all attest to this. The average rise in global temperature was 0.74

degrees in the one hundred years from 1906 to 2005. In the last fifty years, temperature has risen at a rate twice as fast as in the past 100 years. The average rise in sea levels was 17 centimeters in the 100 years of the 20th century. It rose 1.8 millimeter per year from 1961 to 2003. It rose 3.1 millimeters per year from 1993 to 2003, rising at a much faster pace. The area of sea ice in the Arctic is decreasing by 2.7% every 10 years. Summertime ice is decreasing even more, by 7.4%. The ice sheet in Greenland and the Antarctic decreased, contributing to the rise in sea levels from 1933 to 2003.

## ii . Artificial Greenhouse Gases

The rise in the global temperature since the mid-20th century has been caused by greenhouse gases. Global warming induced by CO<sub>2</sub> is responsible for 60% of the global warming after the Industrial Revolution. In Japan, the ratio of CO<sub>2</sub> in greenhouse gases is very high at about 95%.

## iii . CO<sub>2</sub> Emissions in 2007

This graph is based on the latest statistics published by IEA in September 2009. The total amount of CO<sub>2</sub> emissions in the world is about 288 (290) billion tons.

China is responsible for about 61 billion tons, or 21%. The United States is responsible for about 57 billion tons, or 20%. Japan

is responsible for about 12 billion tons, or 4.2%

So China is now the biggest CO2 emitter in the world.

### CO2 Emissions '07

rank	name	emissions	(%)
1	China	5973	20.7
2	U.S.A.	5792	20.1
3	Russia	1536	5.3
4	India	1357	4.7
5	Japan	1220	4.2
6	Germany	796	2.7
7	Britain	532	1.8
8	Canada	529	1.8
9	Korea	476	1.7
10	Mexico	449	1.6

【IEA】

CO2 conversion in million ton

### 3. The Reason Why Reducing CO2 Is Difficult

#### i . Case of Japan

To realize the reduction of CO2 emissions, the energy suppliers must work on a variety of technology development in the field of new energy resources and energy conservation. The users of energy must also take more energy-saving measures and review their lifestyles. But we must not put too much burden on companies or restrict their economic activities. If we do, the amount of greenhouse gas emissions may be reduced, but, at the same time, it

may weaken the industrial base and companies may not be able to secure enough funds to implement measures to fight global warming.

## ii . Case of China

(1) There is a big economic gap between the rich and poor within China, so economic development and improvement of living standards are top-priority issues for China. Therefore, China needs to promote industrialization.

(2) China's per capita CO<sub>2</sub> emissions and per capita CO<sub>2</sub> cumulative emissions are both smaller than those of industrialized countries of the West.

(3) The trend of international division of labor and the shift of manufacturing industries to China mean China is pressured to accept the burden of CO<sub>2</sub> emissions.

## 4. Issue

In Asia, CO<sub>2</sub> emissions of industrially-developed nations, including Japan and Korea, are increasing. CO<sub>2</sub> emissions of developing countries, such as China and India, which do not have reduction targets, are also rapidly increasing.

## **IV. Solution**

### **1. Green Tax—The Introduction of a Carbon Tax**

#### **i . Green Tax—The Introduction of a Carbon Tax**

Green tax is considered effective in reducing CO<sub>2</sub>, which leads to global warming. Now, we propose the introduction of a carbon tax to help improve the environment. A carbon tax is a system that imposes a tax on fossil fuels according to their carbon content. It is expected to limit energy demand by raising the price of products using fossil fuels. As a result, it is effective in reducing CO<sub>2</sub> emissions.

All member nations of the Organization for Economic Cooperation and Development (OECD) have introduced some form of green tax. A database managed by the OECD and the Environmental Protection Agency (EPA) mentions 375 green taxes and 250 fees and taxes implemented in OECD countries. As of 2006, eight countries had introduced the carbon tax: Finland, Norway, Sweden, Denmark, the Netherlands, Britain, Germany, and Italy. France has announced that it, too, will introduce a carbon tax in 2010

#### **ii . Effects of a Carbon Tax**

A carbon tax is a system that imposes a tax on fossil fuels according to their carbon content. It is expected to limit energy demand by raising the price of products using fossil fuels. As a



result, it is effective in reducing CO2 emissions.

The carbon tax not only reduces CO2 emissions, but we can expect it to have a (1) price incentive effect by promoting the purchase of energy-saving devices, (2) revenue effect, and (3) announcement effect by the powerful message of introducing a green tax. Introducing a carbon tax will encourage people to select fuel-efficient cars and energy-saving devices when they buy a new car or new consumer electronics. By raising the price of products using fossil fuels, the carbon tax will limit the demand for these products so that companies and persons who tried to reduce CO2 will benefit in the end, and those who did not make the effort will be burdened with a higher tax. As we have seen, the carbon tax is a rational system that rewards the effort involved in environmental conservation.

## **2. Case Study**

### **Carbon Tax in Sweden**

In Sweden, they impose a tax on wholesale agents and manufacturers of fuels designated by the EU Mineral Oil Directive (gasoline, diesel fuel, kerosene, LPG, and other petroleum products for heating etc. excluding lubricants and grease). In the case of other kinds of fuel (natural gas, coal, and peat, etc.), they impose a tax on manufacturers and processors including wholesale agents.

Sweden succeeded in reducing CO<sub>2</sub> emissions by an average of 19 percent (8 million tCO<sub>2</sub>) in heating, industries, housing, and the business sector from 1987 to 1994. About 60 percent of the reduction in emissions was due to the introduction of the carbon tax.

The carbon tax also had the following effects.

- (1) The carbon tax increased consumption.
- (2) The carbon tax provided new revenue to compensate for the loss of sales.
- (3) The carbon tax created economic growth.
- (4) The carbon tax instilled the idea that CO<sub>2</sub> is bad.

So it is clear that the carbon tax has a major effect in reducing CO<sub>2</sub> emissions, and we can say that introducing this system in Asia will also be effective.

### **3. Carbon Tax in Asia**

#### **i . Analyzing the Effects in Japan**

Because of this, we want to try to apply the carbon tax to Asia on the basis of past achievements in Europe. We will first try to analyze the effect of introducing the carbon tax in Japan, one of the developed countries of Asia.

Taxable carbon will be CO<sub>2</sub> from fossil fuels (coal, petroleum, natural gas, etc.). In Japan, if we set the tax rate as 6,000 to 15,000 yen per ton of carbon (which comes out to about 4 to 10 yen per liter

of gasoline), the carbon tax revenue will be about 2 to 5 trillion yen in total.

What to tax and what to exempt from this tax needs to be examined carefully, but even so, we can say that the carbon tax is highly effective in reducing CO2 emissions.

## ii . International Integration of Environmental Policy

Globalization is now affecting environmental problems as well as the economy. In order to introduce the carbon tax in Asia, we must consider at least two problems: (1) the problem of developing countries and (2) the possible weakening of international competitive power.

So we propose forming an Asian alliance like the EU and introduce the carbon tax by agreeing on the tax rate and taxation base within the alliance. It means each country does not tackle environment policies separately, but implement environmental policies regionally or even globally.

ACIST, Association of Citizens for International Solidarity Taxes, is now actively trying to introduce the international solidarity tax. The international solidarity tax is one of the mechanisms for generating funds for global problems such as climate change and poverty. The idea is to tax economic activities carried out across national borders and to use the tax revenue for

supporting developing countries.

In order for us to tackle global problems such as global warming, we must introduce a system like the international solidarity tax.

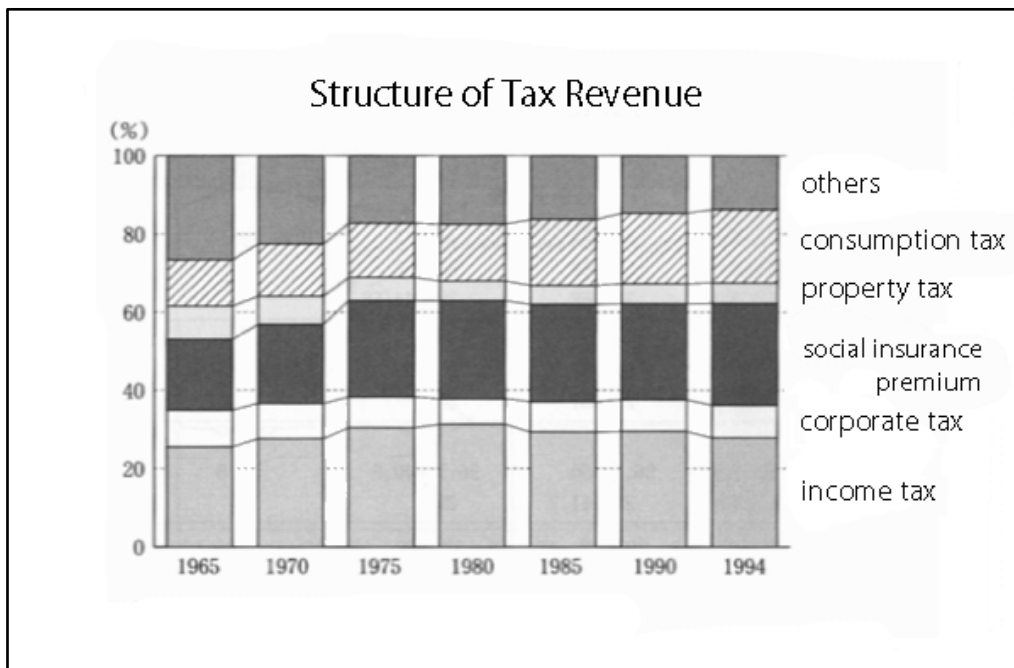
If this system is introduced across Asia, it will promote the transfer of technologies from Japan as a developed country to China as a developing country. Therefore, it will help to moderate the vicious cycle of economic activity intended to lift people out of poverty causing environmental disruption around those people. By adopting this system, we can also grasp the CO2 emissions of some developing countries for which we do not have information now. If only Japan introduces the carbon tax, we are worried that the higher energy cost will drive up the price of our domestic products, and Japan will not be able to compete in the international market. But if we can form an alliance and implement this policy as an alliance, loss of competitive power will not pose such a problem.

#### **4. How to Use the Tax Revenue**

In Sweden, the tax revenue is used for decreasing the income tax. In Germany, the revenue from the environmental tax is used for general purposes. In Japan, we should return the revenue to the companies by reducing their corporate tax. With the plan under consideration until now, we cannot expect active participation by

companies. To reduce the obstacles to the introduction of the carbon tax, we propose reviewing how to use the tax revenue.

When we introduce the carbon tax, it is important to consider how to use the tax revenue. We propose using the tax revenue to give companies tax exemption on their income tax and corporate tax. We assume that companies will be against the introduction of the carbon tax because it will mean a tax increase for them. But if we adopt this system, we can expect companies to support this carbon tax because there is merit for them. When we introduce the carbon tax in Asia, we should return the revenue to the companies. Using it only to fight global warming will make the carbon tax a special tax and a tax increase. If we return the revenue to the companies, we can continue the economic development and, at the same time, we can reduce the emissions of CO<sub>2</sub>.



## **V. Conclusion**

The environment continues to deteriorate even as we are speaking now. So we must reduce CO<sub>2</sub>, which is causing global warming. In order to do so, we examined the possibility of a green tax, the carbon tax. When we introduce the carbon tax in Asia, it is important to consider how to use the tax revenue.

When we introduce the carbon tax in Asia, we propose using the tax revenue as part of the general revenue. If we use the revenue only for national measures to counter global warming and for companies that support those measures, it becomes a special tax and a tax increase. We should not treat the carbon tax revenue as special revenue. We should use it to help companies in need. That is why we propose using the carbon tax as general revenue.

To reduce CO<sub>2</sub>, which is causing global warming, we should introduce an effective and efficient environment policy, that is, the carbon tax, in Asia. This requires active intervention by governments.

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