



Roadmap of Reconciling Environment, Resources and Economy in China

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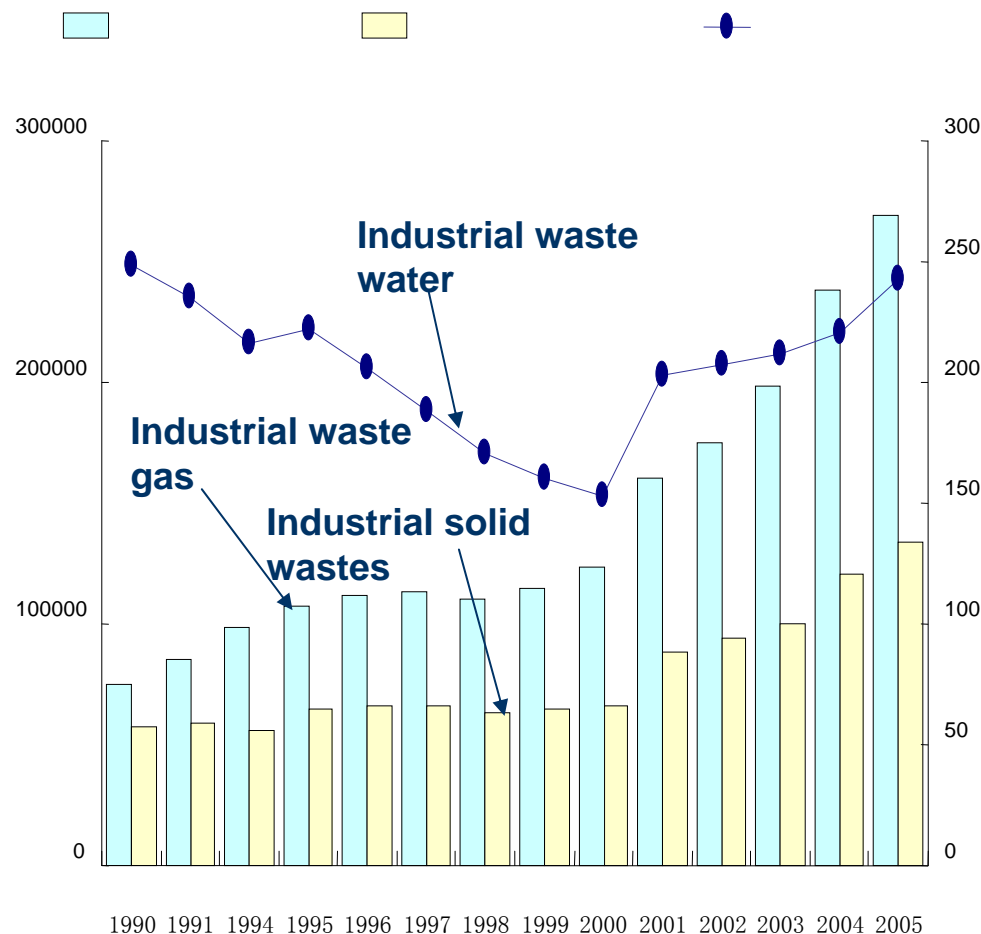
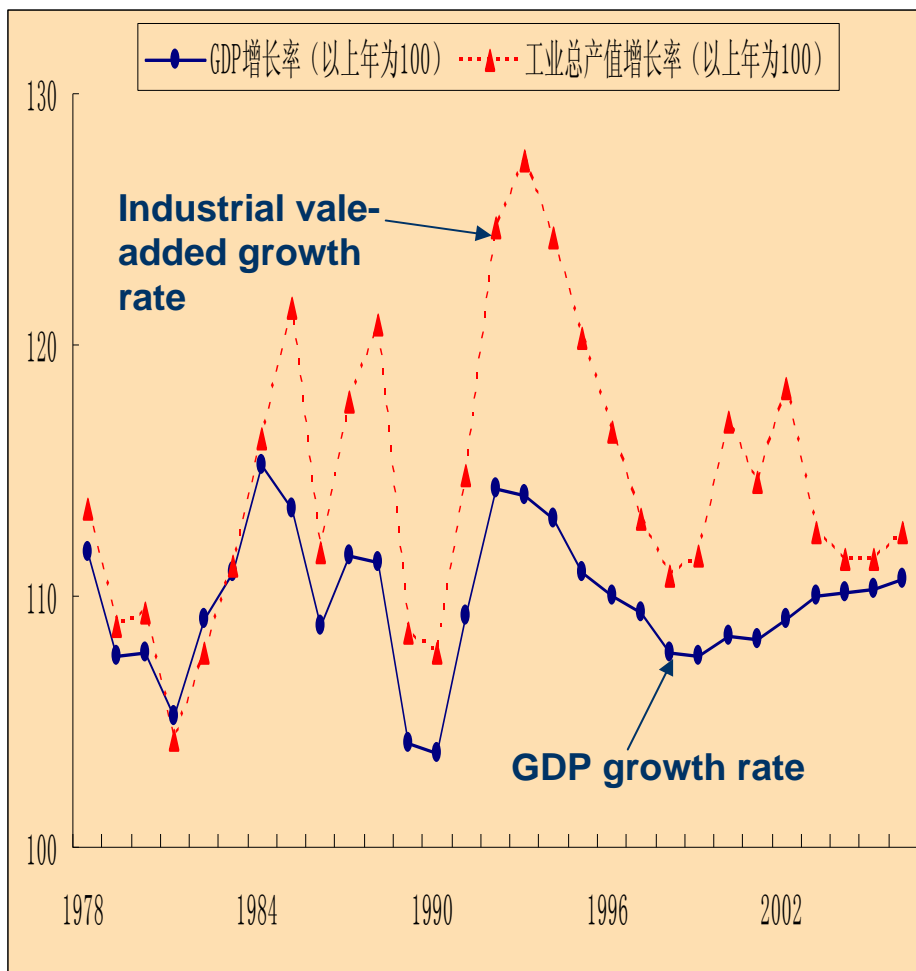
- 1. Features of interaction among environment, resources and economy**
- 2. Challenges in the context of globalization**
- 3. Roadmap of reconciling**
- 4. Possibly decoupling?**



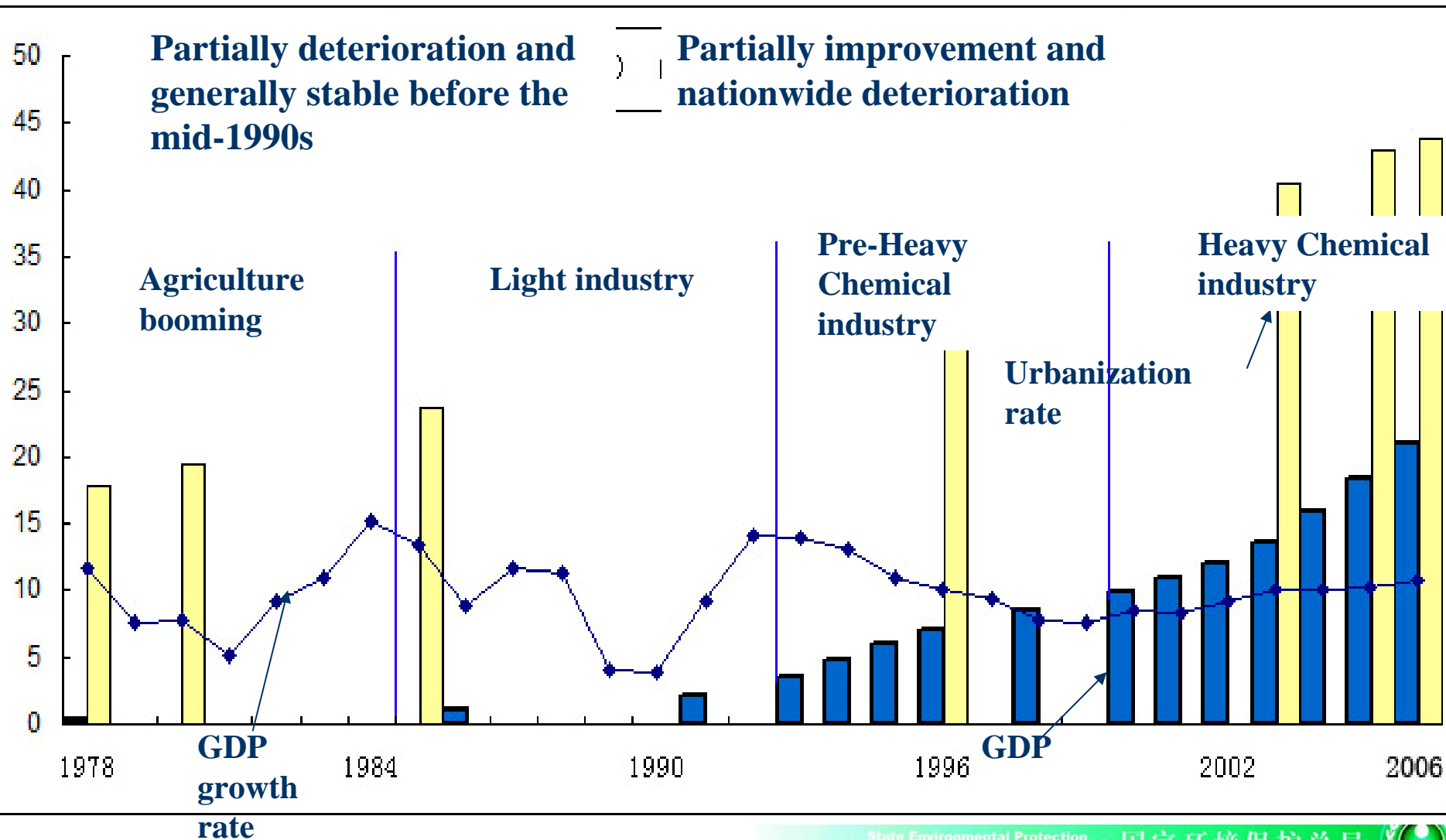
1. Environment, Resources and Economy

---too much costs for the growth

A. Enormous pollutant emission has been following with rapid economic expansion



B. Industrialization process has determined the features of resources consumption and pollution



C. Compressed industrialization process has brought about compound environmental problems

- 1) Industrialized countries, 150-200 years since the late half of 18th century to the late of 1980s;**
- 2) Japan, 100 years from Meiji Revolution to the late 1980s;**
- 3) Asian new industrializing countries and regions, 50 years in the 20th century;**
- 4) China, 50 years from the beginning of 1980s to 2020; or 70 years from 1949 to 2020.**
- 5) Attacked different environmental problems occurring in different stages of development, step by step;**
- 6) In contrast, China is facing and struggling against all environmental problems at same time.**

D. Imbalance of economic development has led to the imbalance tendency of environment problems



E. Poor eco-efficiency of economic performance exerts big burden on environment

High capital inputs

High resources consumption

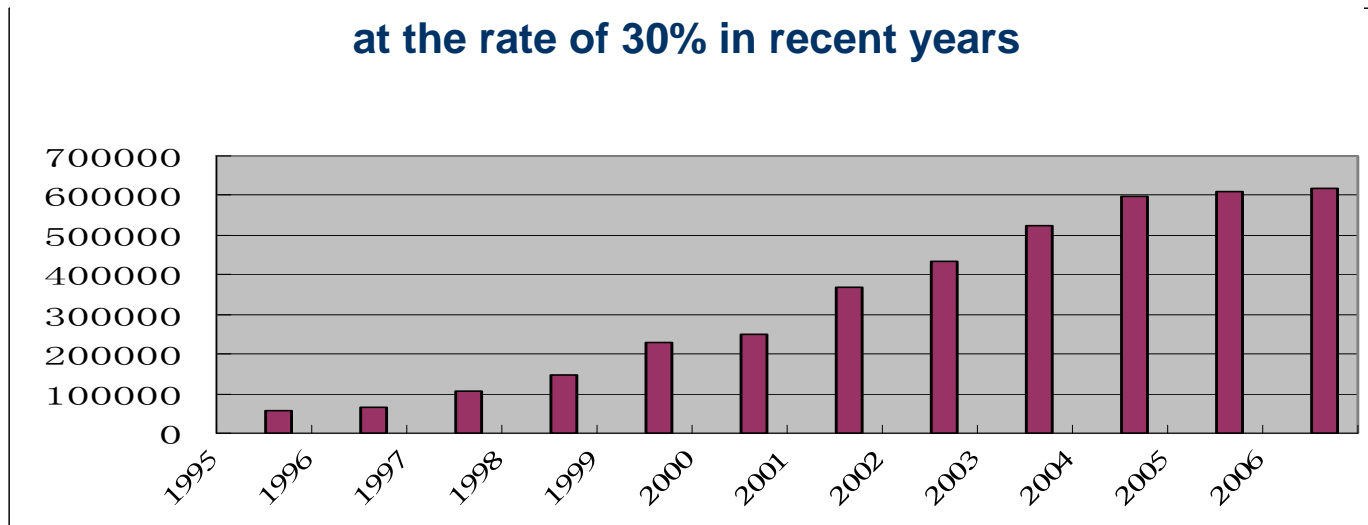
High pollution intensity

F. Heavy pollution and severe ecological degradation leads to big economic losses

- **From 1983 to 2004, 8 research institutes and organizations have valued the economic loss caused by some kind of pollution such air and water:**
 - **from 2.1% of GDP (East-west study center, 1992) to 9.7% of GDP (WB, 1995);**
 - **In 2004, 3.05% of GDP, SEPA;**
- **4 research institutes and organizations have valued the economic loss caused by ecological damages:**
 - **from 5.4% to 12.47% of GDP**

G. Heavy pollution and severe ecological degradation exerts big negative impacts on the public

The number of complaints about pollution related has increased at the rate of 30% in recent years



H. Moreover, economic growth can not sustain any longer if following the current pattern of environment, resources and economy

Year	Population	GDP per capita	Urbanization level
2000	1.2 billion	800US\$	37%
2020	1.5 billion	3000US\$	55%

$$I = PAT$$

2000 as base year, given environmental impacts of economic development as 1	Scenario 1: no changes in eco-efficiency of economy	Scenario 2: maintain environmental situation in 2000	Scenario 3: the impact be reduced by a half, against that of 2000
2020	Impact: 4-5	Eco-efficiency needs a increase by 4-5 times	Eco-efficiency needs a increase by 8-10 times

2. New challenges in the context of globalization

A. Environmental impacts of “World Manufacture Center”

- **World Bank studies: atmosphere and water pollutants from 7 sectors, including steel, oil refining, food, chemical, paper, coloured metal and cement, account for 90 percentage of the total emissions and discharges from the 28 industrial sectors globally,**
- **This percentage had never changed obviously in 30 years from 1960 to 1990,**
- **The only change is movement from one place to another place**



B. Trade in surplus and environment in deficit

- **CCICED: Embodied energy in 2006 net exported goods reached to 668 million tec, 27.6% of the primary energy consumption;**
- **Tyndall Center for Climate Change Research: Net Chinese exports emitted 1.1 billion tons of carbon dioxide and accounted for 23 percent of Chinese emission in 2004.**
- **EIA, 2007: 28% of the total energy consumption, and 34% of the total GHG emission.**
- **In 2005, 5.5 million tons of SO₂ emission from net exports-- 39% of total emission, and 61.5 billion tone of water– 12% of total volume of water consumed by industrial and agricultural sectors**



C. Trans-boundary hazard wastes

news paper: 80% of E-wastes of the world is moved to the Asian countries, and 90% of which is coming to China

In a word, China has to fundamentally renew its strategies to shape the model of environment, resources and economic growth from both domestic and global perspectives



3. New Roadmap of Reconciling environment, resources and economy



General Picture

The top guidelines	Long-term goal	Pathways	Medium-term targets	Actions
<p>Scientific Outlook on Development: <i>takes development as its essence, putting people first as its core, comprehensive, balanced and sustainable development as its basic requirement, and overall consideration as its fundamental approach.</i></p>	<ul style="list-style-type: none"> ● Domestic: Harmonious Society-- <i>harmony among people; harmony between human and the nature</i> ● Global: Harmonious World 	<ul style="list-style-type: none"> ● Domestic: <i>new industrialization road--technology-oriented, high economic benefits, low resource use, low pollution and full use of human resources.</i> ● Global: <i>peaceful development road—cooperation, win-win and peaceful</i> 	<p>All-round better-off society:</p> <ul style="list-style-type: none"> ● <i>Quadruple d GDP per capita by 2020;</i> ● <i>Increase in sustainable ability</i> ● <i>.....</i> 	<ul style="list-style-type: none"> ● Creation of Innovative country; ● Changing economic growth pattern; ● Development zoning nationwide; ● New rural construction; ● <i>.....</i>



Resource and Environmental Aspects

Social consensus-building	Conservation culture/eco-civilization
Long-term goal	Resource-saving and environmental-friendly society
pathways	<ul style="list-style-type: none">● Sound and fast development—<i>resource-saving and environmental protection become preconditions to determine the growth rate of GDP</i>● Three shifts in relationship between environment and economy● Help each other, cooperatively promotion, and jointly protection
Actions	<ul style="list-style-type: none">● Energy-saving and pollution abatement with two legal-bounding targets● Circular economy● National program for climate change● Economic policies● SEPA to MEP●

Energy saving and pollutant abatement in the 11th 5-years period

Type	Indicators(22)	Year 2005	Year 2010	Annual Growth Rate (%)	Properties
Economic Growth(2)	GDP (Trillion Yuan)	18.2	26.1	7.5	expected
	Per capita GDP (Yuan)	13985	19270	6.6	expected
Economic Structure (5)	Proportion of Added Value of Service Industry (%)	40.3	43.3	[3]	expected
	Proportion of Service Industry Employment (%)	31.3	35.3	[4]	expected
	Proportion of Expenses for Research, Experiment and Development to GDP (%)	1.3	2	[0.7]	expected
	Urbanization Rate	43	47	[4]	expected
Population Resource Environment (8)	Total National Population (10,000 persons)	130756	136000	< 8‰	mandatory
	Decrease of Energy Consumption per unit of GDP (%)			[20]	mandatory
	Reduction of Water Consumption per unit of Industrial Added Value (%)			[30]	mandatory
	Coefficient of Effective Use of Agricultural Irrigation Water	0.45	0.5	[0.05]	Expected
	Comprehensive Use Ratio of Industrial Solid Waste (%)	55.8	60	[4.2]	Expected
	Area of Reserved Cultivated Land (100million hectares)	1.22	1.2	-0.3	mandatory
	Decrease of Major Pollutant Emissions (%)			[10]	mandatory
Forest Acreage (%)	18.2	20	[1.8]	mandatory	

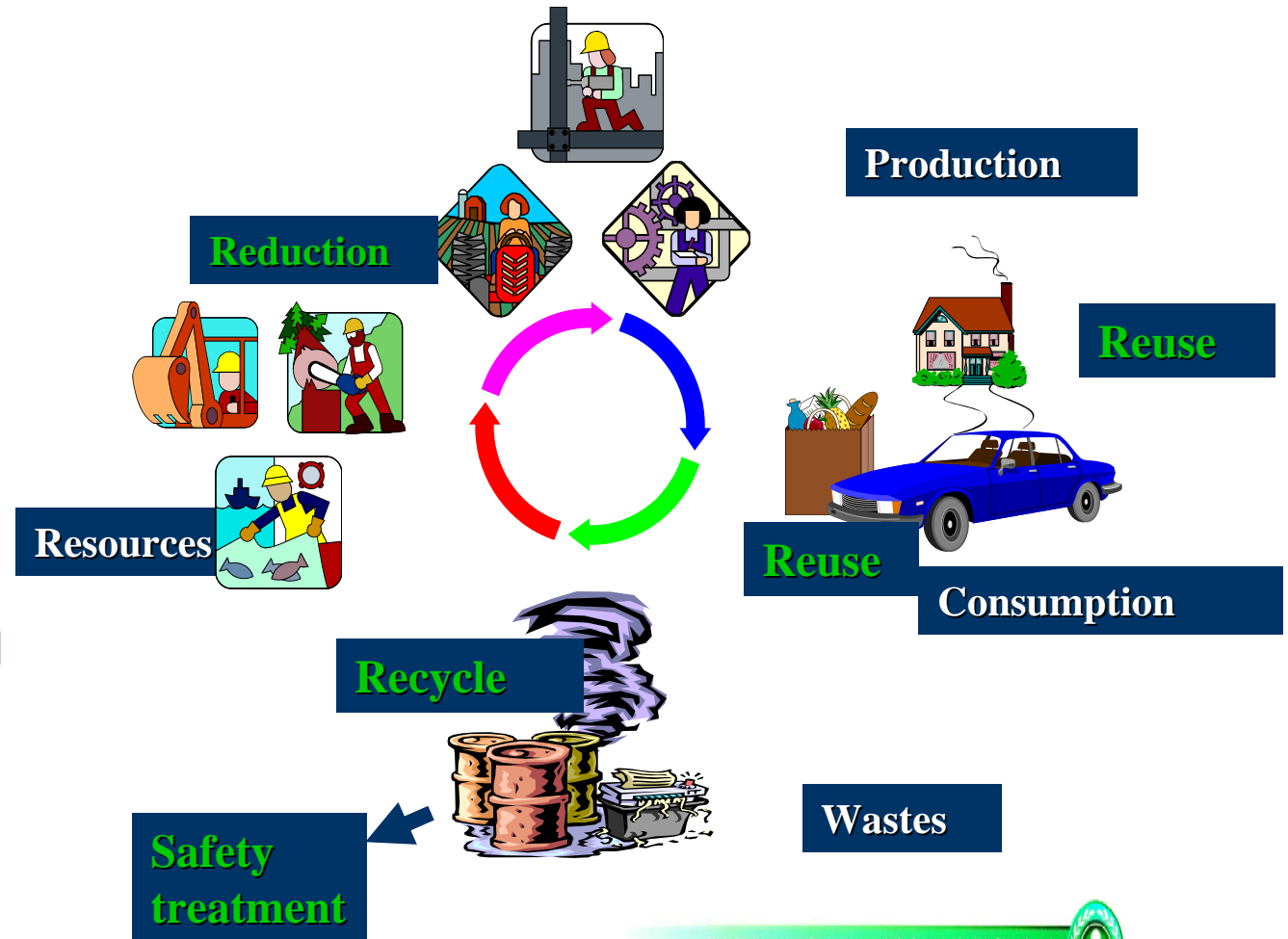
Public Service People's Life (8)	Average National Education Span (year)	8.5	9	[0.5]	Expected
	Number of Persons Covered by Urban Basic Pension Insurance (100 million)	1.74	2.23	5.1	mandatory
	Coverage Ratio of New Rural Cooperative Medical Service (%)	23.5	> 80	> [56.6]	mandatory
	Increase of Urban Employment every Five Years (10,000 persons)			[4500]	Expected
	Diversion of Agricultural Labors every Five Years (10,000 persons)			[4500]	Expected
	Urban Unemployment Registration Ratio (%)	4.2	5		Expected
	Urban per capita Disposable Income (Yuan)	10493	13390	5	Expected
	Rural per capita net income (Yuan)	3255	4150	5	Expected

As compared with 2006, energy intensity decreased by 3.27%, the total volume of SO2 and COD emissions, by 4.7% and 3.2%, respectively.

Circular economy

- A hundreds of national pilot projects including enterprises, industrial parks, cities and provinces
- Promotion Law for Circular Economy, issued this August and coming into effect from January 1, 2009.

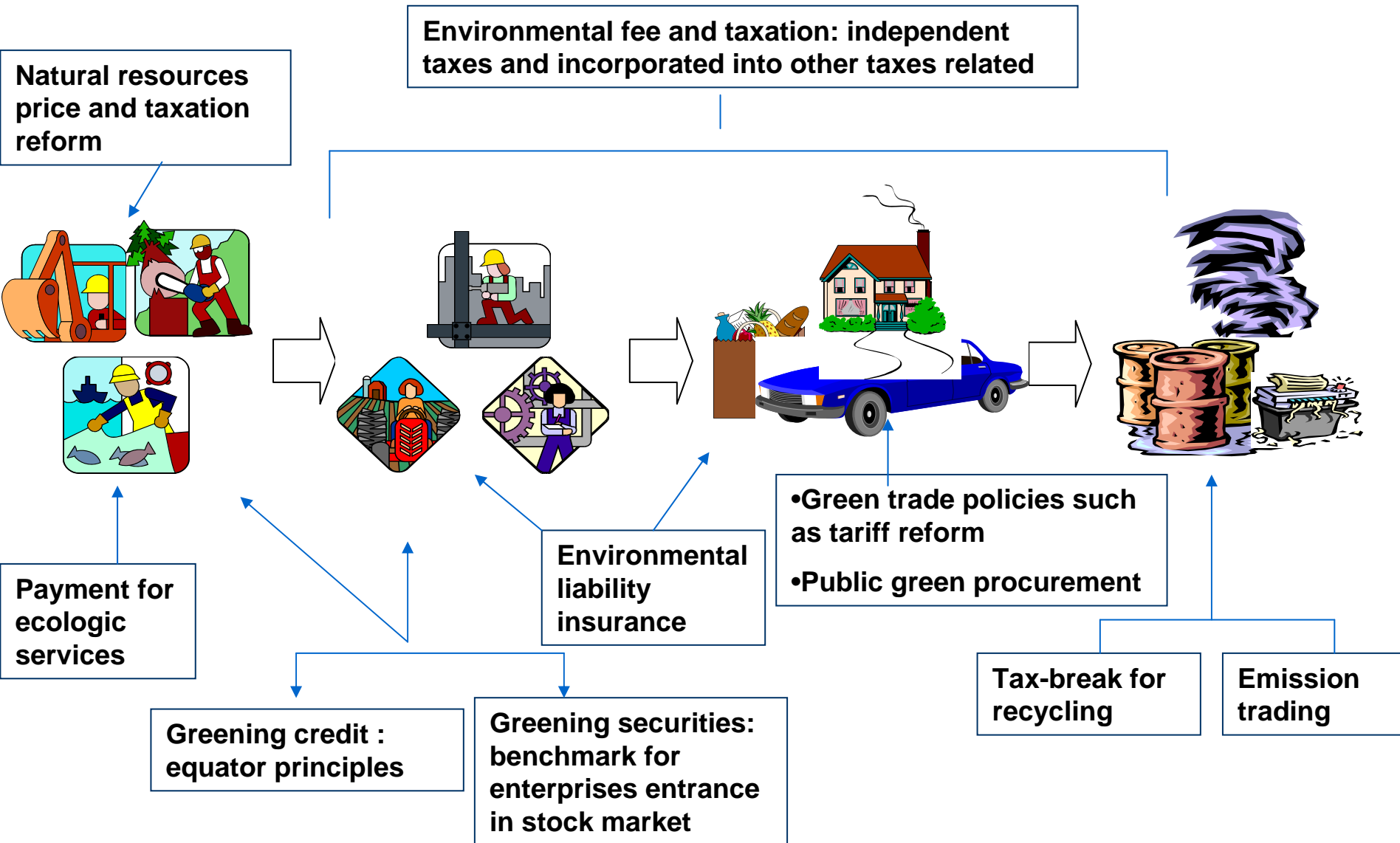
Change the linear way of material flow to the circular way, raising the eco-efficiency, based on 3R principle



National Program for Climate Change: targets

- **Control greenhouse gas emissions**
 - Energy intensity will be reduced by 20% by 2010;
 - Share of renewable energy (including large-scale hydropower)in primary energy supply will reach up to 10% by 2010;
 - The extraction of coal bed methane will be up to 10 billion cubic meters;
 - by 2010, the emission of nitrous oxide from industrial processes will remain stable as that in 2005;
 - Increase the forest coverage rate to 20% and have the increase of carbon sink by 50 million tons over the level of 2005 by 2010.
- **Enhance capacity of adaptation to climate change**
- **Enhance R&D**
- **Raise public awareness and improve management**

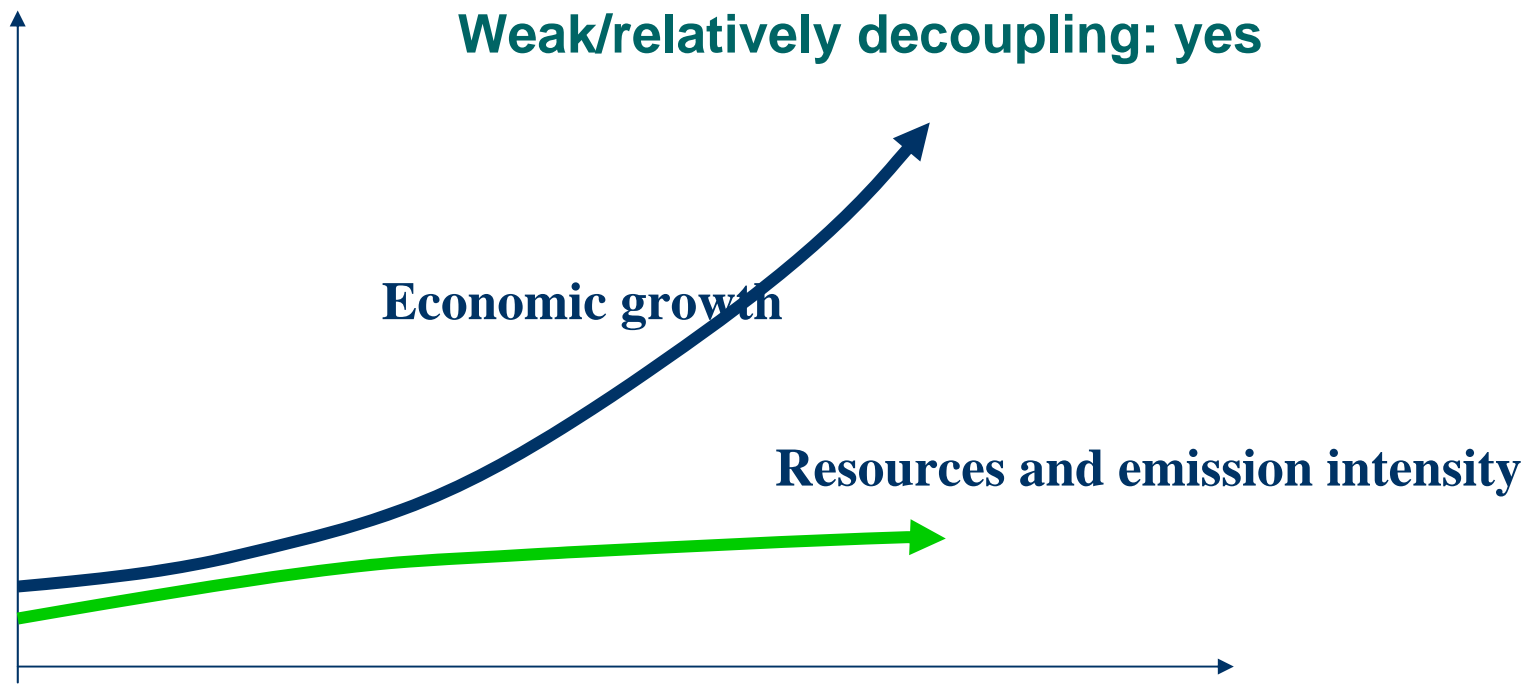
Initiatives in economic instruments

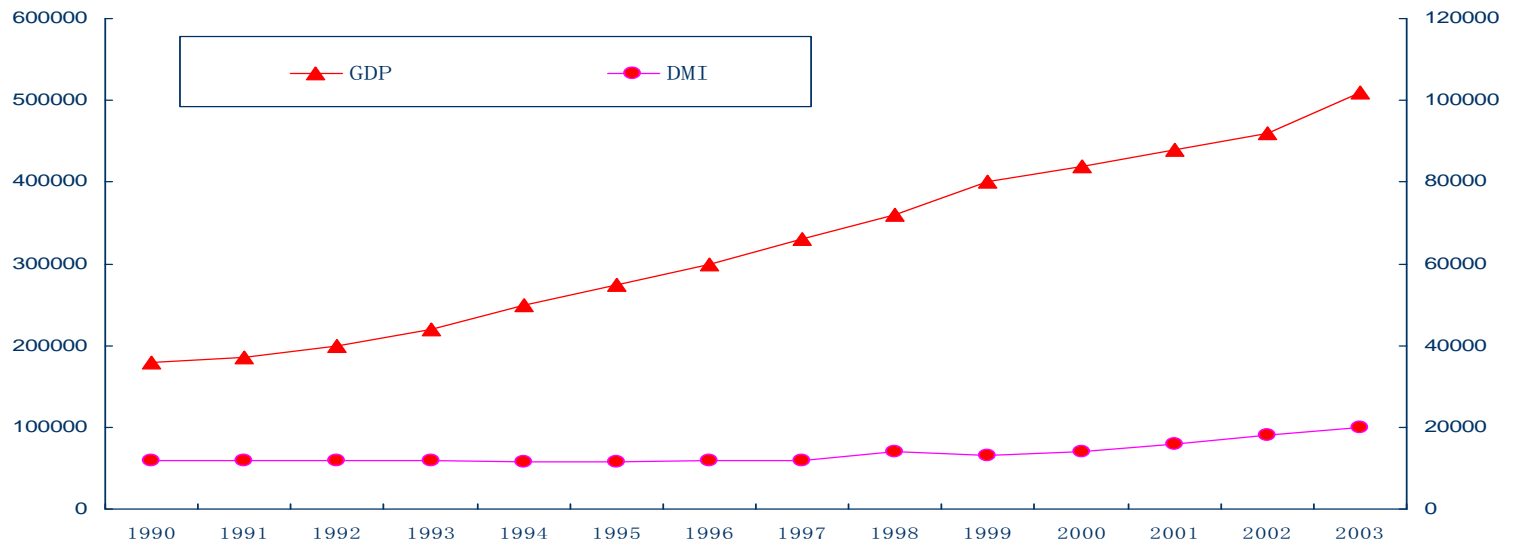


4. Possibly Decoupling ?



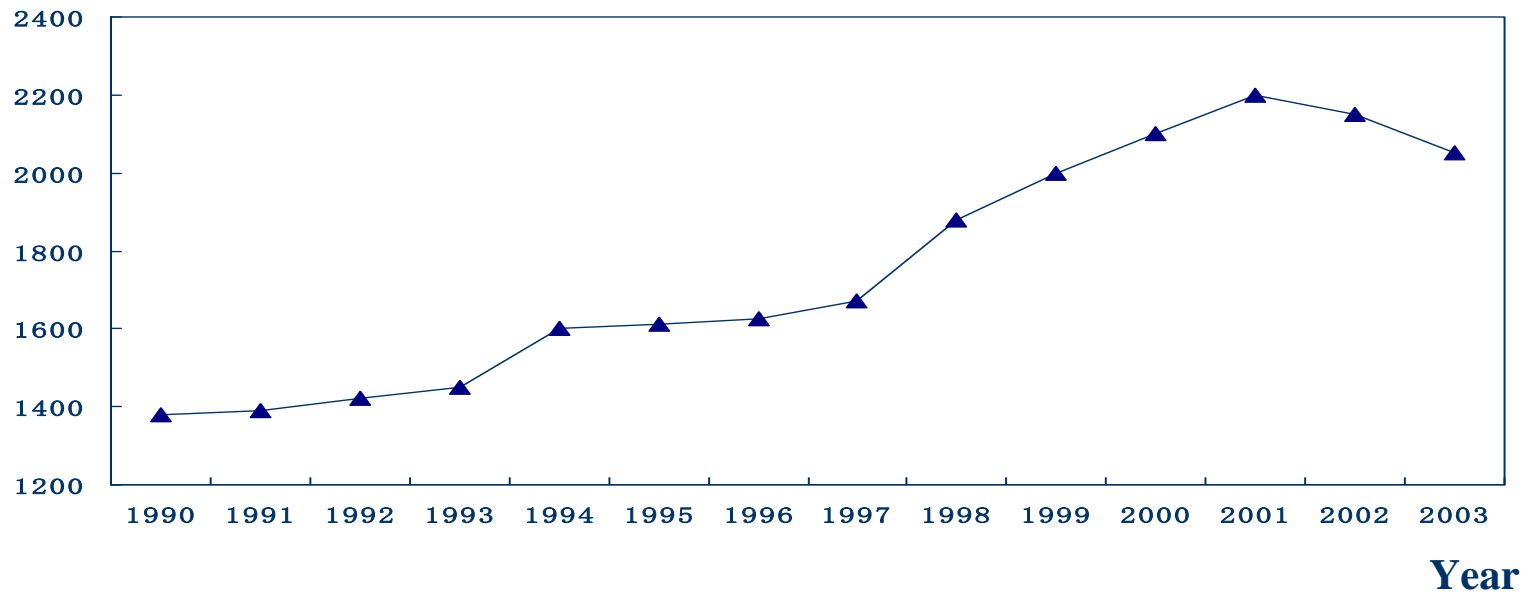
Weak/relatively decoupling: yes





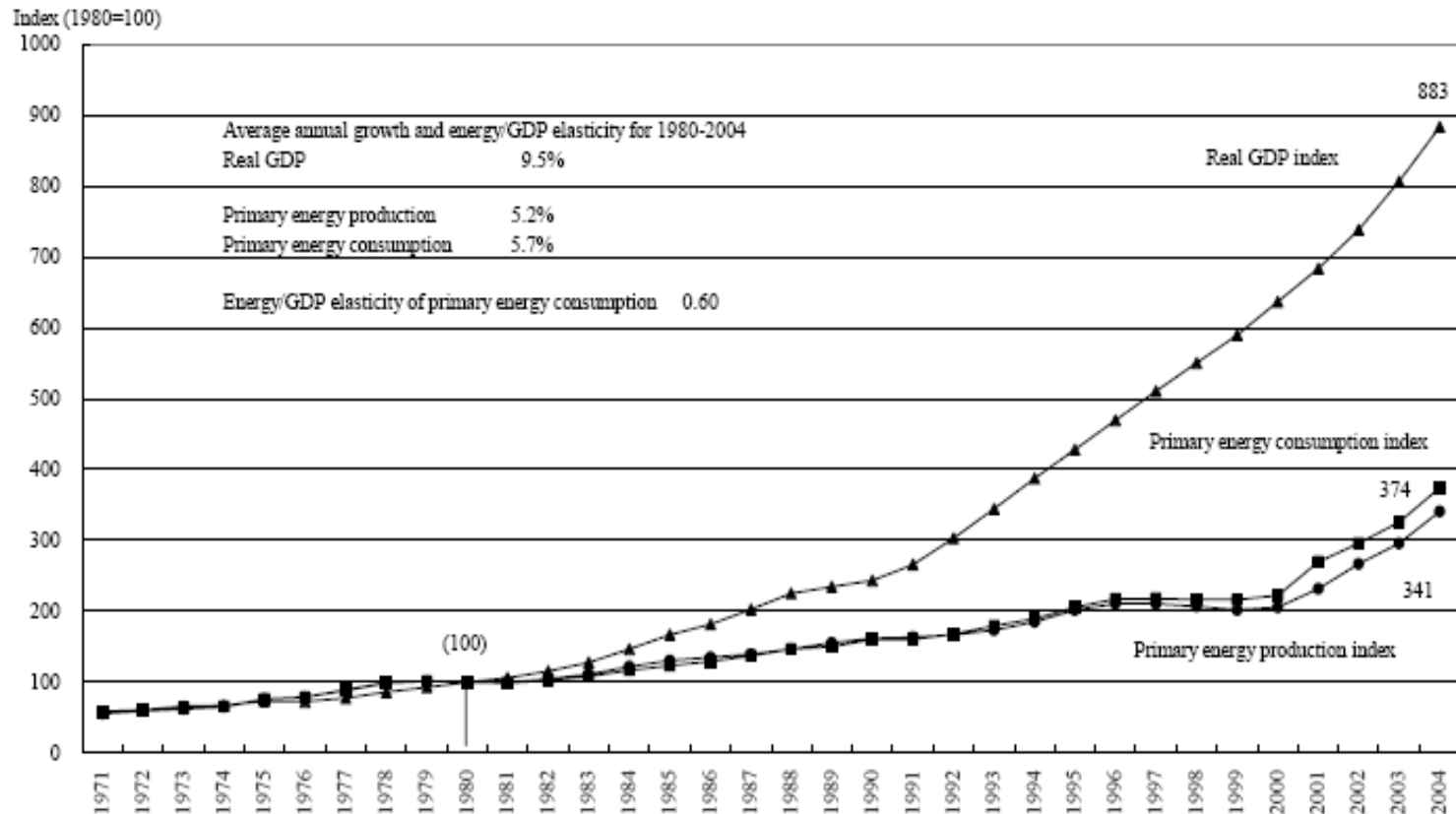
GDP and Natural Resources Consumption (*Chinese Academy of Environmental Sciences, 2006*)

Natural resources efficiency (RMB/T)

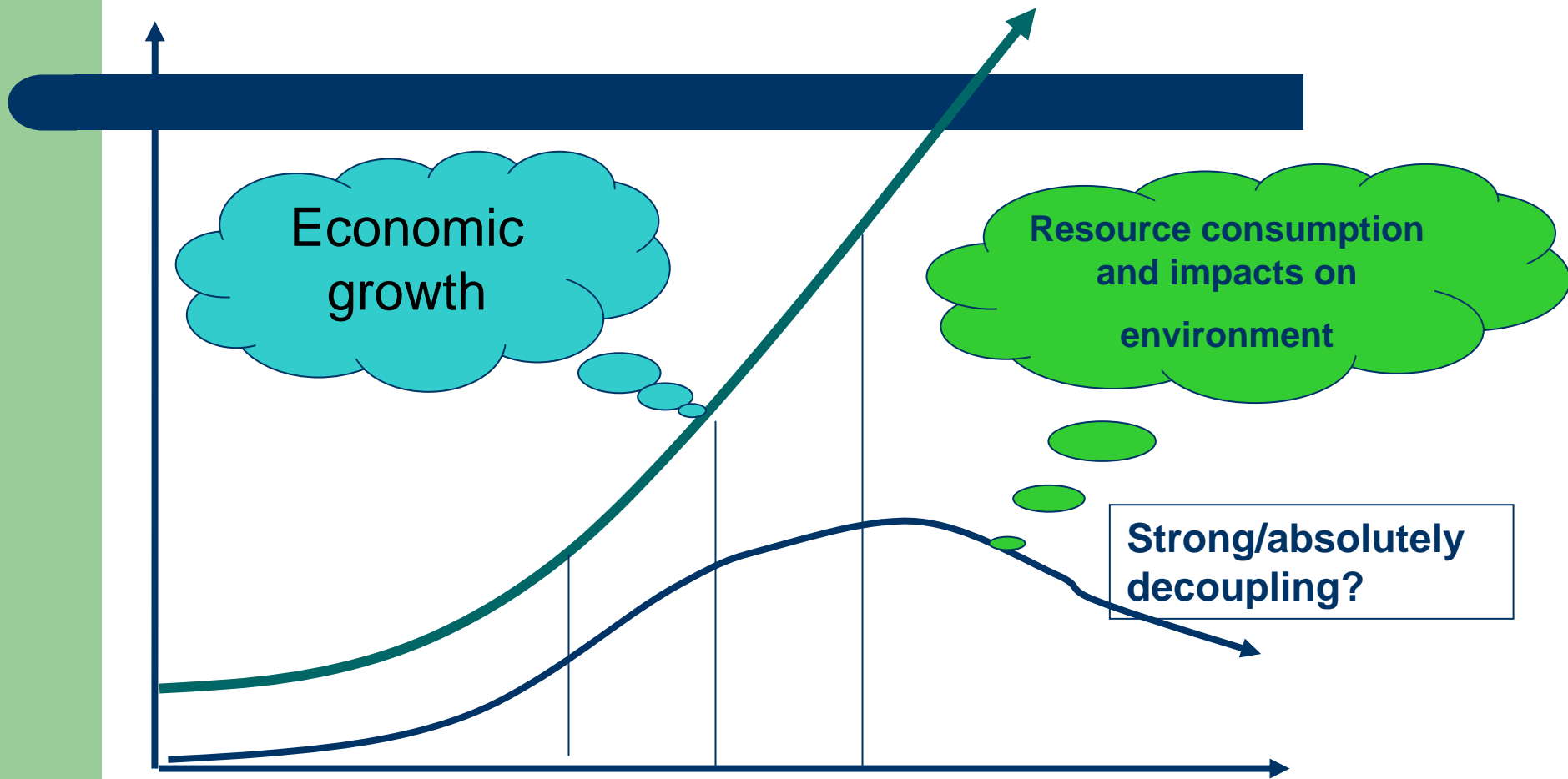


Natural resources efficiency from 1990 to 2003 in China (*Chinese Academy of Environmental Sciences, 2006*)

Figure 2-1 Transition in China's economic growth and energy supply and demand (1971-2004)



Source: Created by Zhidong Li based on "China Statistical Yearbook," "Statistics Communiqué on National Economic and Social Development in 2004," and other materials.



5. negative impacts from financial crisis on energy conservation and pollution abatement? –yes/no

- Strong commitment from Chinese Government: not sacrifice environmental targets to stabilize the economic growth.
- 4 trillion RMB in next two years in four areas:
 - **Medical treatment, education, social security;**
 - **Infrastructural construction;**
 - **Reconstruction of earthquake, including afforestation and forest management;**
 - **Environmental protection and natural conservation**



**thank you for your
attention!**

