

事例発表 中国

中国における企業環境管理：原価主導型の選択

J. ビ、B. チョウ、J. ゲ、B. リュウ、Z. ユアン

南京大学環境学院、環境管理・政策センター

従来、中国政府は企業の環境活動を奨励してきたが、実施効率はよくなかった。さらに重要なことに、経済発展を迫ってきたために、企業は不十分な環境コンプライアンスなど、多くの点で特別扱いを受けてきた。発展途上にある社会では、政府および企業に対する地域社会の圧力も影響力が弱かった。全体的に見ると、コンプライアンスと環境活動にかかるコストが、企業の意思決定システムにおいて重要な要因となることはほとんどなかった。近年、中国は急速な経済発展により、深刻な環境悪化、エネルギー効率低下、気候変動の圧力、より質の高い環境に対する市民要求の高まりという問題に直面した。より良い**企業環境管理 (CEM)** が、きれいな環境と持続可能な社会を達成する戦略の一つとして取り上げられている。中国政府は CEM をより重視するようになり、中国の企業に対する新たな要求が盛り込まれた。しかし、なぜ CEM にそのような劇的な変化が起こったのか。こうした変化は、企業の意思決定プロセスにどう影響するのか。地域的および国際的規模からみて、そうした移行は長期的に社会経済および環境にどのような影響を及ぼすのか。こうした分野について、これまでほとんど研究はなされていない。我々は過去の調査と研究に基づいて、原価主導型説明を推進する。今回の発表では、統計データや補足情報を利用して、原価関連モデルを研究し、中国における CEM に関連する質問の大半に回答したいと思う。

キーワード： 企業環境管理 (CEM)、環境コンプライアンス、科学開発戦略、
原価主導型モデル

Corporate Environmental Management in China: A Cost-Driven Strategy

J. Bi, B. Zhang, J. Ge, B. Liu, Z. Yuan

Centre of Environmental Management & Policy, School of the Environment, Nanjing University

Traditionally, governments in China promoted good corporate environmental behaviors but with very inefficient implementation. More importantly, with the sole objective of economic development, industrial enterprises were given privileges in many aspects, including weak environmental compliance. In a less developed civil society, public pressures on both the government and enterprises had minor impacts also. Overall, costs of compliance and good environmental behaviors have been seldom key factors in corporate decision-making system. In recent years, China's rapid economic development was in a danger of facing severe environmental degradation, lower energy efficiency, pressure of climate change, and increasing civil demands on better environmental quality. Better ***Corporate Environmental Management (CEM)*** has been taken as one of the strategies to achieve a clean environment and sustainable society. CEM has been more strictly emphasized by the government and endowed with new requirements for enterprises in China. However, why there is such a dramatic change in CEM? How this change will affect enterprises' decision-making process? What could be the long-term socio-economic and environmental impacts of such a transition at a regional and international scope? There are very few studies in these areas so far. Based on our past observations and studies, we provide a cost-driven oriented explanation. In this paper, we will use statistical data and other supplementary information to explore a cost-related model, aiming at answering most of the questions asked in regard to CEM in China.

Keywords: Corporate Environmental Management (CEM), Environmental Compliance, Scientific Development Strategy, Cost-driven Strategy



Corporate Environmental Management in China: A Cost-Driven Strategy

Prof. Jun BI

*Centre of Environmental Management & Policy,
School of the Environment, Nanjing University*

2007-10-18

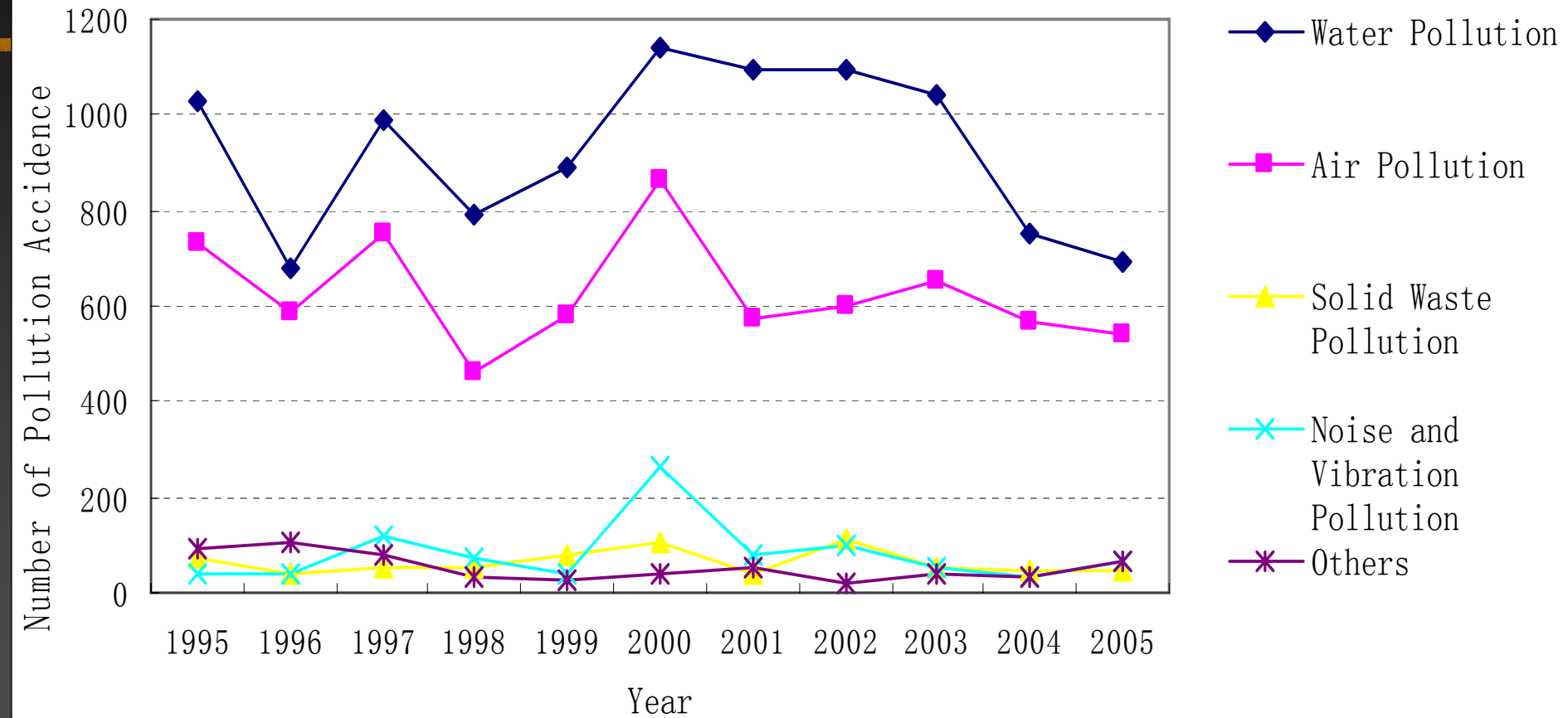
Contents

- Environmental Challenges in China
 - Corporate Environmental Governance vs. Corporate Environmental Management
 - CEM in China: cost-driven strategy
 - Research suggestions
-

Challenges: environmental accidents

- 2000 to 2005, 400 to 500 big pollution accidents
 - Frequently occurred
 - Impacts on the society, the economy and the environment
 - Reflects low level of environmental management
-

Pollution Accidents in China



A MUST objective

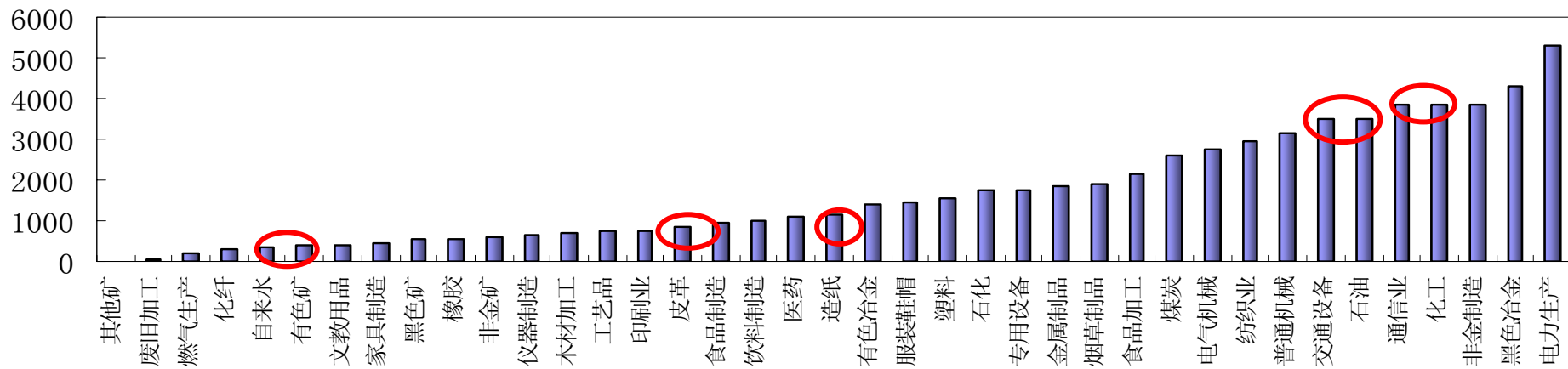
National objectives: 10% reduction of COD and Sulphur Dioxide ; 20% increase of energy efficiency.

Maintain current development strategy, industrial structure and consumption trend, that means double GDP in 2010.

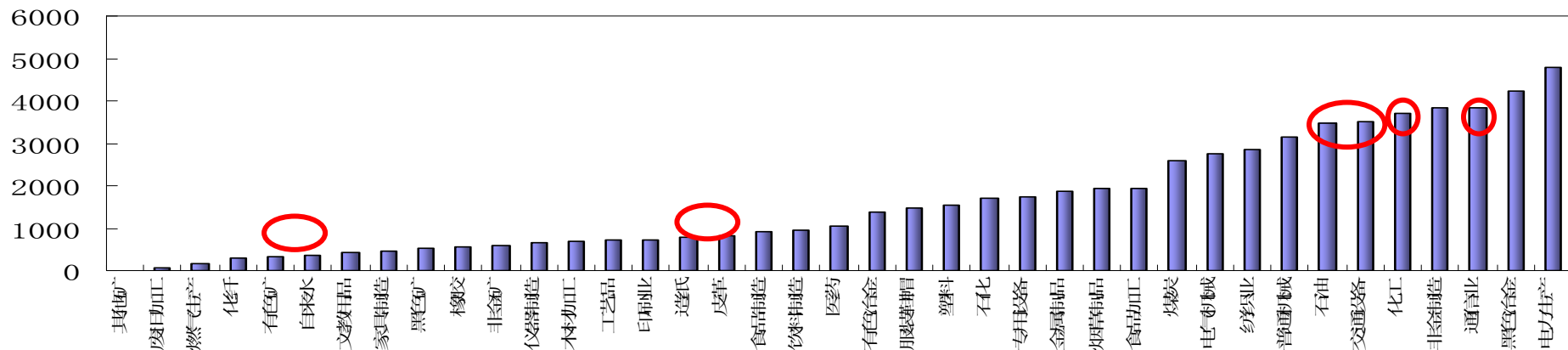
Jiangsu Province : To achieve 15% COD and 18% SO₂ reduction objectives, COD per unit GDP must be 2.35 times more efficient than that of current level and SO₂ per unit GDP must be 2.43 times more efficient that of current level.

Order of gross output of various industries in China after Green-GDP adjustment

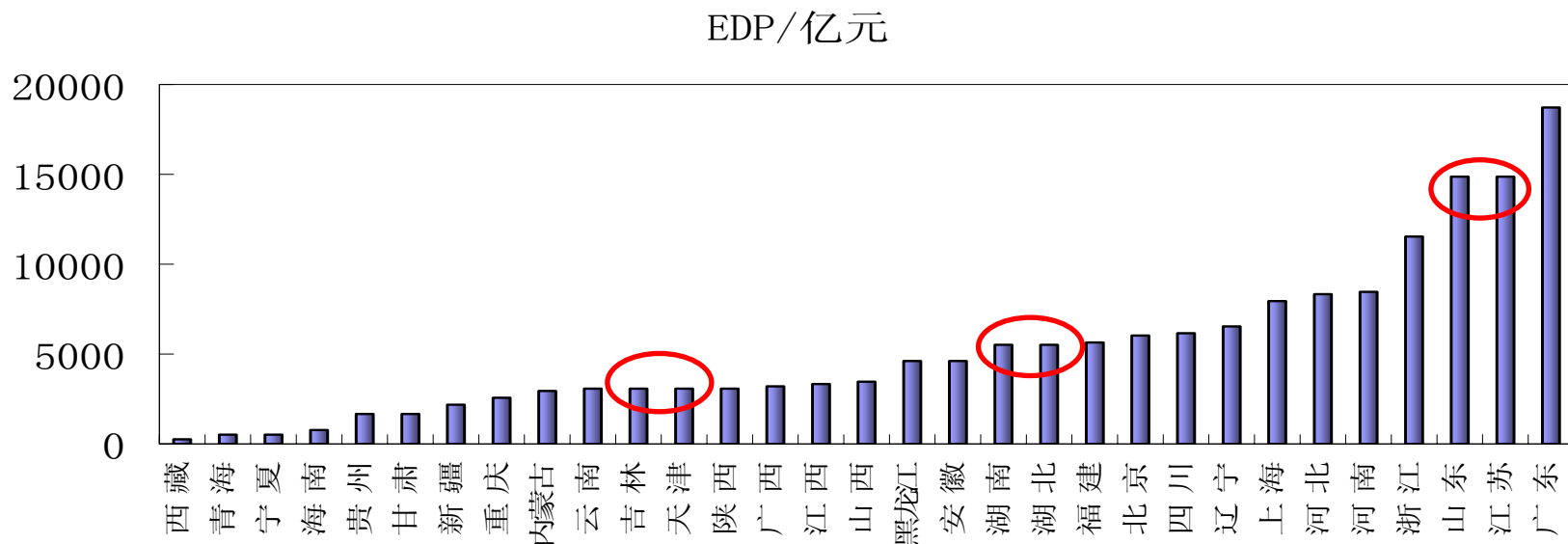
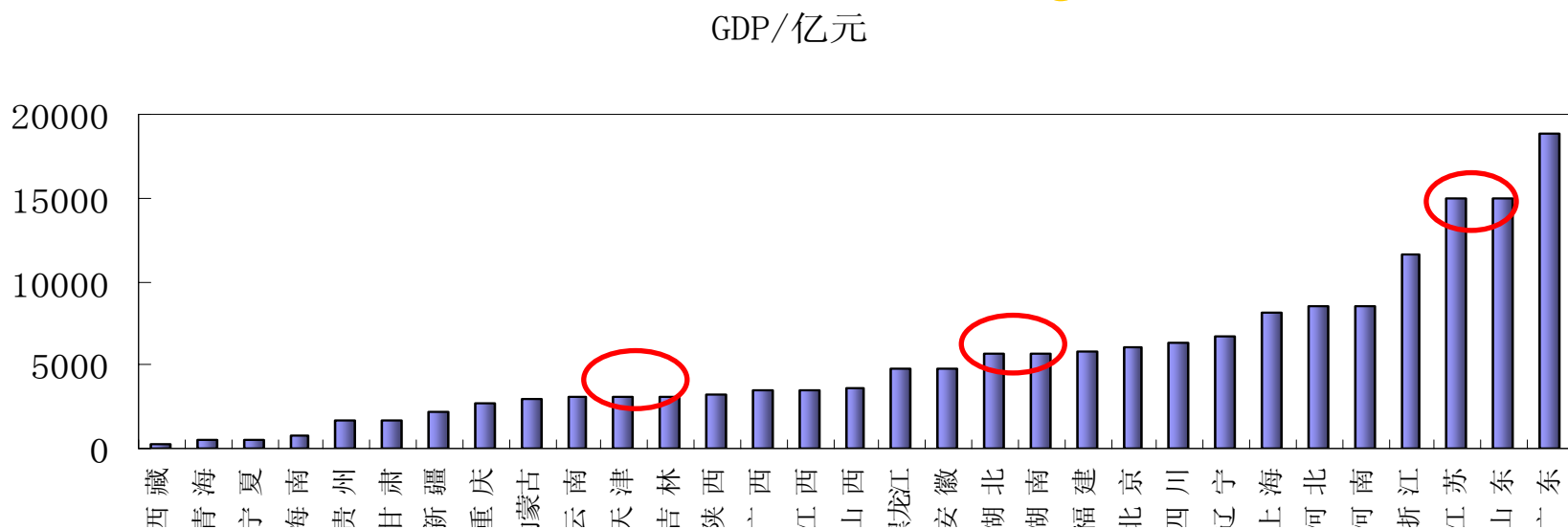
增加值/亿元



EDP/亿元

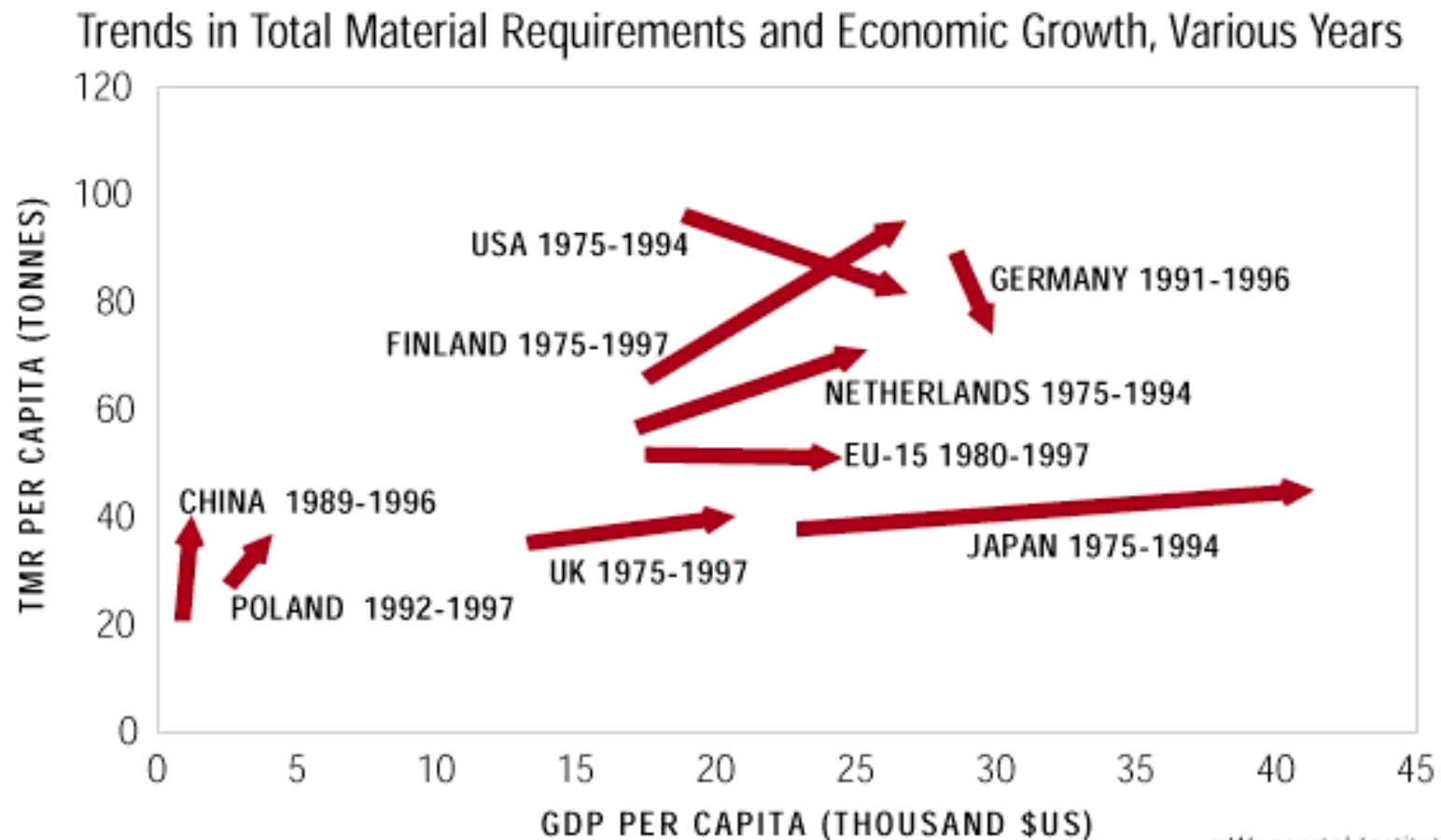


Order of gross output of various provinces in China after Green-GDP adjustment



International Comparisons of Material Consumption

Entire Economies Are Improving Efficiency



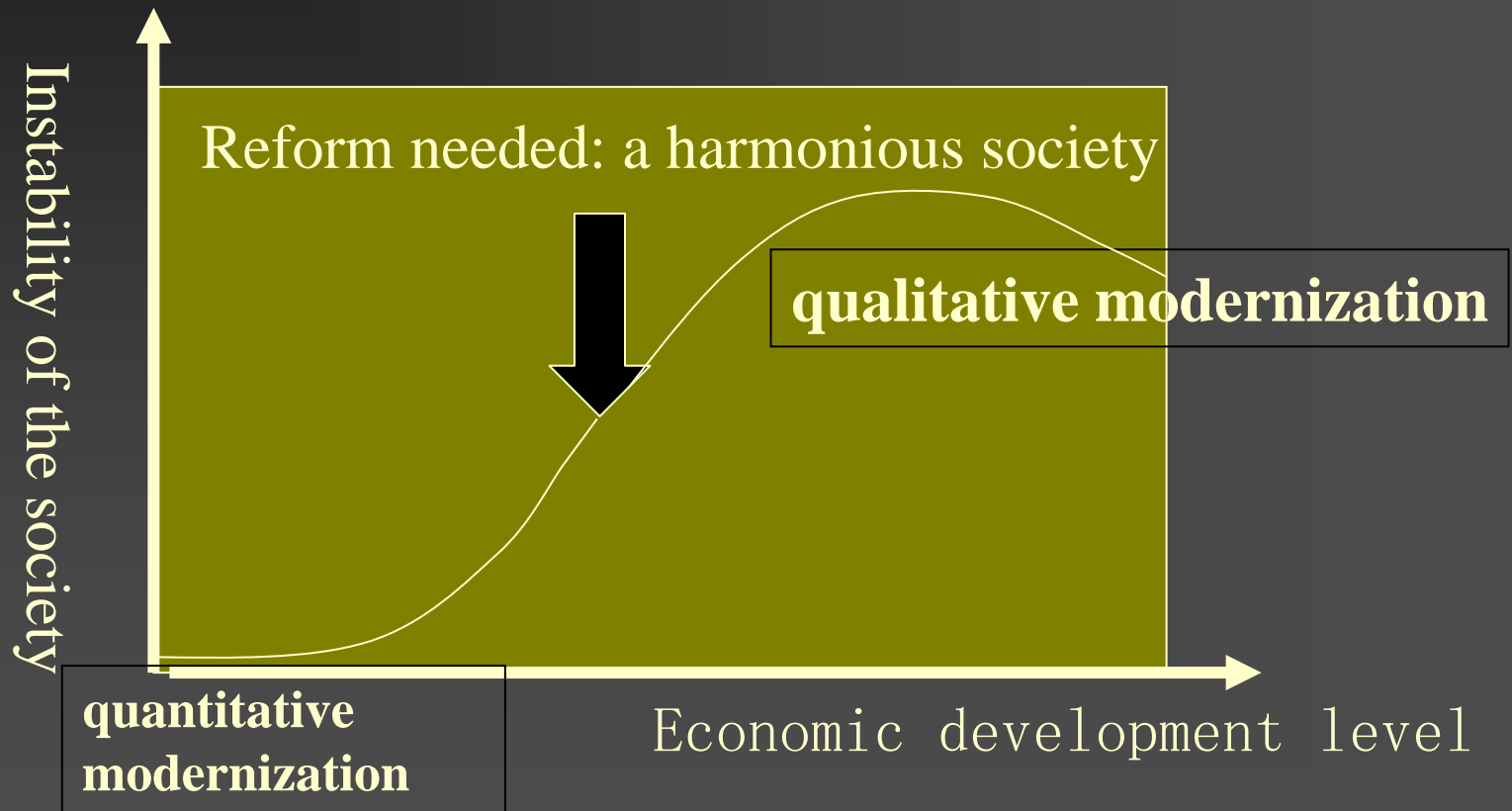
Eco-efficiency: a global comparison

	China	Japan	Austria	Netherlands	Germany	America
Population (Million)	1250	127	8	16	82	273
area (thousand km ²)	9597	378	84	41	357	9364
Population (density)	134	336	98	466	235	30
GDP (Billion US\$)	980.2	4078.9	210.0	384.3	2079.2	8351.0
GDP Per capital	3291	24041	23808	23052	22404	30600
GDP per area (100millionUS\$/ thousand km ²)	1.02	107.9	25.0	93.7	58.2	8.9
TMR (million ton)	50000	5461	560	1056	6150	21840
TMR per capita (ton)	40	43	70	66	75	80
NAS (ton)	16(?)	9.7	11.5	8.3	11.5	7.7
Material intensity (kg/us\$)	51.01	1.34	2.67	2.75	2.96	2.62
Resource productivity (us\$/ton)	19.6	746.3	374.5	363.6	3378	381.7

Scientific Development Strategy

- *The Strategy called for a comprehensive, coordinated and sustainable approach to economic development; an approach that takes social and environmental aspects seriously into account.*
 - *Harmonious Society*
 - *Efficiency*
-

A quantitative modernization to a qualitative modernization



Incentives of promoting CEM in China

- Energy saving
 - Pollution reduction
 - Circular economy & CP
 - Strong enforcement
 - Regional control policy
 - A strong EIA policy
 - Climate change: CDM
 - Ecological tax
 - Ecological compensation
 - Emission trading
 - Green loan policy
 - Information disclosure
 - Risk minimization
 - CSR...
-

Stricter standards

- Taihu Lake Watershed issued new standards
 - Discharge standards for pollutants such as COD and total P increases 28.3% and 50%, targeting reducing 50% COD and total P.
 - Stricter discharge standard for wastewater treatment plants.
-

CEM Related Practices

- Cleaner Production Promotion Law
 - Approved by the national congress on June 29, 2002 and officially implemented since January 1, 2003
 - Promoted by the governments;
 - Adopted by enterprises;
 - Supported by related policies and regulations such as tax relief and subsidies.
-

CEM Related Practices

■ Green loans

- Implemented in Jiangyin City, Jiangsu Province in 2002;
 - Originated from corporate environmental behavior disclosure program in Jiangsu;
 - In June 7th, 2007, "notes on reducing loan risk by enforcing environmental protection regulations and policies" was released by SEPA, PBC and CBRC.
-

ICBC

- Stop loan for enterprises in control regions and watersheds, where all the projects will not be given approval in regard to environmental administration such as EIA approval.
 - Requires branches to increase evaluation and post-evaluation for projects that may cause environmental pollution.
-

CEM Related Practices

■ Green trading

- Exporters will be banned for environmental violations - The Ministry of Commerce (2007/10/13)
 - Reducing tax-return for exported environmentally unfriendly products. A recent list: 553 products were moved from tax return/refund list since on July, 1st, 2007
-

CEM Related Practices

- Corporate Environmental Behavior Disclosure Program in Jiangsu, 2007
 - Started in Jiangsu Province;
 - 5 grades: green, blue, yellow, red and black from the best to the worst;
 - Disclosure to the public;
 - In 2007, 12,257 enterprises have participated in the program in Jiangsu Province
-

CEM Related Practices

- Environmentally Friendly Enterprise
 - Evaluated and approved by SEPA and provincial EPB's
 - A nationally recognized honor.



CEM Related Practices

- Emission Trading Programs
 - Started from Sulphur dioxide (2002 in Jiangsu, Taiyuan.....)
 - New water trading programs in Taihu Lake Watershed, Jiangsu
 - Local regulations (newly issued in Jiangsu)
-

CEM Related Practices

- Promote ISO14001 EMS certification and cleaner production auditing
 - The rate of cleaner production auditing has become an important indicator for regional environmental performance.
 - Heavily-polluted enterprise were obliged to implement cleaner production auditing
 - In Suzhou Industrial Park, more than 170 enterprises pass the certification of ISO14000.
-

1st Wave: Command and Control

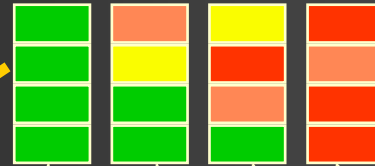
Administrators



Technicians



Ambient Quality



BOD
Metals
Phosphorus
Coliforms



Emissions

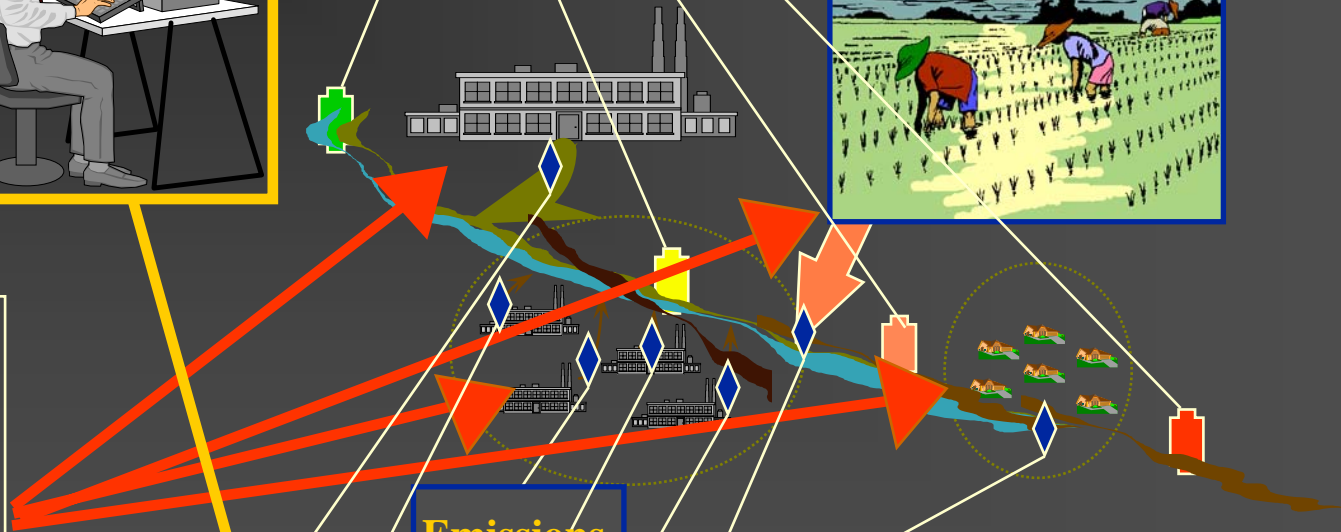


BOD
Metals
Phosphorus
Coliforms

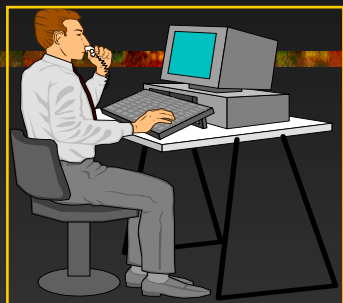
Courts



Inspectors



Enter Economics



Database



Technical Analysis



Policy Analysis

◆ Ambient Quality



◆ Emissions



◆ Other Information

◆ Overall Damage

- Health
- Ecosystems

◆ Damage Sources

- Scale
- Performance
- Abatement Options
- Costs

◆ Policy Priorities

◆ Ambient Goals

◆ Required Abatement

◆ Charges, Tradable

Permits

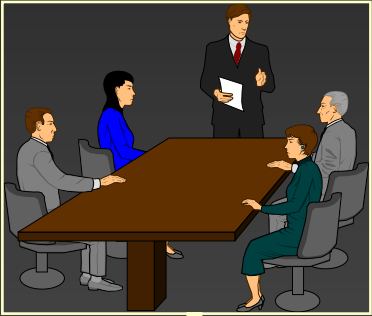
◆ Enforcement Strategy

2nd Wave: Economic Instruments

Policy Analysts



Administrators



Courts



Inspectors



Technicians



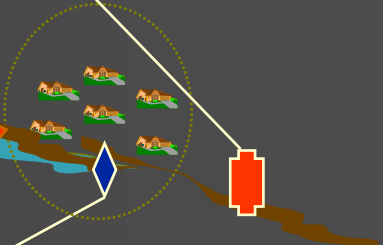
Ambient Quality



BOD
Metals
Phosphorus
Coliforms

Emissions

BOD
Metals
Phosphorus
Coliforms



3rd Wave: Public Information

- ◆ Ambient Conditions
- ◆ Damages
- ◆ Quality Targets & Timing
- ◆ Emissions
- ◆ Performance Ratings
- ◆ Adjustment Costs



Channels

Citizens



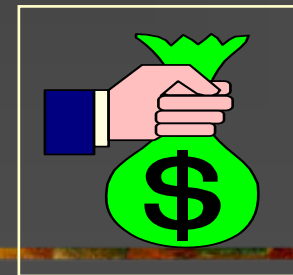
NGO's



Consumers



Investors



Some Impacts of Public Information

Citizens



- ◆ Media Pressure
- ◆ Reputation
- ◆ Personal Contact

NGO's



- ◆ Demonstrations
- ◆ Direct Negotiations
- ◆ Political Pressure

Consumers



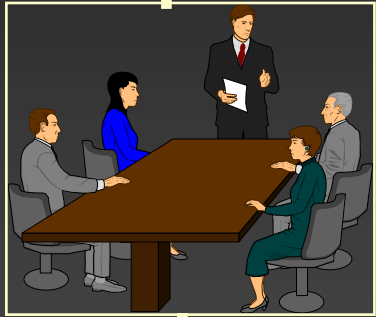
- ◆ Product Choices
- ◆ Price Sensitivity

Investors



- ◆ Lending Liability
- ◆ Stock Valuation

Information in Regulation: The New Model



Citizens



NGO's



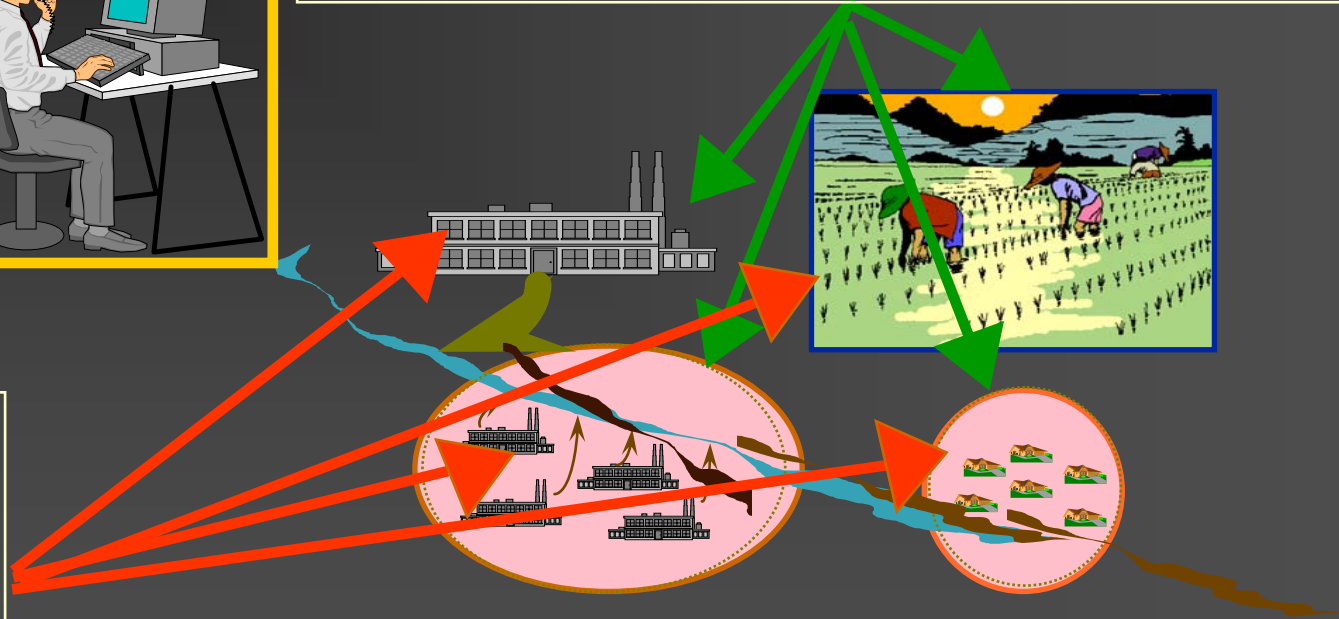
Consumers Investors



Courts



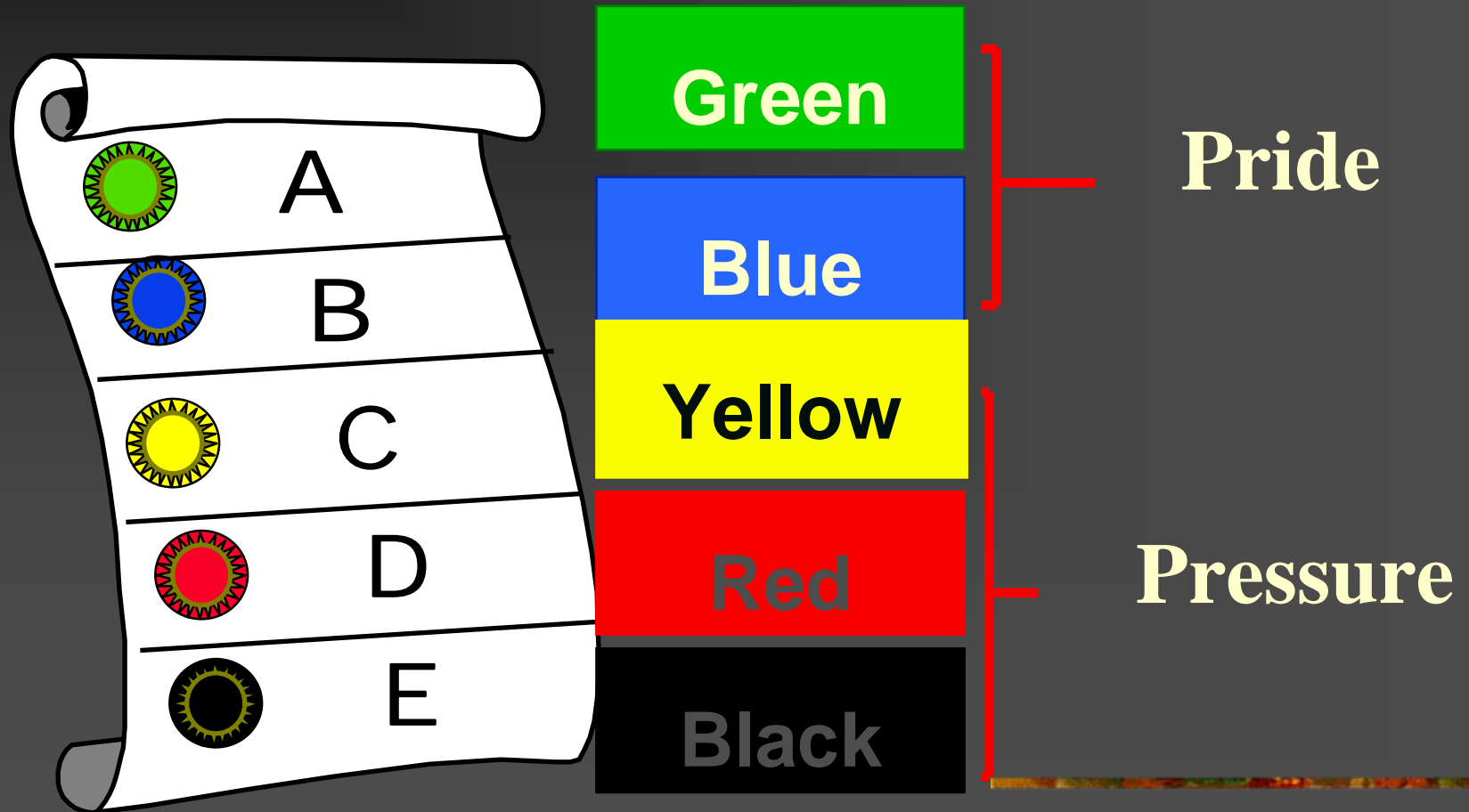
Inspectors



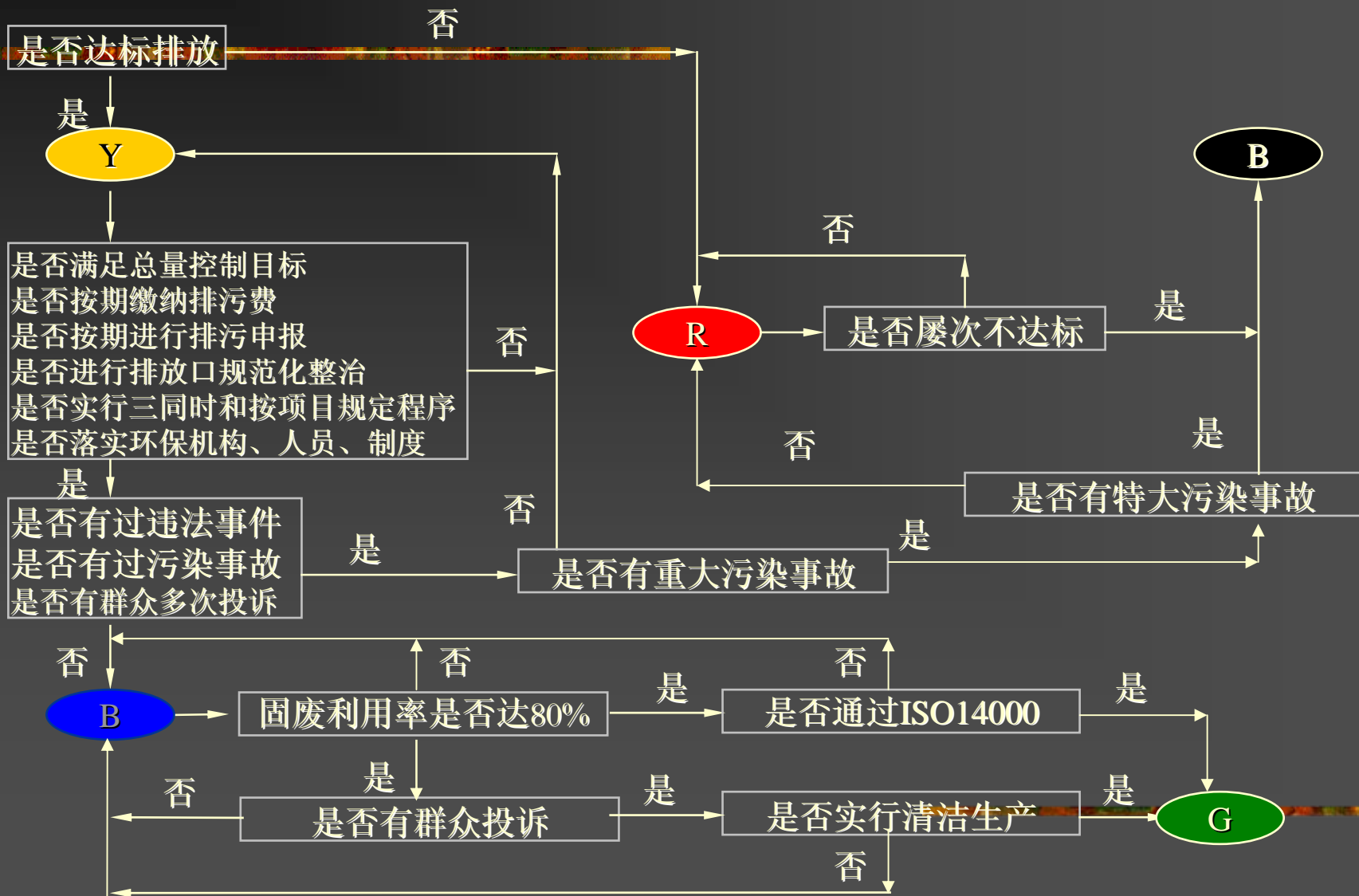
Corporate information disclosure program in China

- Phase 1: 1999~2000, Zhenjiang
 - Phase 2; 2001~2003, pilot in Jiangsu
 - Phase 3: 2003~2005, pilot in the whole country
 - Phase 4: 2005~ , nationwide promotion and information disclosure policy issued
-

Performance Rating System in China



Performance rating procedure



2001~2005: Practice in Jiangsu

Results	2001		2002		2003		2004		2005	
	#	%	#	%	#	%	#	%	#	%
	1059	100	2508	100	3074	100	5094	100	8005	100
G	77	7.27	182	7.26	267	8.69	329	6.46	530	6.62
B	512	48.35	1196	47.69	1545	50.26	2659	52.20	4016	50.17
Y	288	27.2	655	26.12	789	25.67	1467	28.80	2614	32.65
R	141	13.31	398	15.87	367	11.94	525	10.31	702	8.77
B	41	3.87	77	3.07	106	3.44	114	2.24	143	1.79

Community environmental roundtable meeting

- Multi-Stakeholders
 - Active participation by various actors
 - Introduction, discussion, negotiation, and responsibility and implementation
 - Feedback mechanism
 - Low cost
-



2006. 6. 3 Changzhou



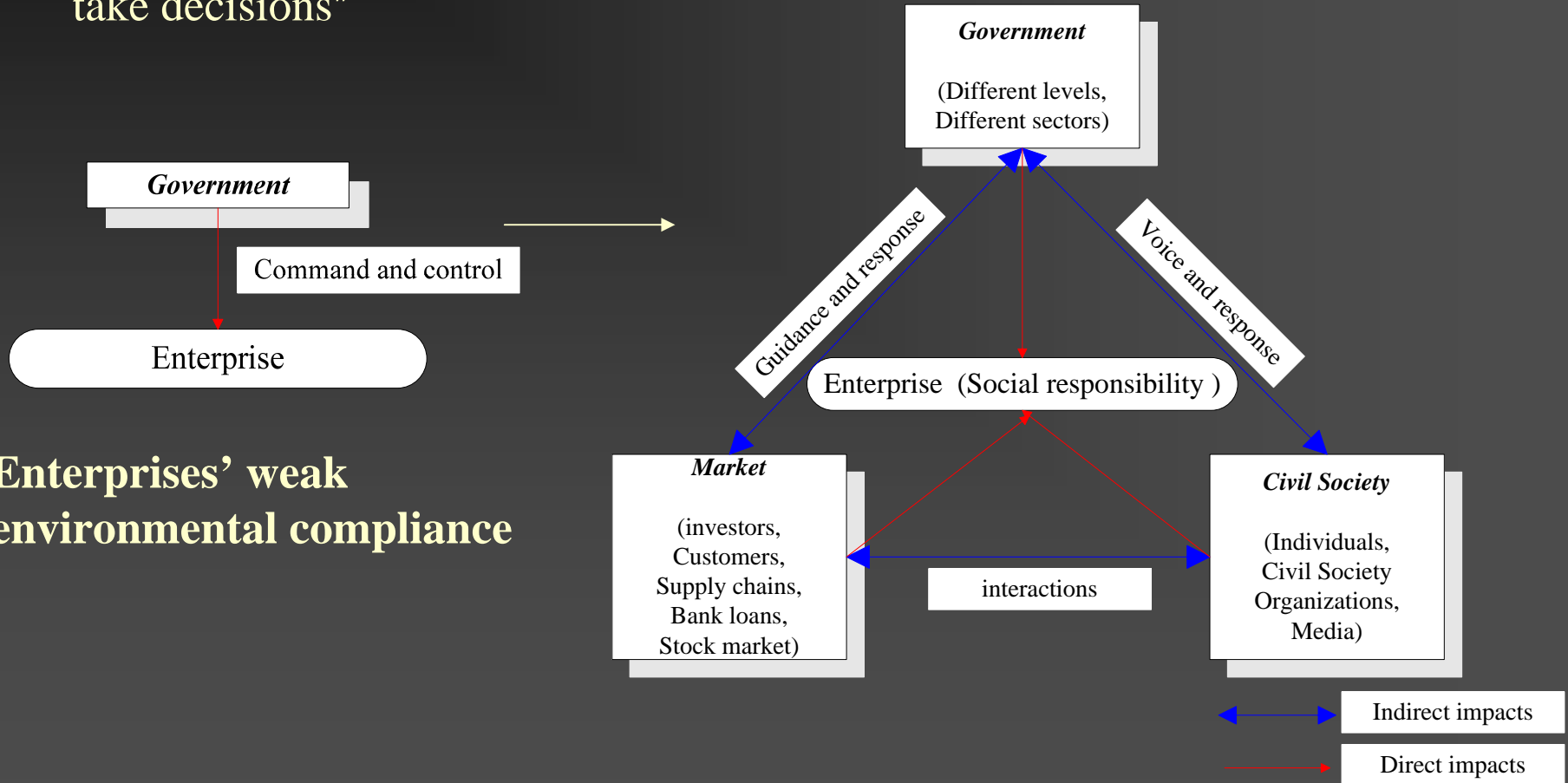
2006. 10. 23 Chemical industrial park, Yancheng

An Analytical Framework of CEM in China

- CEM comprised of three steps:
 - The issuance of a policy statement: outlining the basic principles and norms for the company's environmental management and performance.
 - Formal management systems: designing to control the environmental impacts of their operations, including production processes and outputs.
 - A commitment to environmental performance reporting
-

Corporate environmental governance

- Changes in enterprises' Environmental governance: from "Sole relationship between government and enterprises" to "Multi-actors with multi-interactions to take decisions"

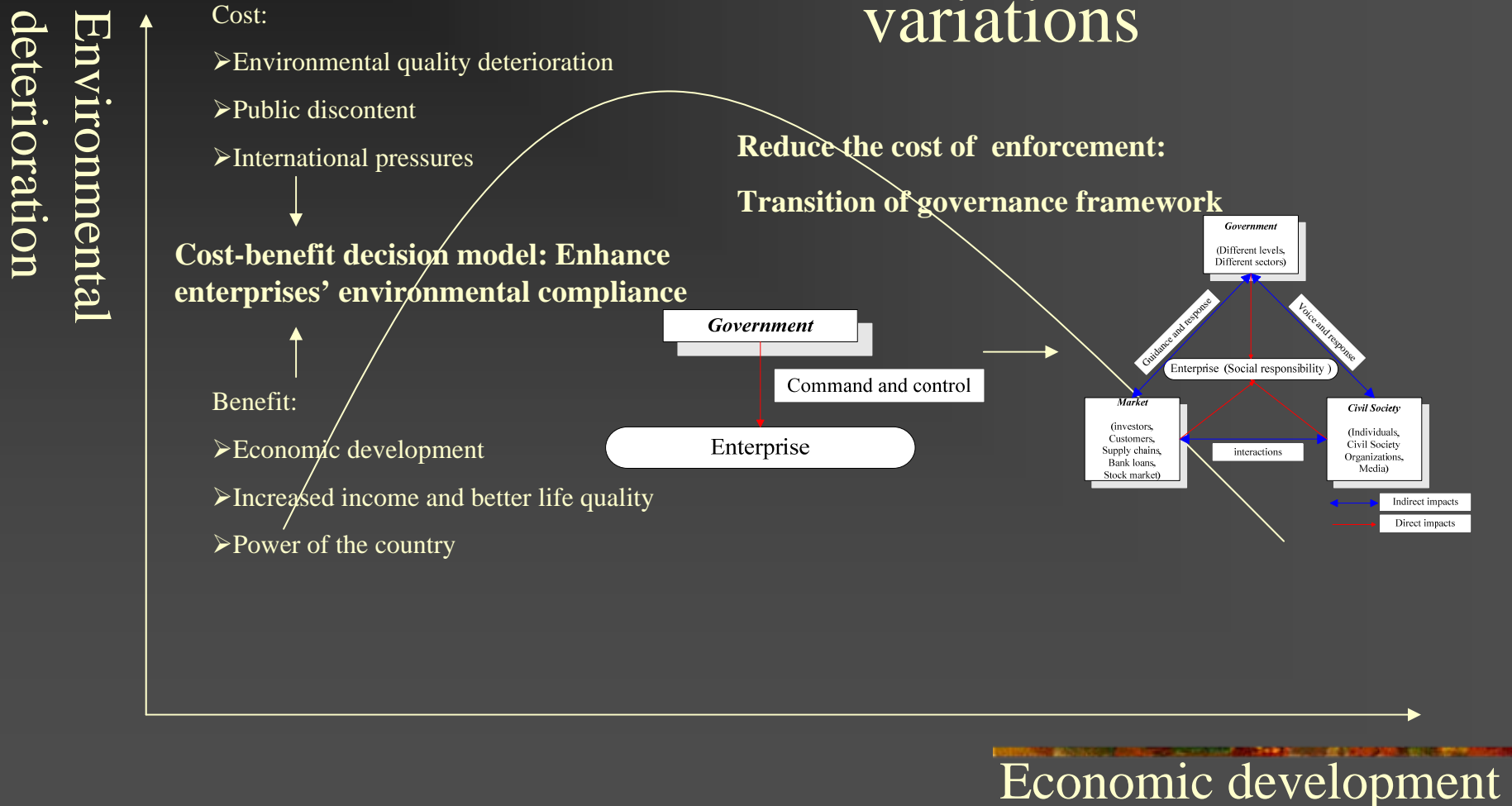


Enterprises' weak environmental compliance

Enhance compliance enforcement

Q1: Why is there such dramatic change in CEM?-A cost driven strategy

Spatial and temporal variations



Q1: Why is there such dramatic change in CEM?

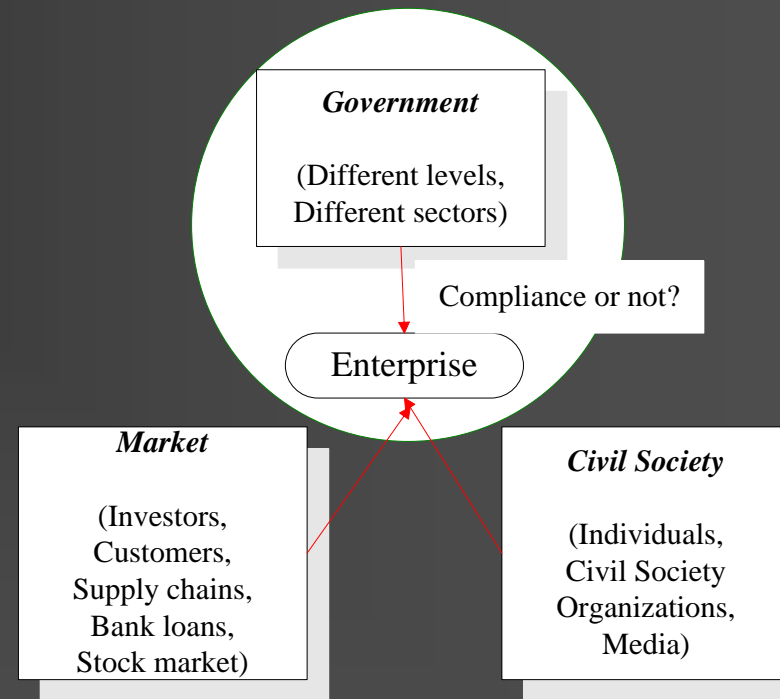
- Cost of enterprises' weak environmental compliance - from the governments' perspective:
 - Environmental quality deterioration and climate change vs. sustainable development
 - Public discontent about the deterioration vs. harmonious society
-

Q1: Why is there such dramatic change in CEM?

- Reduce the cost of enforcement - from the governments' perspective
 - Strictly enforcing C&C and economic incentive tools to push enterprises to enhance CEM
 - Using information tools to promote CEM directly thus to induce multi-actors (market and civil society) into environmental governance system to supervise and make impacts on enterprises
-

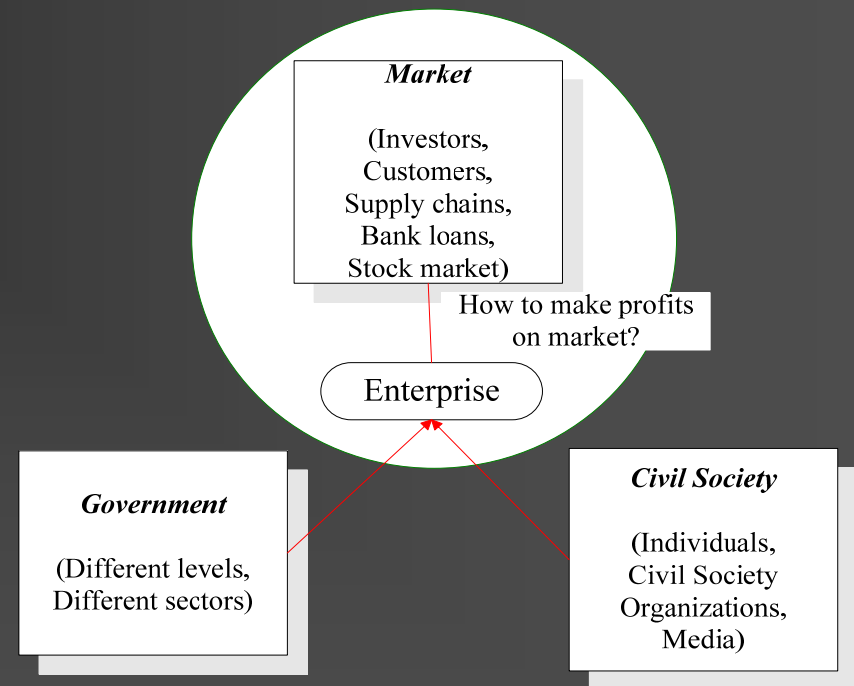
Q2: How will this change affect enterprises' decision-making process?

- Enterprises decision-making:
 - Compliance or violation?
 - Costs of violation become higher.
 - More enterprises choose compliance



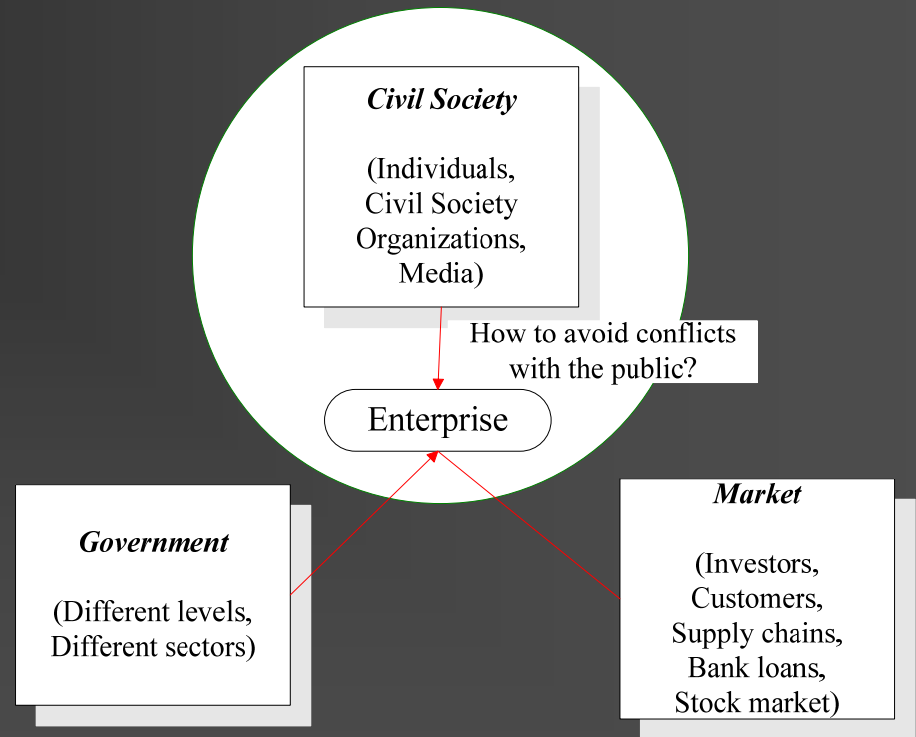
Q2: How will this change affect enterprises' decision-making process?

- Enterprises decision-making
 - How to make more profits in the market?
 - More enterprises choose to improve their environmental performance



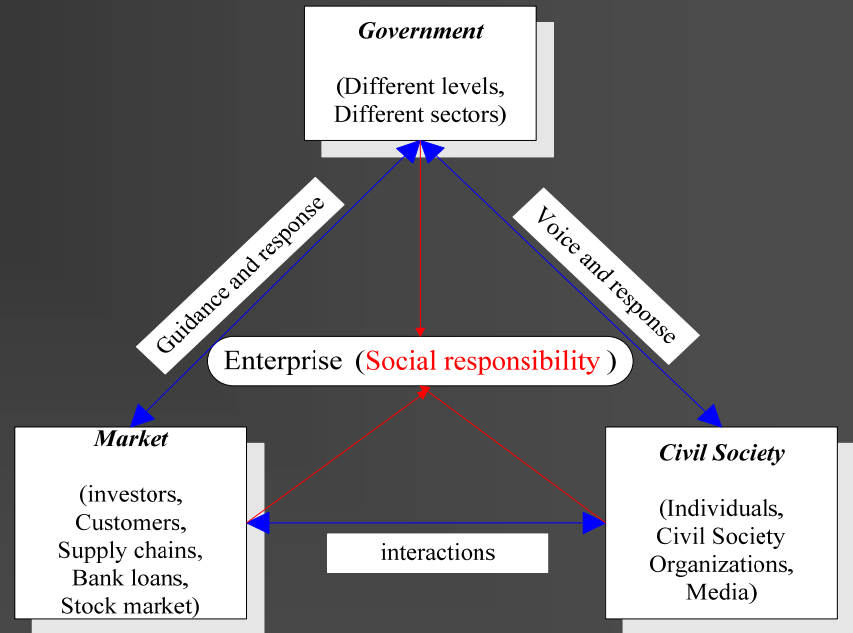
Q2: How will this change affect enterprises' decision-making process?

- Enterprises' decision-making:
 - How to avoid cost of conflicts and disgrace?
 - More enterprises choose to improve their environmental performance and communicate with the public



Q2: How will this change will affect enterprises' decision-making process?

- Enterprises' *long-term* decision-making:
 - How to avoid cost from the more complex and heavier external pressures from multi-actors?
 - More enterprises regard certain social responsibilities as more important as making profits.



Q2: How will this change affect enterprises' decision-making process?-a cost driven strategy

- To avoid all kinds of costs, more enterprises decide to choose :
 - Compliance
 - To improve their environmental performance
 - To inform their environmental behaviors and performance to the public
 - To take social responsibilities
-

Q2: How will this change affect enterprises' decision-making process? - a cost driven strategy

- How to reduce the cost of compliance and improving environmental performance?
 - Enterprises design effective management systems to control the environmental impacts of their operations, including production processes and outputs. (e.g. ISO14001 EMS certification, cleaner production auditing, green supply chain management)

Thus enterprises are active in developing CEM.

Q3: What could be the long-term socio-economic and environmental impacts of such a transition at a regional and international scope?

- CEM, though better management practices in firms, can play a major role in addressing many environmental problems:
 - Improve the enterprises' environmental performance
 - Improve regional environmental performance
 - Improve the partnership among government, enterprise, market and civil society thus to improve the enterprises' environmental governance
-

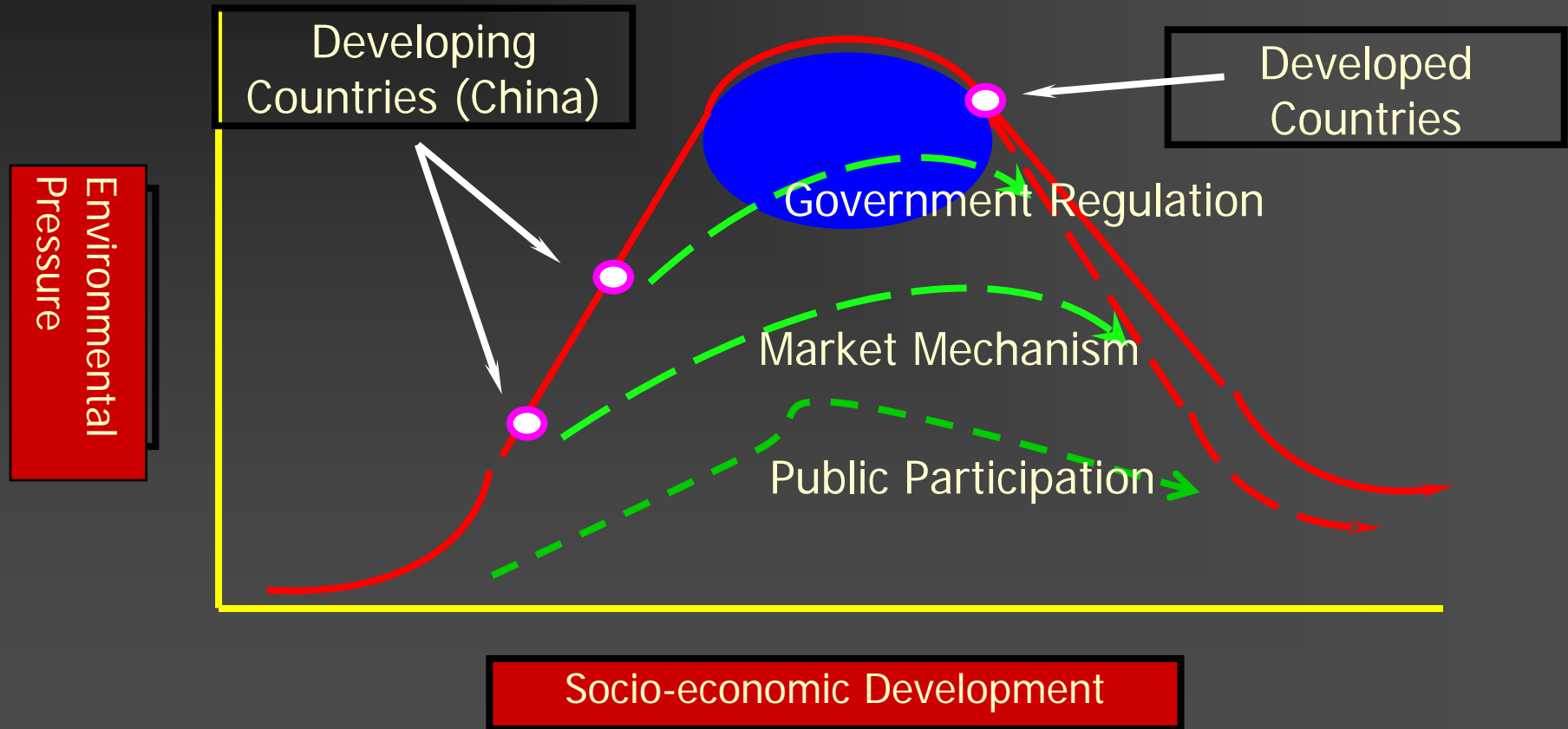
Q3: What could be the long-term socio-economic and environmental impacts of such a transition at a regional and international scope?

- In the improved governance framework, these actors take part in the decisions of enterprises' environmental performance and reach an equilibrium in a multi-objective cost-benefit model. These objectives includes:
 - Good environmental compliance
 - High regional/enterprises' environmental performance
 - Lower enforcement/compliance cost
-

Solutions of CEM: low cost strategy

- How to reduce the cost for better CEM?
 - Good governance
 - Partnership
 - Public participation
 - Compliance and enforcement
 - Developing more tools (C&C, market-based instruments and voluntary tools)
-

Good Governance and CEM



Government-Business-Citizen Partnerships

government

you are concerned about maintaining a sound economy and a healthy environment for all...

company

you think about environmentally benign ways of your business and products...

citizen

you want to improve your quality of life without adversely affecting the environment...



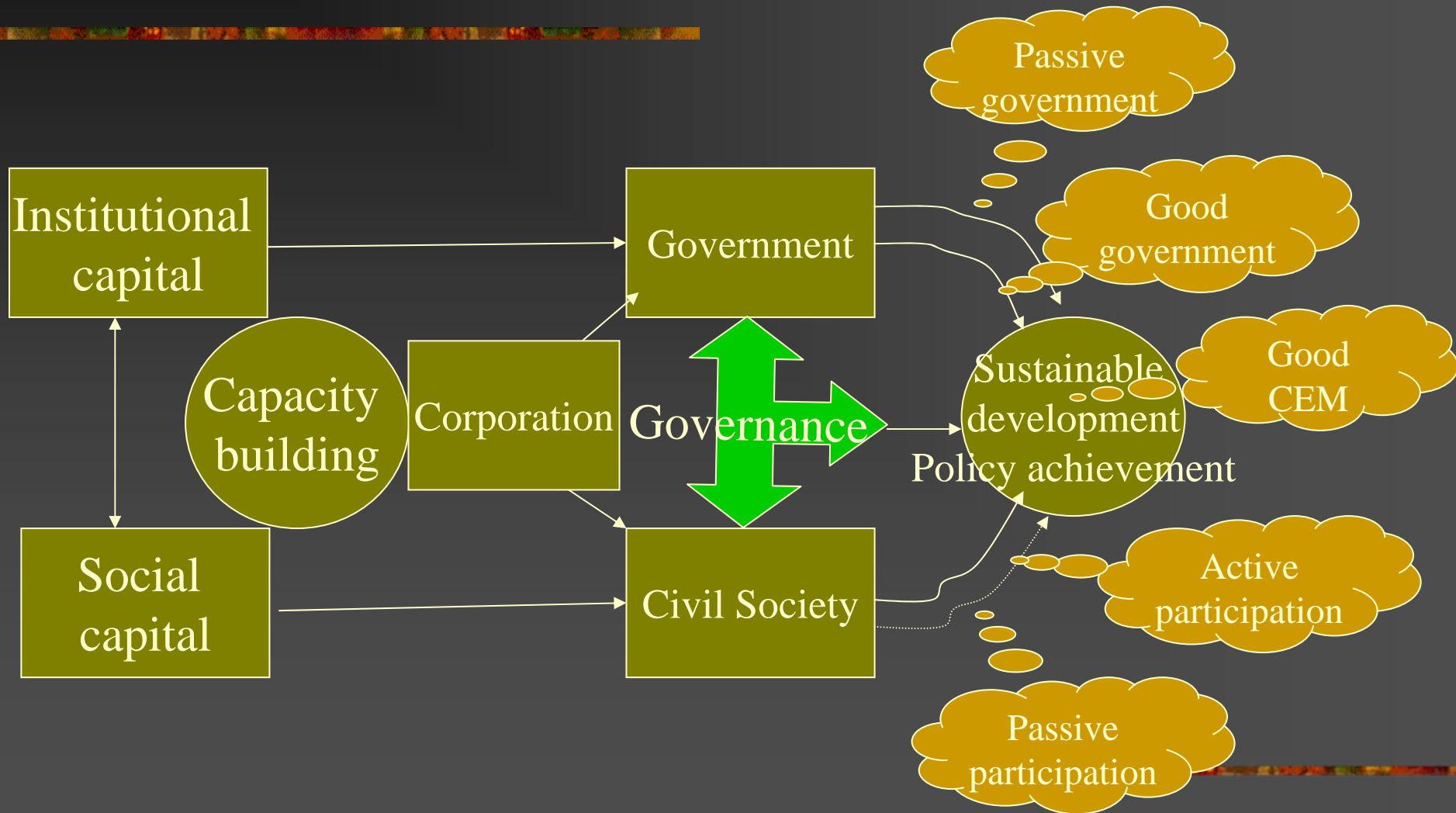
Sustainability: an institution integration

Government promotes more sustainable production and consumption patterns.

Companies provide a service in lieu of tangible products.

Consumers buy a service to fulfill their needs instead of buying a product.

A Framework about Governance and CEM



Suggestions for research framework

- Start from small scale
 - Get help from local government
 - Focus on a few issues, such as building partnership, information disclosure
 - Cooperate with local communities and enterprises/industrial parks
 - Need a few years for performance review and post-evaluation
-



Thank you!

jbi@nju.edu.cn

