

Global Focus on Knowledge Lecture Series  
“Energy and the Earth”  
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### 3. In Relation to Earth Environment

- In Japan
  - energy saving after oil crisis
  - income effect and price effect
- Examples from China
  - Countermeasures against atmospheric pollutants and search for energy efficiency
  - Influence on CO<sub>2</sub> emission
- Global warming countermeasures: carbon tax or emissions trading
- Possibility of CDM



## Global Warming Countermeasures : Carbon Tax and Emissions Trading

- The idea of carbon tax
- Plan by the Ministry of the Environment      ¥2400/t-C (2004)  
Originally, ¥3600/t-C, price of electricity  
rose to 2.0%, gasoline rose to 2.2%  
CO2 decreased 9.5% from 1990



# Issues of Carbon Tax

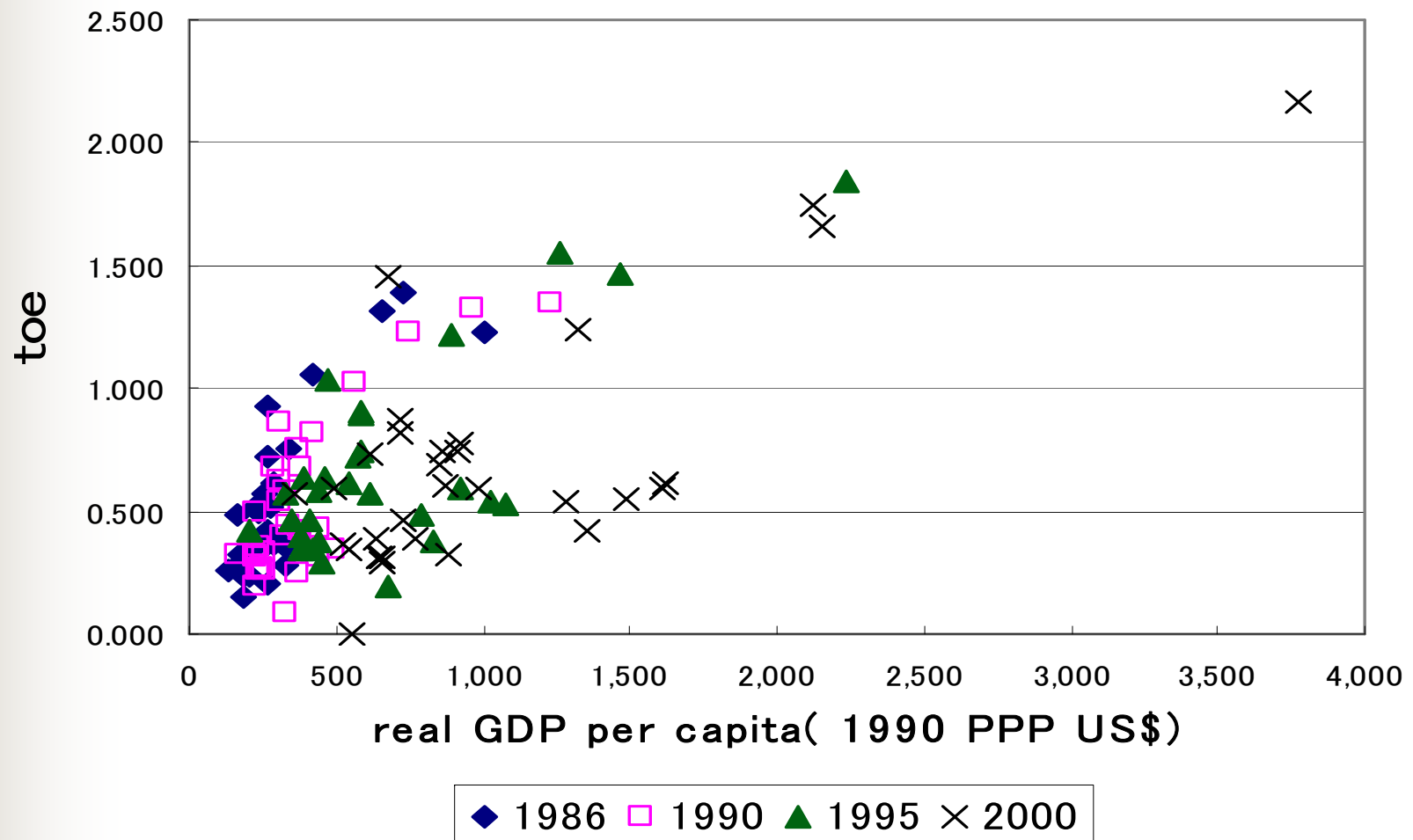
- Price of gasoline and needs
  - Price elasticity is small, demand restraint effect is also small.
- Regular price (average throughout Japan)
  - More than 50% increase from May 1999 to August 2006.
  - Volume of sales in the country rose 6% from 1999 to 2006.
- How to use revenue from tax is also a problem.
  - “Neutral finance” or use for environment subvention.



# Cap and Trade

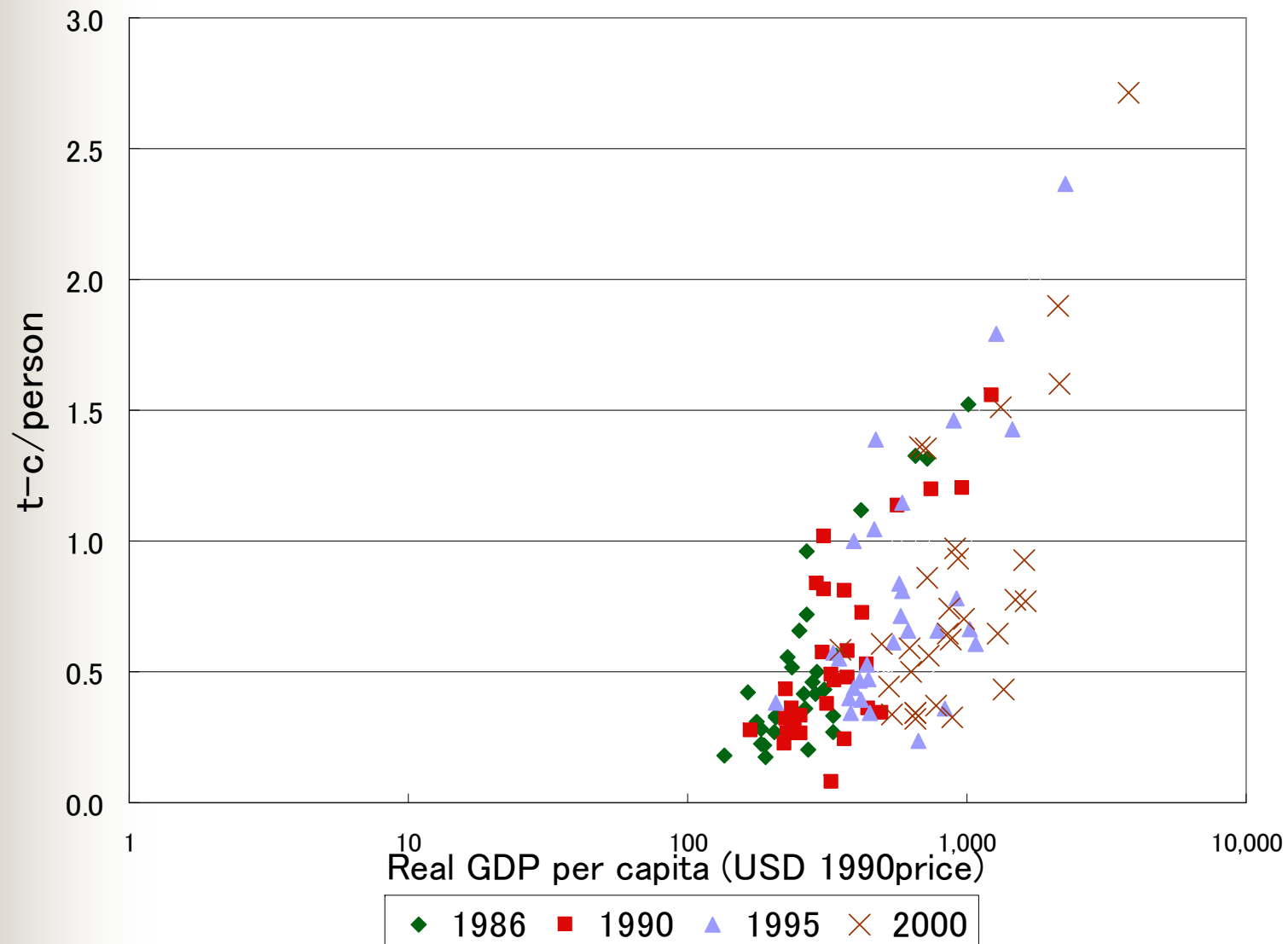
- Advantage
  - cost minimization
  - Amount of emissions cut is clear and secure.
- Why there is a strong resistance
  - disinclination for regulation or intervention, emphasis on voluntary effort
  - dissatisfaction with the Kyoto Protocol

## China: Energy Consumption Per- Person

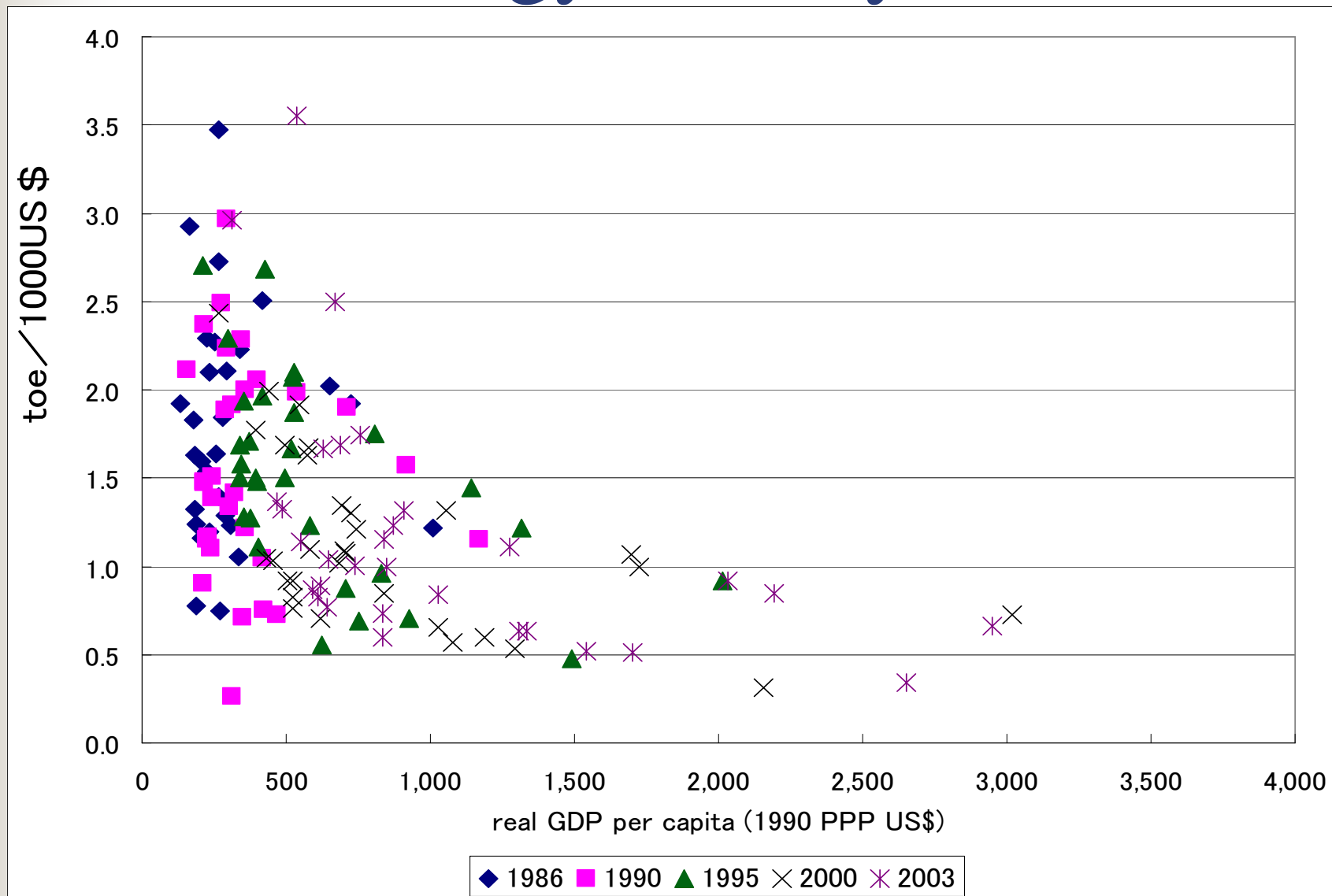




# China: CO<sub>2</sub> Emission Per- Person

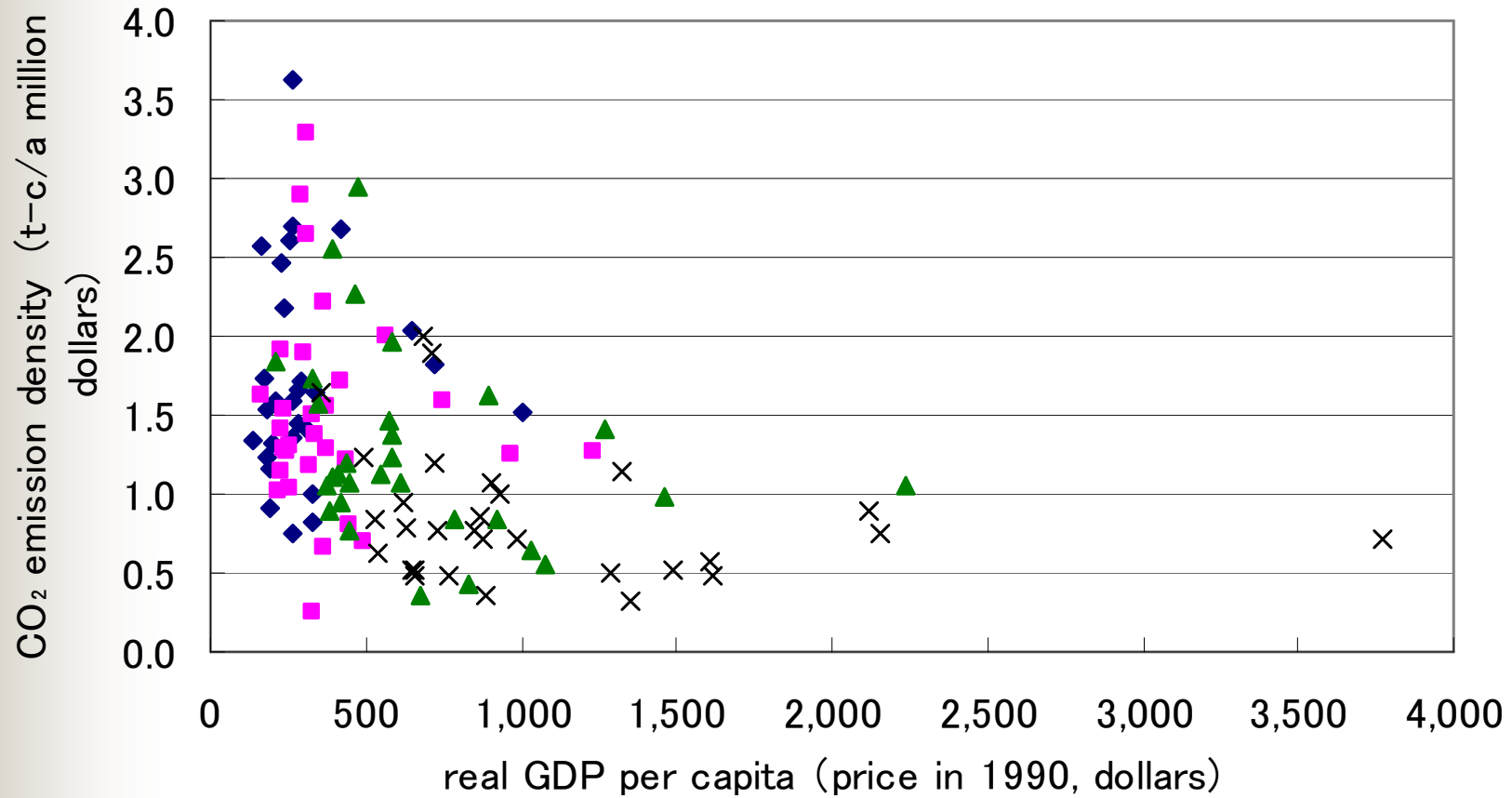


# China: Energy Density



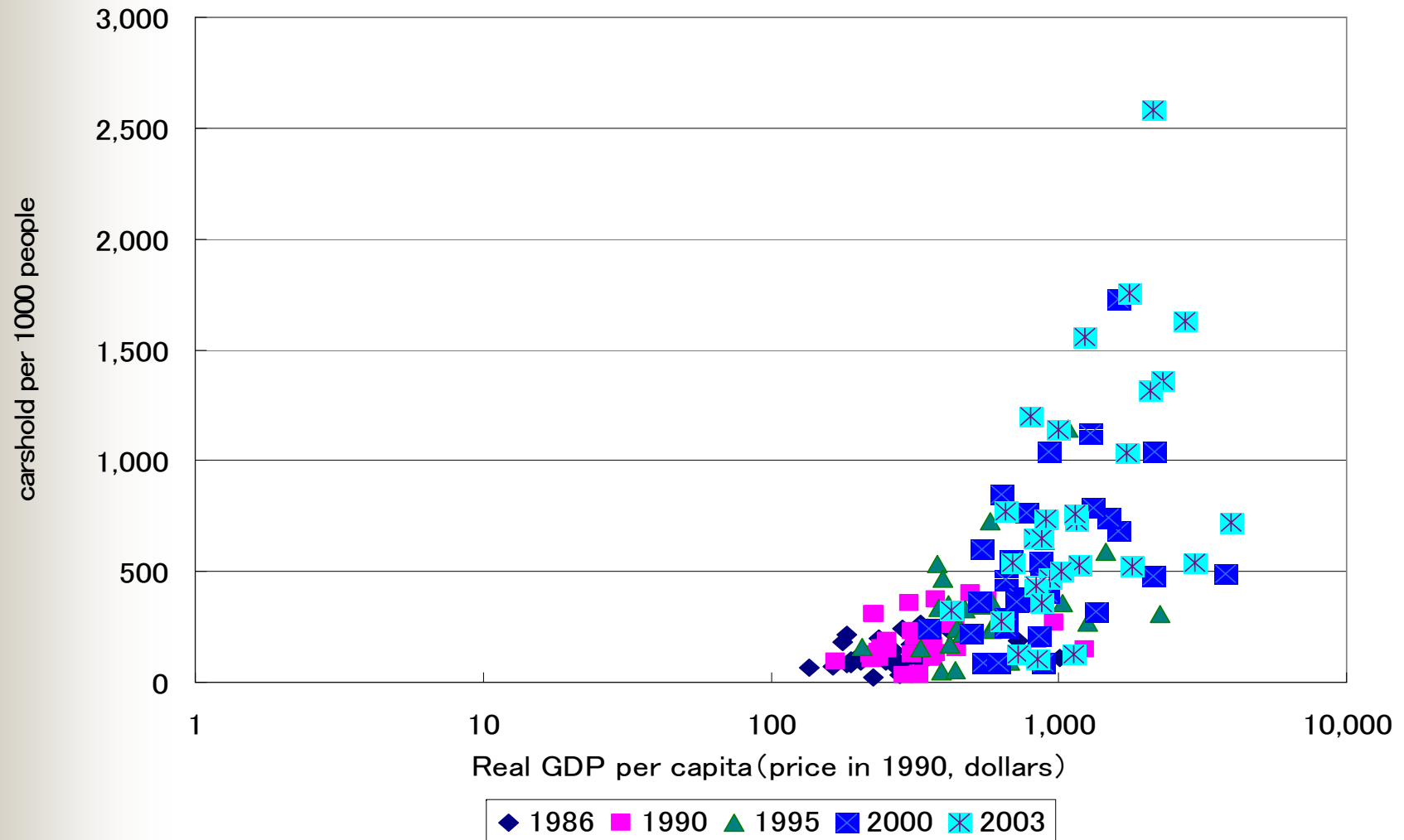


# China: CO<sub>2</sub> Emissions Density

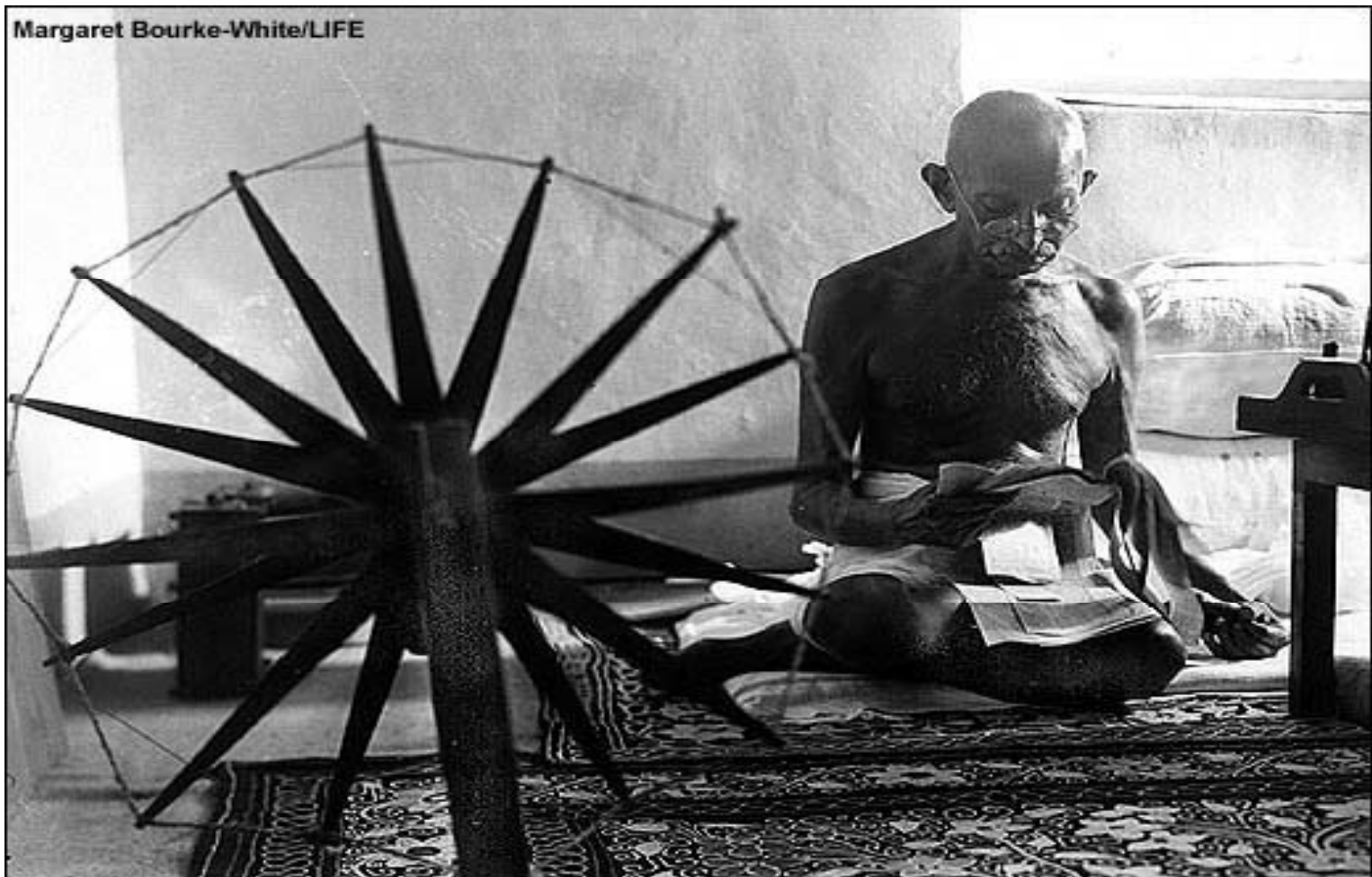


◆ 1986    ■ 1990    ▲ 1995    × 2000

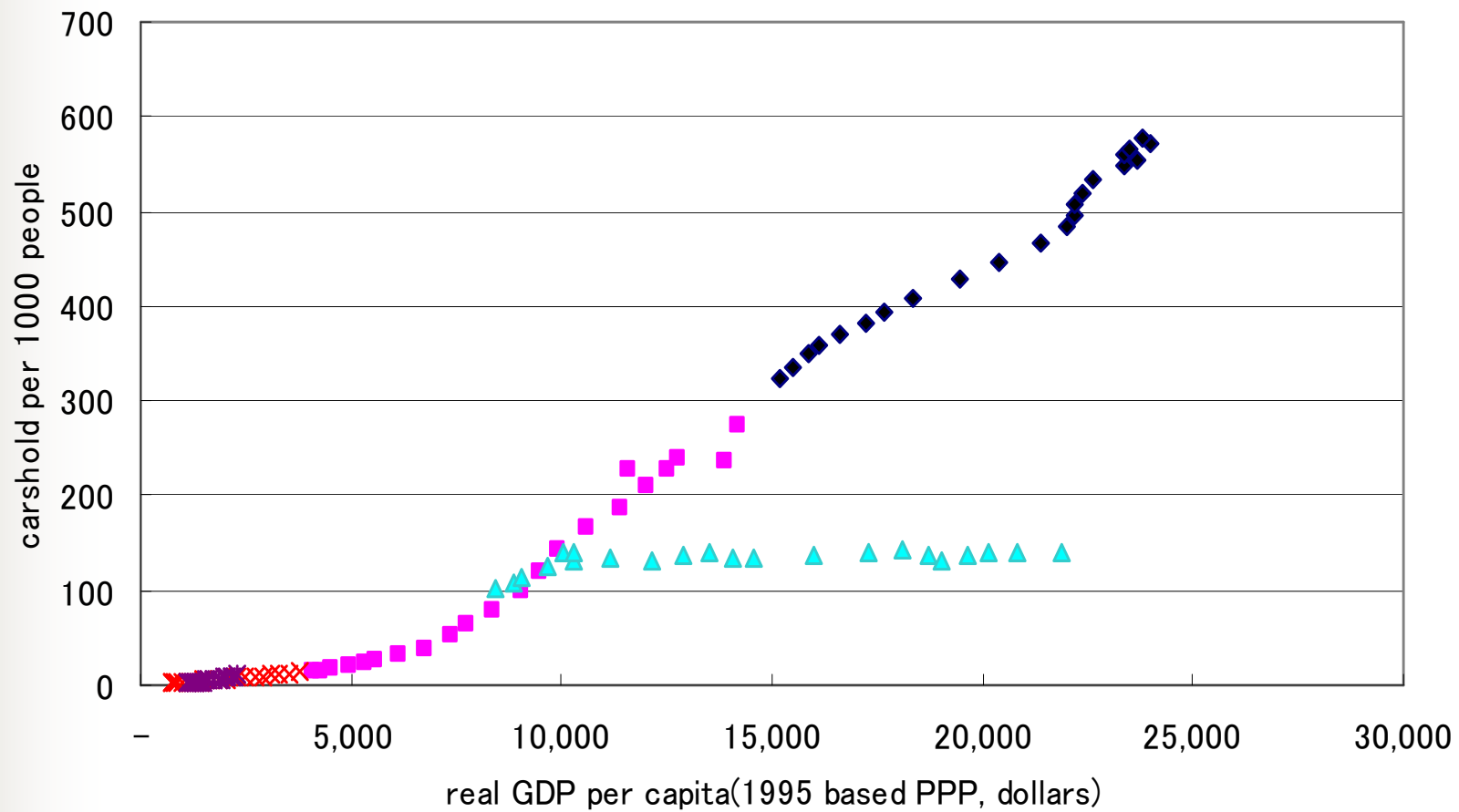
## China: Number of Carshold (per 1,000 people)



“Small and simple is beautiful,  
but...”

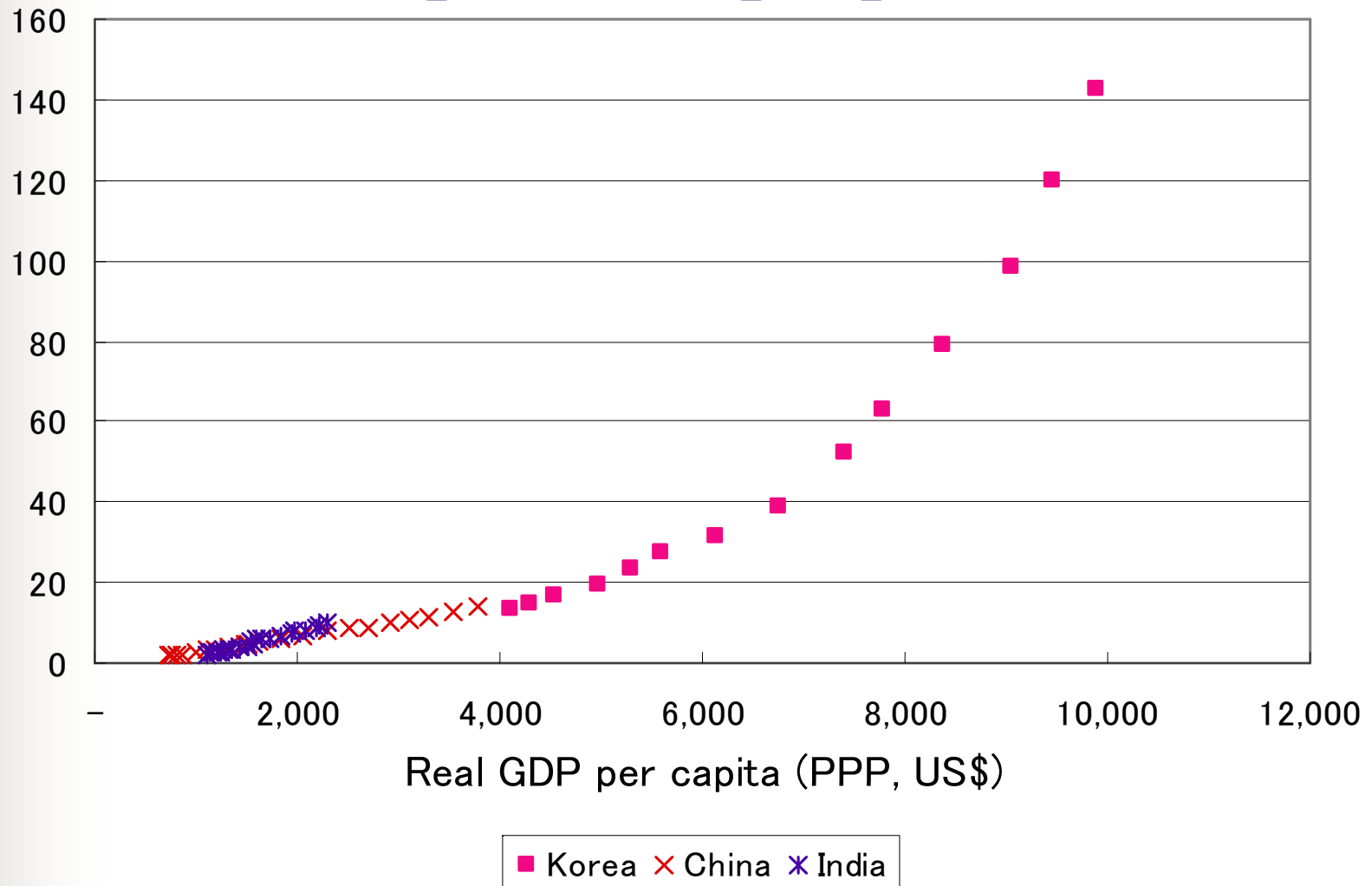


# Carshold and Income



◆ Japan ■ Korea ▲ Singapore × China \* India

# Carshold (per 1000 people)







# CDM (Clean Development Mechanism)

- Advantage

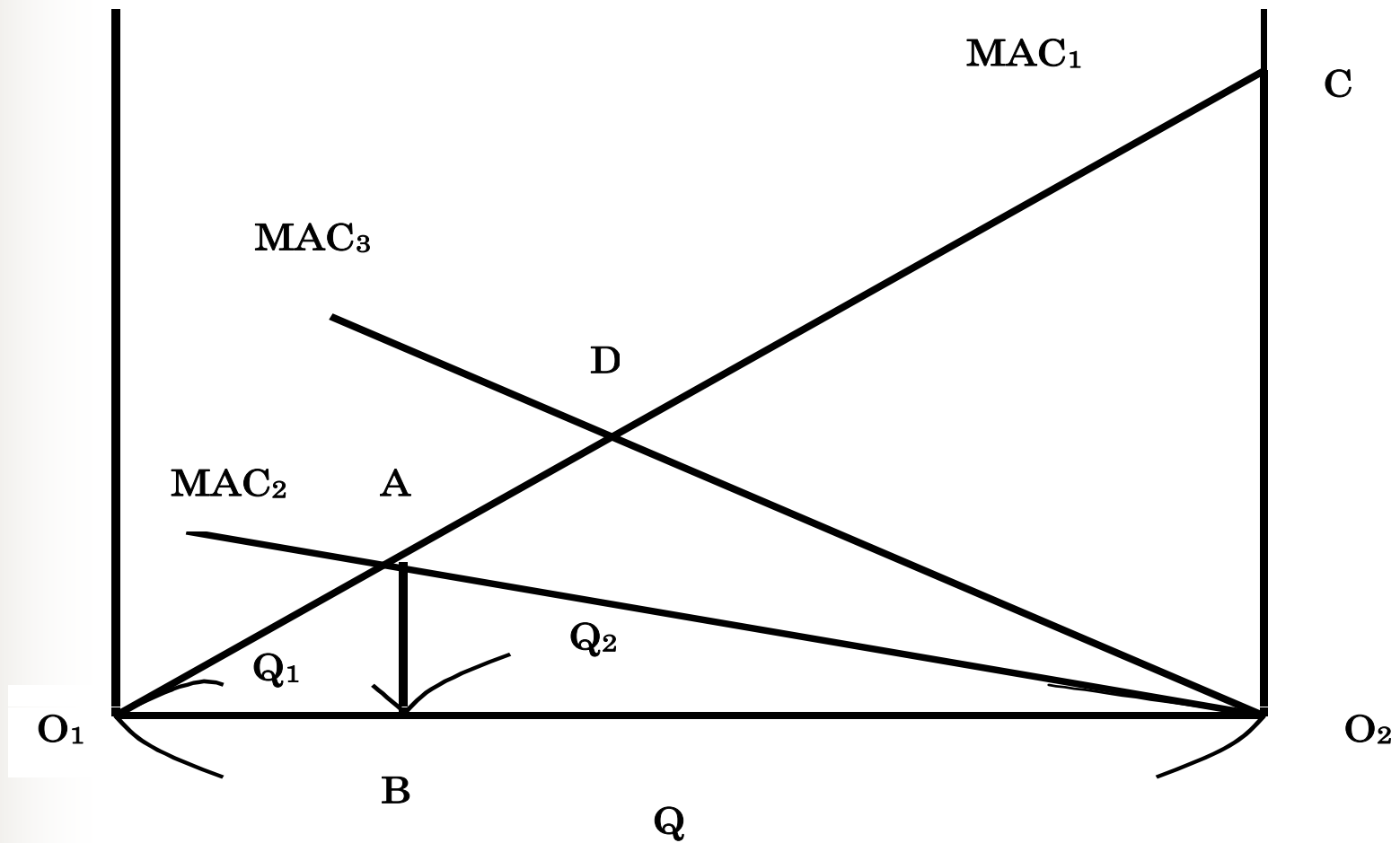
- Make emissions cuts in developing countries easier
- Minimize cut-down costs globally

- Disadvantage

- Influence on industrial competitive force
- Retard technological innovations



# Principle of CDM





## “Evenness” of the World and Emissions Cut-down

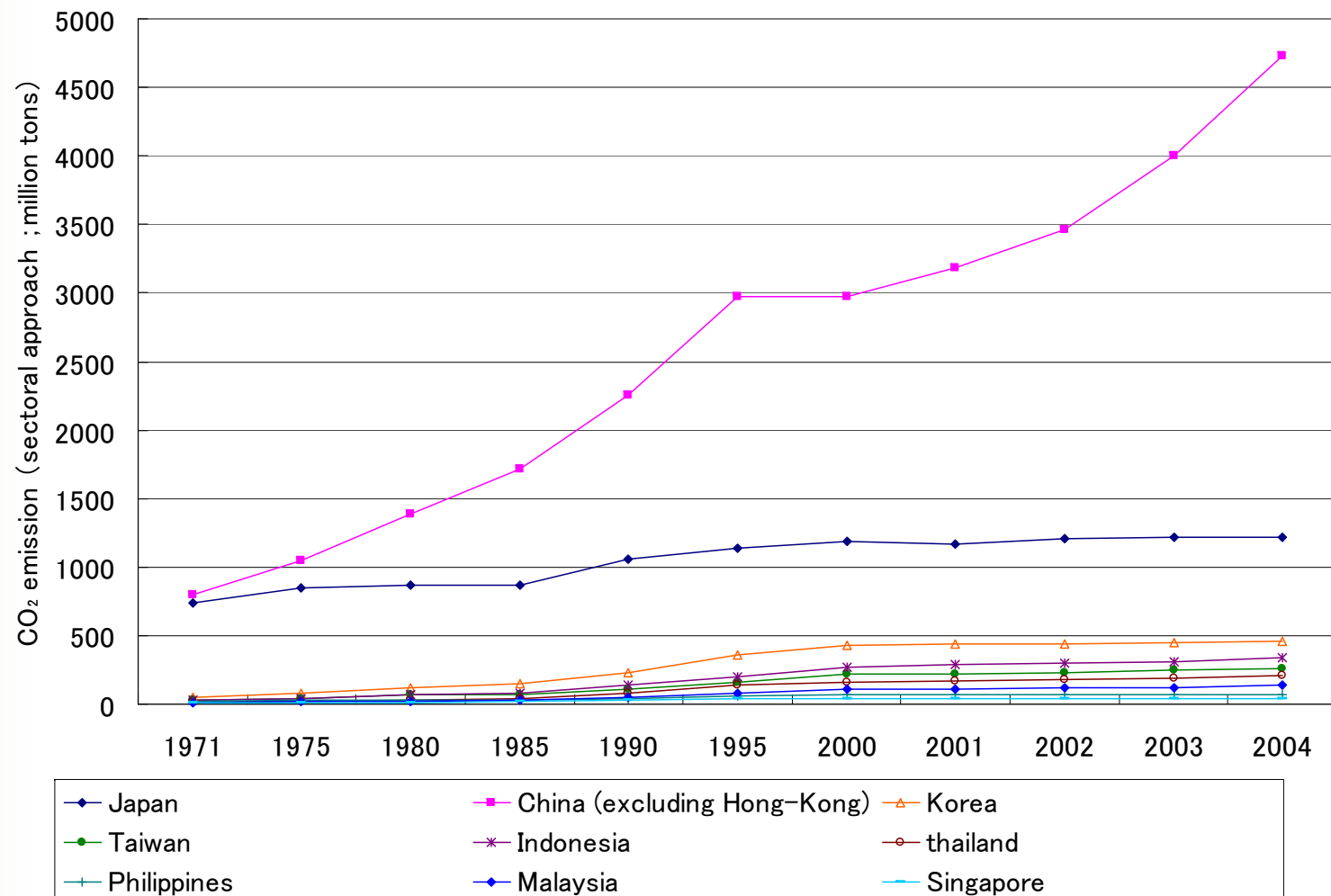
- How to define “evenness”
  - Even emission per person
  - Even carbon tax Stiglitz
  - Earnings related (progression) carbon tax Uzawa
- Money transfer between South and North
- Feasibility



## What if a Country Does Not Reduce Emissions?

- According to the Kyoto Protocol  
Should the USA be punished?
  
- Punitive Tariff
  - Would WTO admit?
  - Limit of punitive tariff      advantageous for larger countries
  
- The last trump card is reputation in the world.

# Total CO<sub>2</sub> Emissions in East Asian Countries



# CO<sub>2</sub> Emissions Per- Person in East Asian Countries

