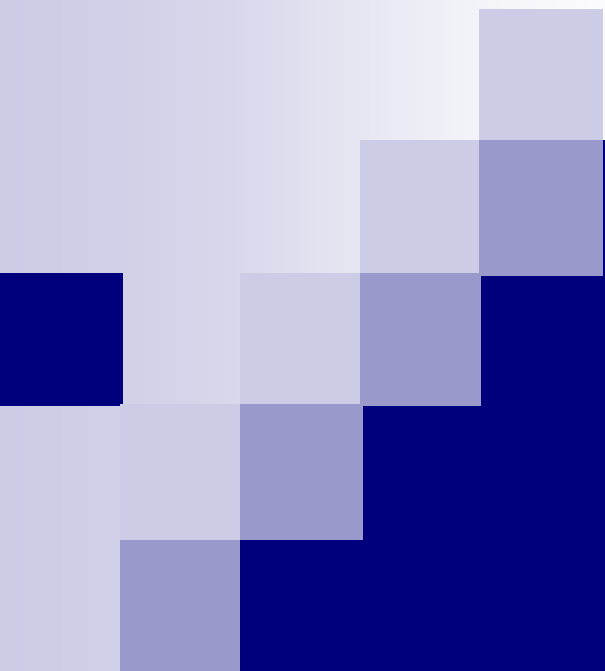**The Science Council of Japan Conference on Sustainability**

7-8 September 2007

Conservation of Global Environment for the Benefit of Poor People

Yujiro Hayami

Foundation for Advanced Studies on International Development
Tokyo, Japan

How to reduce pollution?

Charge prices to pollution
(by laws & regulations)

•Tax (including fine) on pollution

= pollutor-pay → consumers

Subsidy for not polluting

= victim-pay → tax payers

Equivalence in efficiency

different in income distribution

=

Pigou Theorem (Arthur Pigou 1920)

•**Choice depends on the costs of monitoring**

Example 1

Tax on fuel consumption **= carbon tax**

subsidy to reduction in fuel consumption

Example 2

Tax on polluting cars

subsidy to R&D for non-polluting cars

Costs depend on community participation
(NGO etc)

INTERNATIONAL COOPERATION & CONFRONTATION ON ENVIRONMENT

Stockholm → Rio de Janeiro
1972   1992

→ Johannesburg
2002

- Developed :
Uniform rule
Polluter pay → Anti-pollution dumping border protection

- Developing :
Differential rules

↓

polluter-be-paid

Cooperation
‖
Polluter be paid between developed and developing under the condition that polluter-pay within developing countries

Kyoto Protocol
→ Reduction in GHG emission

● **Tradable emission quota**

☐ Assign emission quota among members

☐ Members can sell unused quota (achievement above reduction quota)

● **Clean Development Mechanism**

Contribution of a developed-country member to emission reduction in developing countries can be counted as a part of quota achievement by that member **||**

Victim pay according to Pigon

↓

● **Poverty reduction in rural hinterlands**

Scientific Research and Technology Development for the
effective use of local renewable resources for rural producers

‖

Power generation from solar, hydro, wind and biomass energies

↓

Rural electrication at low capital costs

↓

Rural-based industrialization

‖

Japanese experience, Meiji-Taisho

= electric motor + small hydro electricity generation

↓

Made small rural manufactures competitive to large urban
  factories using steam engines

e.g., conversion of biomass to biofuels

- Chemical engineering technology to convert cellulose in cropresidues and wild grasses to ethnol/diesel
- Agricultural technology to breed suitable plants to biofuels, while can be grown in unfavorable environments (e.g., sweet sorghum)

↑

Clean development mechanism of Kyoto protocol

||

Creation of markets for GHG emission reduction

||

Carbon funds of WB and RDBS

↑

Post-kyoto framework (inclusion of BRICS?)