International Symposium, March 17, 2011 , Seoul,
Environmental Protection and Industrial Competitiveness

Current situation of Domestic Environmental Policy Tools, including Cap and Trade Japanese experience

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Variety of domestic measures

Table 13.1: *National environmental policy instruments and evaluative criteria* [a]

Instrument	Criteria			
	Environmental effectiveness	**Cost-effectiveness**	**Meets distributional considerations**	**Institutional feasibility**
Regulations and standards	Emissions level set directly, though subject to exceptions. Depends on deferrals and compliance.	Depends on design; uniform application often leads to higher overall compliance costs.	Depends on level playing field. Small/new actors may be disadvantaged.	Depends on technical capacity; popular with regulators in countries with weakly functioning markets.
Taxes and charges	Depends on ability to set tax at a level that induces behavioural change.	Better with broad application; higher administrative costs where institutions are weak.	Regressive; can be ameliorated with revenue recycling.	Often politically unpopular; may be difficult to enforce with underdeveloped institutions.
Tradable permits	Depends on emissions cap, participation and compliance.	Decreases with limited participation and fewer sectors.	Depends on initial permit allocation. May pose difficulties for small emitters.	Requires well functioning markets and complementary institutions.
Voluntary agreements	Depends on programme design, including clear targets, a baseline scenario, third party involvement in design and review and monitoring provisions.	Depends on flexibility and extent of government incentives, rewards and penalties.	Benefits accrue only to participants.	Often politically popular; requires significant number of administrative staff.
Subsidies and other incentives	Depends on programme design; less certain than regulations/standards.	Depends on level and programme design; can be market distorting.	Benefits selected participants, possibly some that do not need it.	Popular with recipients; potential resistance from vested interests. Can be difficult to phase out.
Research and development	Depends on consistent funding; when technologies are developed and polices for diffusion. May have high benefits in the long term.	Depends on programme design and the degree of risk.	Benefits initially selected participants; potentially easy for funds to be misallocated.	Requires many separate decisions. Depends on research capacity and long-term funding.
Information policies	Depends on how consumers use the information; most effective in combination with other policies.	Potentially low cost, but depends on programme design.	May be less effective for groups (e.g. low-income) that lack access to information.	Depends on cooperation from special interest groups.

IPCC/AR4/WG3/Ch.13 p. 767

Why voluntary initiative works well in Japan

- No penalty. What if they fail to comply with?
- Long-term profit maximization
- Credibility (verbal commitment is enough)
- Earthquake in 2007 and TEPCO
- Industry's strong will to do it by themselves
- Need to explain to the rest of the world
- It must be acknowledged that VAs fit into the cultural traditions of some countries better than others. Japan, for example, has a history of co-operation between government and industry that facilitates the operation of "voluntary" programmes. (IPCC/AR4/WG3/Ch. 13, p.760)
- The special relationship between the government and industry as well as unique societal norms make this voluntary initiative unique. In the context of Japan there is de facto enforcement. (IPCC/AR4/WG3/Ch. 13, p.761)

Why Japan avoided cap and trade

- Lessons learnt from EU ETS
- Can Government decide future industrial structure?
- Cap does not necessarily reduce emissions because of leakage
- VA proved to work well

But the most important factor was the Government's intention to introduce C&T without showing target level itself.

Lessons learnt from EU ETS

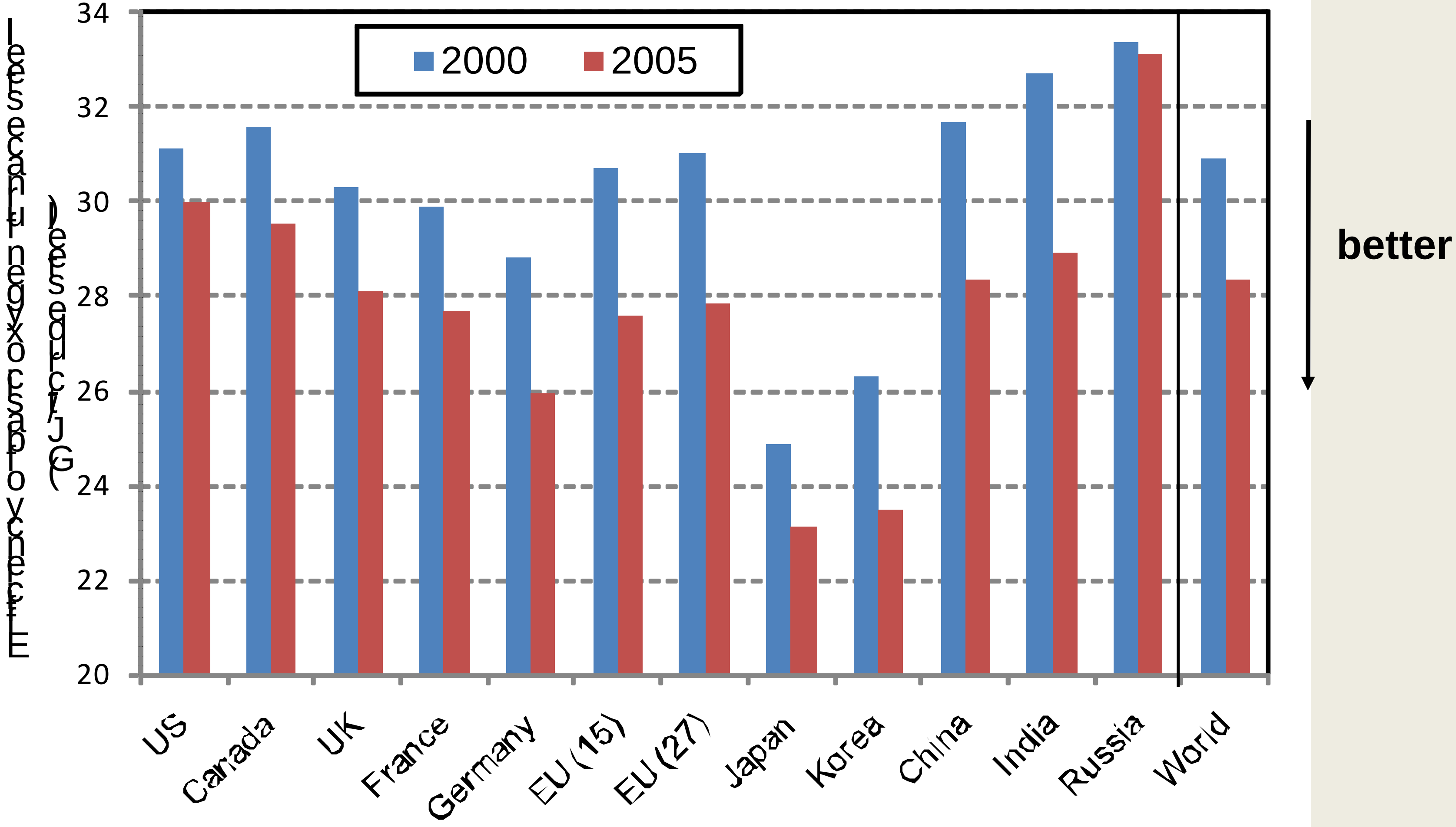
Theory

- Cap (Environmental Effectiveness) and Trade (Economic Efficiency), based on “short-term profit maximization”.
- Set quantity target and leave the price to market

Reality

- Lack of investments due to fluctuations of carbon price
- Recent efforts to stabilize price is against the nature of C&T.
- Complexity of initial allocation (benchmarking for sectors exposed to international competition)
- Cap was not so stringent
- Comparison of energy efficiency between Japan and Europe

Comparisons of Energy Efficiency
— Iron & Steel Sector (BF/BOF) —



Note: Electricity is converted by using 1MWh=0.086/0.33toe.
Source: Estimates by RITE based on IEA statistics, IISI (WSA) etc.

Can the Government decide future industrial structure?

Government was not confident

- This may lead to market distortion
- What if government give lenient allocation to the sector that may decline in future, and vice versa?

100% auction of allowances are the solution. It would be unrealistic, however, in view of international competition in several sectors.

Can cap reduce emissions?
Industrial Sector in 2020 (Japan, EU and US)

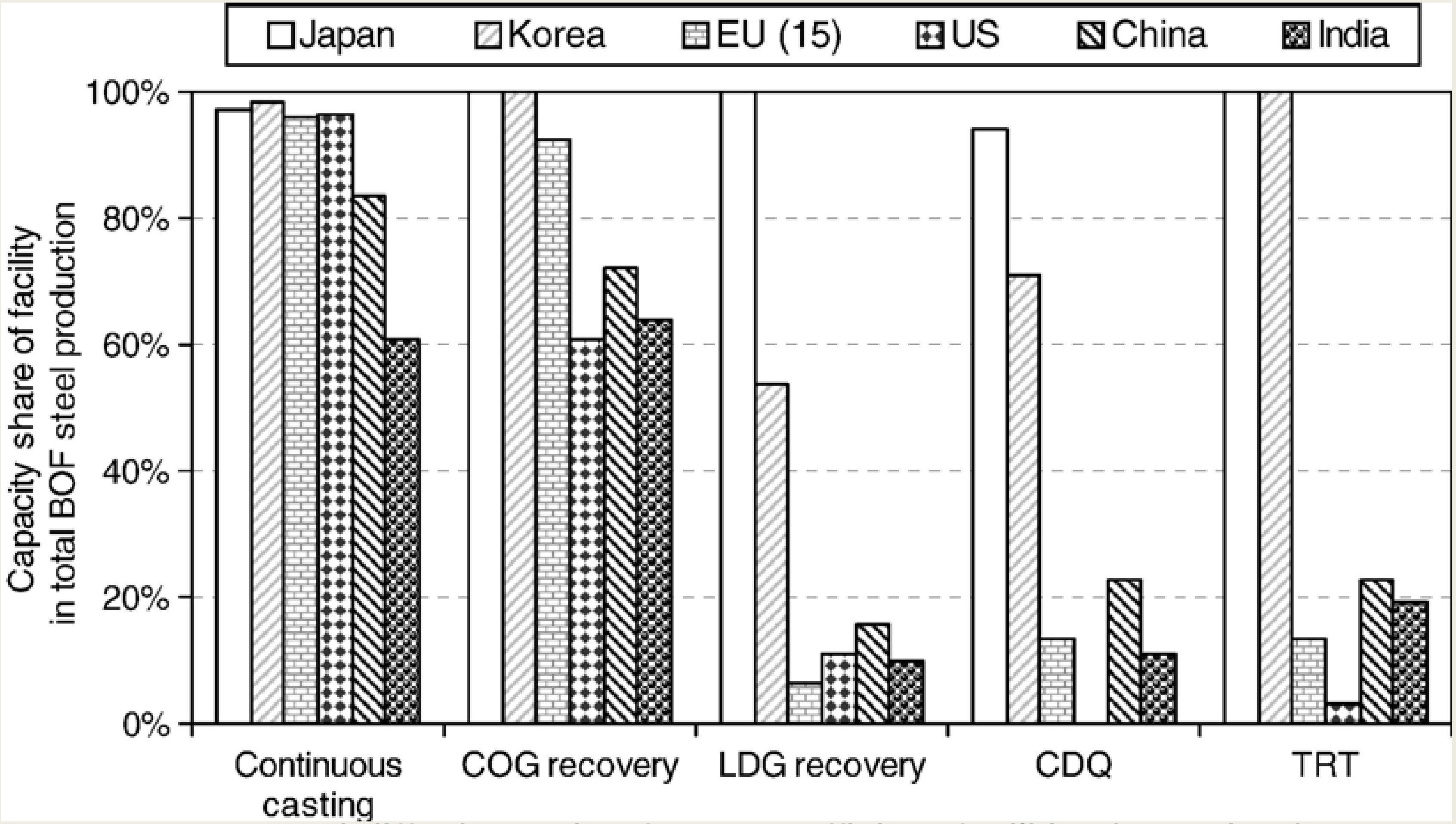
[%] (Share of emission reduction potential by cost in baseline emissions (BaU case) in inddustrial sectors of each country.)

	Japan	EU27	US
0-50 $/tCO2	**2.0%** (Representative measures) Increase in waste biomass use in various industrial sectors	**9.0%** (Representative measures) Energy saving in iron&steel and alminium sectors Increase in waste biomass use	**17.4%** (Representative measures) Energy saving in iron&steel, chemical, and alminium sectors Increase in waste biomass use
50-100 $/tCO2	2.0% (Representative measures) Energy saving in iron&steel, cement and petrochemical sectors	7.1% (Representative measures) Energy saving in petrochemical and chemical sectors	10.8% (Representative measures) Energy saving in cement and petrochemical sectors
100-200$/tCO2	5.5% (Representative measures) Energy saving in various industrial sectors	5.8% (Representative measures) Energy saving in cement and other industrial sectors	8.1% (Representative measures) Energy saving in various industrial sectors
200-500$/tCO2	7.6% (Representative measures) Energy saving in iron&steel, chemical sectors etc. by replacement of facilities with long remaining lifetime	5.2% (Representative measures) Energy saving in iron&steel, cement, petrochemical sectors etc. by replacement of facilities with long remaining lifetime	1.0% (Representative measures) Energy saving in iron&steel, cement, petrochemical sectors etc. by replacement of facilities with long remaining lifetime
Total	17.0%	27.0%	37.3%

Note: The shares of emission reduction potentials represent those not from the emissions in a certain base year (e.g., year of 1990) but from baseline emissions (BaU case) in 2020 .

The chart presented by Dr. K. Akimoto of RITE to the Government Committee in September 1, 2010.

Technologies should be taken into account when setting cap



Assumed diffusion ratio of energy efficient facilities by region in 2000

J. Oda et al. "Diffusion of energy efficient technologies and CO2 emission reductions in iron and steel sector" Energy Economics 29 (2007)

Real issue was that the Government tried to introduce cap & trade without setting the level of target

The above is the experience in Japan.

Korea should have its own evaluation on cap & trade and other policies and measures