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Environmental Economics and Environmental Policy
No. 3

1. Air Pollution Control

Pollution Control → Macro policy: industrial policy, location policy
Micro policy: emission source control

Emission source control → Emission Standards

Actors: private company, citizen, scientist (epistemic community), mass media,
local government, national government

Standard Setting: epidemiology

Air Pollution Control Law 1968

Factory (plant)

Emission standards: SOx：K value regulation（1968）$q=K\times10^{-3}\times He^2$

K Values: 3.0-14.5 (17.5), q: $kg/Nm^3/h$

Total pollutant load control（1974）

Automobile

SOx, NOx, PM10, PM2.5

2. Water pollution Control

Water quality standards:

①living environmental items: pH, BOD, SS, DO, Coliform

②Health items: Cd, T-CN, Pb, Cr, As T-Hg, Org-Hg, PCB etc. total 23 substances

Rivers : AA, A, B, C, D, E、Lakes: AA, A, B, C、Sea: A, B, C and Ⅰ,Ⅱ,Ⅲ,Ⅳ

Effluent standards (1970), Total pollutant load control (1979)

River Water Quality Standards in Japan					
	Standard Level				
Type	**pH**	**BOD**	**SS**	**DO**	**Coli form**
AA	**6.5-8.5**	**Less than 1mg/L**	**Less than 25mg/L**	**More than 7.5mg/L**	**Less than 50MPN/100ml**
A	**6.5-8.6**	**Less than 2mg/L**	**Less than 25mg/L**	**More than 7.5mg/L**	**Less than 1000MPN/100ml**
B	**6.5-8.6**	**Less than 3mg/L**	**Less than 25mg/L**	**More than 5mg/L**	**Less than 5000MPN/100ml**
C	**6.5-8.7**	**Less than 5mg/L**	**Less than 50mg/L**	**More than 5mg/L**	**-**
D	**6.0-8.5**	**Less than 8mg/L**	**Less than 100mg/L**	**More than 2mg/L**	**-**
E	**6.0-8.6**	**Less than 10mg/L**	**-**	**More than 3mg/L**	**-**

River Water Quality Standards in Indonesia

parameter	Unit	Class Ⅰ	Class Ⅱ	Class Ⅲ	Class Ⅳ
1. Physical Parameter					
Solve residue	mg/L	1000	1000	1000	2000
Temperature	℃	Temp+-3	Normal Water Temp	Normal Water Temp	Normal Water Temp
Suspended residue	mg/L	50	50	50	400
2. Chemical Parameter					
a. Inorganic chemistry					
pH		**(6-9)**	**(6-9)**	**(6-9)**	**(6-9)**
BOD	mg/L	**2**	**3**	**6**	**12**
COD	mg/L	**10**	**25**	**50**	**100**
Desolved Oxigen (DO)	mg/L	**6**	**4**	**3**	**0**
Total phospate (T-P)	mg/L	0.2	0.2	1	5
NO_3-N	mg/L	10	10	20	20
NH_3-N	mg/L	0.5	-	-	-
Arsenic(As)	mg/L	0.05	1	1	1
Cobalt (Co)	mg/L	0.2	0.2	0.2	0.2
Balium(Ba)	mg/L	1	-	-	-
Boron(B)	mg/L	-	-	-	1
Selenium (Se)	mg/L	0.01	0.05	0.05	0.05
Cadmium	mg/L	0.01	0.01	0.01	0.01
Chromium 6(CR6+)	mg/L	0.05	0.05	0.05	1
Zink (Z)	mg/L	0.02	0.02	0.02	0.2
Iron(Fe)	mg/L	0.3	-	-	-
Lead	mg/L	0.03	0.03	0.03	1
Manganese (Mn)	mg/L	0.1	-	-	2

3. Technology Based Effluent Standards (TBES) in USA

Air Pollution

1970 Clean Air Act: Old Plant: Reasonable Available Control Technology (RACT)
New Plant: Lowest Achievable Emission Rate (LAER)
Serious Pollution Area: Best Available Control Technology (BACT)

Water Pollution:

1972 Water Pollution Control Act Amendments: Best Practicable Technology (BPT)
Best available Technology (BAT) 1983
1977 Clean Water Act: Best Conventional Technology (BCT)
1987 Water Quality Act: Technology-based effluent standards

4. 3 types of Environmental Policy

CAC: command and control ・Emission Standard
・Technology Standard

MBIs: market based instruments ・Pollution Charge (Tax)
・Emission Rights Trading

VA: voluntary approach ・Pollution control agreement
・Certification: ISO14000, Eco-labeling
・CSR, Environment Audit

6. References

Committee on Japan's Experience in the Battle against Air Pollution (1997), *Japan's Experience Against Air Pollution: Working towards Sustainable Development*, The Pollution-Related Health Damage Compensation and Prevention Association, Tokyo.

Field, B. and M. K. Field (2009), *Environmental Economics: an Introduction, 5th ed.*, McGraw-Hil

Matsuoka, S. (2000), Implementation of environmental policy in the developing countries: Regulatory Instrument and their efficiency, *Journal of International Development Studies*, 9 (2), pp.11-36.
http://www.f.waseda.jp/smatsu/

7. Schedule of Course Work

1. Introduction: Theory and practice of Environmental Economics and Environmental Policy (9/28)

Part 1: Historical Development of Environmental Policies

We will review the history of pollution and combating against pollution in Japan.

2. Air Pollution and Policy (10/5), (10/12 will be closed)
3. Water Pollution and Policy (10/19)
4. * Students have to make a short report and presentation about the situation of major pollution issues (air and water) and ambient standards in your home country. (10/26)

Part 2: Theory of Environmental Policies

We will see three basic types of environmental policies, Command and Control (CAC), Market Based Instruments (MBIs), and Voluntary Approach (VA) and their efficiency.

5. CAC and MBIs and the comparison of their efficiency (1) 11/2
6. CAC and MBIs and the comparison of their efficiency (2) 11/9
7. Voluntary Approaches and theory of Policy Mix 11/16
8. Climate Change Policy 11/30
9. * Students have to a short report and presentation about the pollution control policy (air, water and climate) in your home country. 12/7

Part 3: Economic Evaluation on Environmental Policy and Project

In this part, we will discuss policy evaluation and economic evaluation of environmental policy, focusing on Cost of Illness (COI), Stated Preference (SP), and Revealed Preference (RP).

10. PDCA Cycle and Policy Evaluation 12/14
11. Cost Benefit analysis in Environmental Policy 12/21
12. Economic Valuation on Environmental Policy-COI, SP and RP 1/11
13. Contingent Valuation Method (CVM) and Travel Cost Method (TCM) 1/18
14. The Design of Environmental Policy 1/25
15. * Students have to a short report and presentation about Policy Evaluation of the pollution control policy (air, water or climate) in your home country. Concluding remarks 1/25