Environmental Politics in Other Industrialized Democracies
Main Lecture Points

- Other Industrialized Democracies:
  - Face many of the same environmental problems
  - Use different policy solutions
  - Arrived at by different paths
  - Design, legislate, and implement solutions at different speeds

- Differences in Pollution Intensity & Population Demographics Matter

- Differences in Government Institutions Matter
  - Electoral Rules
  - Government Structure
Major Themes of the US Story

- Increasing intensity of pollution driven by economic growth
- High visibility crisis & publications
- Crystallizing events
- Federal Elections
- Institutions
  - States vs. Federal
  - Executive vs. Congress
  - Congress vs. Congress
  - Bureaucrats vs. others
  - Courts
- Continuous Major Policy Changes Alongside Periods of Status-quo
Japanese Environmental Politics Story

1950s-1960s:
- Tremendous economic growth led by industry + LDP + bureaucracy
- National level regulation
- Increasing pollution & deadly pollution diseases

Late 1960s:
- Waves of protest and complaints
- 4 major pollution-disease lawsuits
- LDP loses several municipal & local elections

1971: “The Pollution Diet” passed 14 major laws. Goes from most environmentally lax industrialized state to most stringent.

1980s-1993: Pollution issue fades

1993: Electoral formula changes, environmental policy increases in saliency

2001: Govt. restructured: Ministry of Environment created
Japan’s Big Three Pollution Diseases

- Minamata Disease
- Yokkaichi Asthma
- “Itai Itai” Disease
Japan’s “Big Four” Court Cases

- Aoyama et. al. v. Mitsui Kinzoku, Nagoya High Court, August 9, 1972
- Ono et. al. v. Showa Denko, Niigata District Court, September 29, 1971
- Watanabe et. al. v. Chisso, Kumamoto District Court, August 9, 1972
- Shiono et al. v. Showa Yokkaichi Sekiyu, Tsu District Court, July 24, 1972
Major Themes of the Japanese Story

- Increasing intensity of pollution driven by economic growth
- High visibility crises & continuous, increasing protest
- High visibility but ineffective court cases
- Municipal & Local Elections
- Institutions
  - Majority Party (LDP): Executive & Parliament
  - Bureaucrats vs. Bureaucrats
- Sudden major policy change, followed by little for decades, then major policy change
Comparative GDP Growth

World Bank (2002)
### Sulfur Dioxide (SO2) Air Pollution, 1970

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Emissions</th>
<th>Per Capita Emissions</th>
<th>Per GDP Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>27.8 m. tons</td>
<td>271 lbs/person</td>
<td>15 lb/$1,000 in GDP</td>
</tr>
<tr>
<td>UK</td>
<td>6.2</td>
<td>224</td>
<td>19</td>
</tr>
<tr>
<td>Japan</td>
<td>5.6</td>
<td>107</td>
<td>5</td>
</tr>
<tr>
<td>Germany</td>
<td>3.6</td>
<td>92</td>
<td>5</td>
</tr>
<tr>
<td>France</td>
<td>2.9</td>
<td>114</td>
<td>7</td>
</tr>
</tbody>
</table>

From stationary sources; SO2--OECD 1993 data; population, GDP—World Bank Data

Source: Broadbent, Jeffrey *Environmental Politics in Japan* (Cambridge Univ. Press, 1998)
## Sulfur Dioxide (SO2) Air Pollution, 1998

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Emissions</th>
<th>Per Capita Emissions</th>
<th>Per GDP Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>21.4 m. tons</td>
<td>152 lb/person</td>
<td>5.1 lb/$1,000 in GDP</td>
</tr>
<tr>
<td>UK</td>
<td>2.2</td>
<td>76</td>
<td>4.0</td>
</tr>
<tr>
<td>Japan</td>
<td>1.0</td>
<td>16</td>
<td>0.7</td>
</tr>
<tr>
<td>Germany</td>
<td>1.4</td>
<td>35</td>
<td>1.5</td>
</tr>
<tr>
<td>France</td>
<td>1.0</td>
<td>36</td>
<td>1.8</td>
</tr>
</tbody>
</table>

OECD, World Bank
Comparative S02 Reduction

Source: Broadbent, Jeffrey Environmental Politics in Japan (Cambridge Univ. Press, 1998); OECD 1993, 1999
Why are some countries more polluted than others?

- Degree or timing of industrialization
- Density of population
- Density of industry
- Size of the economy
- Amount/diversity of natural resources
- Green Parties
- Powerful Corporations
- Institutions
Comparative Pop & Industrial Densities, 1970

Japan = 100

Japan
Germany
France
UK
USA

Broadbent (1998)
Do Demographic Factors Explain the Differences in S02 Abatement?

### Comparative S02 Reduction

- **Japan**
- **Germany**
- **France**
- **UK**
- **USA**

### Comparative Pop & Industrial Densities, 1970

- **Pop/KM2**
- **GDP/KM2**
- **Energy Use/KM2**

Legend:
- Japan
- Germany
- France
- UK
- USA
Comparative Air Pollution Intensity, 1970

Natural Intensity of Air Pollution = total SO2 output/populated land area

Social Intensity of Air Pollution = total SO2 output * population density

Broadbent (1998)
Comparative S02 Reduction

Comparative Air Pollution Intensity, 1970

Natural Intensity = total SO2 output/populated land area

Social Intensity = total SO2 output * population density

Broadbent (1998)

17.32 Environmental Politics
What Might Account for The Remaining Cross-National Differences?

- Material interests of those suffering or benefiting, and how they turn these interests into policy → Institutions (elections & division of power)

- But how would election styles affect policy?
The Great Lunch Election

- Pizza
- BBQ
- Chinese
The Great Lunch Election

<table>
<thead>
<tr>
<th>Voter</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Pizza</td>
<td>Chnx</td>
<td>BBQ</td>
<td>Chnx</td>
<td>BBQ</td>
<td>Chnx</td>
<td>Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
<td>Pizza</td>
</tr>
<tr>
<td>2nd</td>
<td>Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
<td>BBQ</td>
<td>Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
<td>Chnx</td>
<td>Chnx</td>
<td>BBQ</td>
</tr>
<tr>
<td>3rd</td>
<td>BBQ</td>
<td>BBQ</td>
<td>Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
<td>BBQ</td>
<td>BBQ</td>
<td>BBQ</td>
<td>BBQ</td>
<td>Chnx</td>
</tr>
</tbody>
</table>
Major Types of Electoral Formulas

- **Simple plurality**: each individual casts a single vote for a single alternative, the one with the most votes wins.

- **Plurality runoff**: each individual casts a single vote for a single alternative, the two with the most votes move to simple plurality.

- **Sequential runoff**: each individual casts a single vote for a single alternative, the one with the fewest votes is eliminated, the balloting in repeated until only one remains.

- **Borda count**: each voter lists his preferences by awarding X votes to his first choice, X-1 to the second, etc. The votes are totaled and the one with the most points wins.

- **Condorcet procedure**: Pairwise round-robin, each alternative is run against each other, the one that wins the most is victor or the one that beats all is victor.

- **Approval Voting**: Each voter casts votes for any alternative he likes, the one with the most votes wins.
# The Great Lunch Election

<table>
<thead>
<tr>
<th>Voter 1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Pizza</td>
<td>Chnx</td>
<td>BBQ</td>
</tr>
<tr>
<td>2 Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
</tr>
<tr>
<td>3 BBQ</td>
<td>BBQ</td>
<td>Chnx</td>
</tr>
</tbody>
</table>
Round-Robin: Run Every Combination of Choices

Pizza v. BBQ = Pizza  
BBQ v. Chnx = Chnx  
Pizza v. Chnx = Pizza

<table>
<thead>
<tr>
<th></th>
<th>Carlos</th>
<th>Julia</th>
<th>Patrick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pizza</td>
<td>Chnx</td>
<td>BBQ</td>
</tr>
<tr>
<td>2</td>
<td>Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
</tr>
<tr>
<td>3</td>
<td>BBQ</td>
<td>BBQ</td>
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<tr>
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<td>Chnx</td>
<td>Pizza</td>
<td>Pizza</td>
</tr>
<tr>
<td>3</td>
<td>BBQ</td>
<td>BBQ</td>
<td>Chnx</td>
</tr>
</tbody>
</table>

Pizza v. BBQ = Pizza (C,J)
BBQ v. Chnx = Chnx (C,J)
Pizza v. Chnx = Pizza (C,P)
The Great Lunch Election

Election Rule: Pizza v. Chinese →
winner v. BBQ

<table>
<thead>
<tr>
<th></th>
<th>Carlos</th>
<th>Sarah</th>
<th>Patrick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pizza</td>
<td>Chnx</td>
<td>BBQ</td>
</tr>
<tr>
<td>2</td>
<td>Chnx</td>
<td>BBQ</td>
<td>Pizza</td>
</tr>
<tr>
<td>3</td>
<td>BBQ</td>
<td>Pizza</td>
<td>Chnx</td>
</tr>
</tbody>
</table>
The Great Snack Election

Election Rule I: Pizza v. Chinese ➔ winner v. BBQ...winner BBQ!

Election Rule II: BBQ v. Pizza ➔ winner v. Chinese

<table>
<thead>
<tr>
<th></th>
<th>Carlos</th>
<th>Sarah</th>
<th>Patrick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pizza</td>
<td>Chnx</td>
<td>BBQ</td>
</tr>
<tr>
<td>2</td>
<td>Chnx</td>
<td>BBQ</td>
<td>Pizza</td>
</tr>
<tr>
<td>3</td>
<td>BBQ</td>
<td>Pizza</td>
<td>Chnx</td>
</tr>
</tbody>
</table>
The Great Snack Election

Election Rule I: Pizza v. Chinese → winner v. BBQ...winner BBQ!

Election Rule II: BBQ v. Pizza → winner v. Chinese...winner Chinese!

Election Rule III: Chinese v. BBQ → winner v. Pizza...

<table>
<thead>
<tr>
<th></th>
<th>Carlos</th>
<th>Sarah</th>
<th>Patrick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pizza</td>
<td>Chnx</td>
<td>BBQ</td>
</tr>
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<td>BBQ</td>
<td>Pizza</td>
</tr>
<tr>
<td>3</td>
<td>BBQ</td>
<td>Pizza</td>
<td>Chnx</td>
</tr>
</tbody>
</table>

Patrick Sarah Carlos
# Probability of Vote Cycling Arising

### # of Voters

<table>
<thead>
<tr>
<th># of Choices</th>
<th>3</th>
<th>5</th>
<th>7</th>
<th>9</th>
<th>11</th>
<th>Huge</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5.6%</td>
<td>6.9%</td>
<td>7.5%</td>
<td>7.8%</td>
<td>8.0%</td>
<td>8.8%</td>
</tr>
<tr>
<td>4</td>
<td>11%</td>
<td>14%</td>
<td>15%</td>
<td>16%</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>5</td>
<td>16%</td>
<td>20%</td>
<td>22%</td>
<td>~</td>
<td>~</td>
<td>25%</td>
</tr>
<tr>
<td>6</td>
<td>20%</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>32%</td>
</tr>
<tr>
<td>Huge</td>
<td>~100%</td>
<td>~100%</td>
<td>~100%</td>
<td>~100%</td>
<td>~100%</td>
<td>~100%</td>
</tr>
</tbody>
</table>
US Federal Electoral System

- First Past the Post
- 1 vote per voter
- 1 seat per district
- 435 House districts/50 Senate districts/
  1 Presidential district
Japan’s Electoral System: 1947-1993

- Single Non-Transferable Vote (SNTV)
- 1 vote per voter
- ~3-5 seats per district (average = 4)
- ~130 districts
- ~512 members of the Diet’s lower house
- Diet members elect the Prime Minister, who then chooses the Cabinet Members
Japan Inc.

Favorable Regulation

Bureaucracy

Staff, Budgets, Oversight

Politicians

Interest Groups

Campaign Support

17.32 Environmental Politics

Campaign Support
Japan Inc.

Jobs + “turf”

Interest Groups

Bureaucracy

Economic Growth, Jobs, Policy

Politicians

Legislation, Pork

17.32 Environmental Politics
Government Structure

- **Vertical:** Federal vs. Unitary

- **Horizontal:**
  - Parliament vs. President
  - Unicameral vs. Bicameral
  - Judicial Review
  - Bureaucracy
US Government Structure

- **Federal:** budgets determined independently at all levels of govt. Federal govt. given power over foreign policy, defense, trade, currency/finance, posts, patents, etc. All residual rights & powers (those not specified in the Constitution) are left to the states which each determine the power structure within their own territory.

- Presidential with weak President, and roughly equal House and Senate.

- Judiciary is independent branch of govt., with checks & balances on the legislature and executive.

- Bureaucracy with limited power over the private sector, positions filled with many political appointees.
Japanese Government Structure

- Unitary: budgets and policy are predominately determined in Tokyo; municipal & local government administer and act as the local face of the national govt.

- Bicameral Parliament with strong lower house, very weak upper house.

- Judiciary is not independent: falls under the Ministry of Justice which determines the career paths of all judges and attorneys.

- Bureaucracy of academic elites with few appointed positions and considerable power over the private sector. MITI, MoF, MoC most powerful...EA is sub-cabinet and shares jurisdiction over environment with more powerful ministries.
Implications of Japanese Government Structure

- **Unitary--local govt cannot well oppose or fight policy decisions made in Tokyo, even when run by minority party members.**

- **Parliament--House elections determine major policy directions, same party in power for ~35 years.**

- **Judiciary--courts are subservient to ruling party, lawsuits are expensive and burdensome, no class action suits, narrow judicial standing, few lawyers & judges, expensive to sue...hence even one-sided cases take years to pass through the legal process.**

- **Bureaucracy--bureaucrats from more powerful ministries can “outrank” the EA and demote environmental considerations**
Annual average SO$_2$ concentration

(average from continued monitoring stations)

Average from 14 ambient air pollution monitoring stations
Japan’s Electoral System: 1994-2003

- 512 → 500 (later → 480) Seats in Diet’s lower house
  - 300 from single-member districts
  - 200 (later → 180) from 11 electoral regions with 6-30 per region chosen by PR (closed-list)
<table>
<thead>
<tr>
<th>Vertical Structure</th>
<th>US</th>
<th>Japan</th>
<th>Germany</th>
<th>UK</th>
<th>France</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Federal</td>
<td>Unitary</td>
<td>Federal</td>
<td>Unitary</td>
<td>Unitary</td>
</tr>
<tr>
<td>Executive Power</td>
<td>Low</td>
<td>Med</td>
<td>Med</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Bicameral</td>
<td>Strong</td>
<td>Weak</td>
<td>Strong</td>
<td>Weak</td>
<td>Weak</td>
</tr>
<tr>
<td>Judicial Review</td>
<td>Strong</td>
<td>Weak</td>
<td>Strong</td>
<td>Weak</td>
<td>Weak/Medium</td>
</tr>
<tr>
<td>Mean District Magnitude (house/senate)</td>
<td>1/2</td>
<td>4/5--&gt;1+?/5</td>
<td>1/5</td>
<td>1/na</td>
<td>1/3</td>
</tr>
<tr>
<td>Electoral formula</td>
<td>Plurality (FPP)</td>
<td>Plurality (SNTV)→FFP + PR</td>
<td>Mixed Plurality-PR (closed list)</td>
<td>Plurality--PR</td>
<td>Plurality--&gt;PR</td>
</tr>
<tr>
<td>Vote Threshold for a House seat</td>
<td>na</td>
<td>depends on the district</td>
<td>5%</td>
<td>na</td>
<td>5%</td>
</tr>
</tbody>
</table>
Major Electoral System Elements

- Number of votes per voter
- Can a voter abstain from casting all of her votes?
- Can a voter cumulate his votes on one candidate?
- Number of seats per district
- Electoral Formula (Plurality vs. PR)
**Major Plurality Electoral Systems**

\[ v = \# \text{ votes per voters} \]
\[ p = \text{must voters vote all their votes?} \]
\[ c = \text{may voters cumulate their votes?} \]
\[ k = \# \text{ of seats per district} \]

**Electoral formula = Simple Plurality Systems**

<table>
<thead>
<tr>
<th></th>
<th>( v )</th>
<th>( p )</th>
<th>( c )</th>
<th>( k )</th>
<th>( f )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Past the Post</strong></td>
<td>1</td>
<td>no</td>
<td>no</td>
<td>1</td>
<td>Plurality</td>
</tr>
<tr>
<td><strong>SNTV</strong></td>
<td>1</td>
<td>no</td>
<td>no</td>
<td>( k &gt; 1 )</td>
<td>Plurality</td>
</tr>
<tr>
<td><strong>Limited Vote</strong></td>
<td>&lt; ( k )</td>
<td>yes</td>
<td>no</td>
<td>( k )</td>
<td>Plurality</td>
</tr>
<tr>
<td><strong>Cumulative Vote</strong></td>
<td>( \leq k )</td>
<td>yes</td>
<td>yes</td>
<td>( k &gt; 1 )</td>
<td>Plurality</td>
</tr>
</tbody>
</table>
Major Proportional Electoral Systems

- Party List
- Mixed-Member Proportional
- Single Transferable Vote
Major Proportional Electoral Systems

- **Party List**
  - Open List = voters choose between individuals, with multiple candidates per party
  - Closed List = voters choose between set lists of individuals

- **Mixed-Member Proportional**
  - Voters have two votes to cast on a split ballot.
  - Half the ballot is single-member plurality vote
  - Half the ballot is party list

- **Single Transferable Vote**
  - \( Q = \frac{\text{#voters}}{\text{#seats} + 1} + 1 \)
  - Voters submit a list of preferences in order
  - Candidates receiving \( Q \) votes win. Surplus votes are transferred to the remaining candidates...wash, rinse, repeat.