In many respects the environmental programs, laws, and institutions found in Japan resemble those of the United States and many European countries. The advanced industrialized states have experienced many of the same pollution problems and environmental concerns. They have introduced many similar laws to deal with these problems learning from each other’s experiences, scientific insights, and policy solutions. The first wave of such learning began with the formation of national parks in the first part of the twentieth century. The second wave began in the 1960s, when there was a relatively rapid emergence and then spread of environmental protection norms, policies, and practices among the advanced industrialized states. Since this time, these states have entered into many international environmental agreements. Still today there continues to be much environmental information exchange and debate about policy priorities and measures in these states as they are confronted with a new generation of environmental problems. Yet, despite the many similarities in the general trajectory of their environmental programs, there are important differences among these political entities in their approaches to environmental protection.

Japan, the EU, and the US together consume the vast majority of the world’s resources. Combined their impact on the state of the global environment and international environmental policy trends is enormous. If for no other reason, this makes it important to understand the similarities and differences in their approaches to environmental protection. How do the environmental policies and outcomes of Japan, the EU, and the United States compare? How similar or different are they in their approaches to environmental management? This paper aims to compare the experiences of Japan with those of the US and the EU.

The paper begins with a brief historical overview of environmental policy formation in Japan, the US, and the EU and discusses ways in which the advanced industrialized states have learned from each other’s experiences. It then compares the institutions and programs that were formed to deal with environmental problems and in their approaches to environmental management. The next section compares performance across a number of environmental indicators and offers hypotheses for why performance has varied across states. This section shows that while there are indeed many similarities among the environmental programs of Japan, the US, and the EU, environmental outcomes differ in some important respects and that institutional structures and policy-making processes influence these

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1 On cross-societal learning in environmental politics see Martin Jänicke and Helmut Weidner, *National Environmental Policies: A Comparative Study of Capacity-Building*.

2 For a comparison of policy making approaches in Japan, the US and the EU see Raymond Vernon, “The Triad as Policymakers.”
differences. The final section looks to the future and where environmental management appears headed in these three regions.

Environmental Policy Learning across the Advanced Industrialized States

The Industrial Revolution and the Birth of Conservation Movements

Environmental policy learning is something that has been occurring across the advanced industrialized states for over a century. One area where this can be seen is in the birth of conservation movements and the formation of national park systems. The Industrial Revolution transformed the relationship between humans and the environment. The advent of the steam engine, railroads, and automobiles made travel faster and the transport of goods easier. The discovery of electricity brought light into homes and city streets. The invention of the telephone revolutionized communications. Factories made mass production of goods possible. The industrial revolution gave humans unprecedented abilities to harness nature and use its resources to improve their quality of life.

For almost a century after the start of the industrial revolution, industrial pollution was viewed as an unavoidable externality of development. Factories pumped huge quantities of smoke, dust, and pollutants into the air and dumped waste into waterways and on land. Forests were cut down for agricultural development, the establishment of highway and railroad infrastructures, and the building of new communities and industrial facilities. The prevailing view was that natural resources were there for humans to exploit to improve their economic condition.

Slowly, however, views about industrialization began to change. Concerns about the exploitation of labor led to the birth of Marxism and the rise of labor unions as a political force. Concerns about human health, led to efforts (that had only mixed rates of success) to introduce sewage systems and basic human health protection in urban areas. Concerns about the loss of natural resources, rural landscapes, and historical monuments gave birth to conservationist and preservationist movements and the beginnings of environmental non-governmental organizations (NGOs).

During the 19th century, protest against the human health impacts of industrialization and urbanization began to emerge throughout the industrializing world. Great Britain, the first country to industrialize, led the world in the introduction of pollution control measures. The 1834 Poor Law Commission’s report led to a revolution in sanitation. Parliament approved legislation in 1853 aimed at reducing the level of smoke emitted by coal-burning furnaces and in 1863 issued the Alkali Act requiring factories to remove 95% of the hydrochloric acid emitted in the production of soap, glass, and textiles. Water pollution was addressed when the stench of the Thames River, which had basically become an open sewer, was so bad that it made it almost impossible for Parliament to conduct its business. In 1876, Parliament approved the Rivers Pollution Prevention Act.

Across the English Channel in Europe, the British example was watched and eventually followed. In 1877, Prussia which had been trying to catch up with Britain economically, forbade the use of rivers for the dumping of sewage and introduced licensing requirements for polluting firms as a way of addressing air pollution.

Sanitation reform began in Japan after the Meiji Restoration as well. There were numerous cases of citizens objecting to industrial pollution. In one famous case from the 19th century farmers spent decades protesting the heavy environmental and health damage mining activities at the Ashio copper mine were causing their community. Eventually when the government began to fear a peasant uprising, in 1897

3 Vogel, National Styles of Regulation, p. 32.
4 Wey, Umwelt Politik in Deutschland, pp. 27-32.
they ordered the mine introduce filtration ponds and equipment to control sulfur emissions. Some decades later, following US and European examples, local governments in major urban areas in Japan issued ordinances to address air pollution by trying to control the siting of plants and regulating smoke emissions. Across the early industrializers, some pollution control measures were established, but they proved to be limited in scope and effectiveness.

**Conservation and Wildlife Preservation Groups**

Preservation and conservation initiatives also emerged prior to World War II. Preservationists were motivated in their thinking by early environmental thinkers like Frank Waldo Emerson and John Muir. They believed in the intrinsic worth of nature and fought for its preservation on those grounds. Private voluntary organizations for protection of open spaces began to form. In Great Britain in 1865, for example, the Commons, Open Spaces and Footpaths Preservation Society was formed; in 1891, Mrs. Robert W. Williamson established the Royal Society for the Protection of Birds; and in 1895, the National Trust was established to preserve places of historical interest and natural beauty. In the US, the Audobon Society and the Sierra Club were formed around the turn of the nineteenth century. In Prussia (and later Germany), state governments sponsored the formation of nature-conservation agencies in response to the growth in nature tourism caused by urbanization and the growth of railroads. Associations for nature conservation such as the Bund Heimatschutz, an umbrella organization of 250 affiliated nature conservation groups set up in 1916, began to form across the country. The conservation and preservation movement also found a home in pre-war Japan although the conservation movement was more restricted there. Japan’s largest environmental group based on membership, the Wildbird Society (Nippon Yachô no Kai), was formed in 1934 (Table 9-1).

Table 9-1: Major Pre-War Conservation and Wildlife Preservation Groups in Great Britain, Germany, the US, and Japan

Audobon Society (US established 1886, incorporated 1905)
Sierra Club (US, 1892)
Wilderness Society (US, 1935)
National Wildlife Federation (US, 1936)
Wildlife Society (US, 1937)

Commons, Open Spaces and Footpaths Preservation Society (Britain, 1865)
Royal Society for the Protection of Birds (Britain 1891)
National Trust (Britain 1895)
Council for the Protection of Rural England (Britain, 1926)

Internationaler Verein gegen Verunreinigung der Flüsse, des Bodens und der Luft (Cologne 1877)
Bund für Vogelschutz (later the Naturschutzbund Deutschland) (Germany, 1899)
Bund Heimatschutz (League for the Protection of the Homeland) (Germany 1914)

Wildbird Society (Japan, 1934)

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**National Park Movements**

The newborn interest in preservation and conservation led to the establishment of the world’s first national park at Yellowstone in the US in 1872 during the presidency of Ulysses S. Grant. Initially national parks were established only in the vast Western frontiers of the US. Then, in the early twentieth century, calls to establish national parks in the more densely populated eastern areas of the US grew. A National Park Service was established in the US in 1916 and the first three national parks established on the east coast of the US were formed between 1919 and 1926 (National Geographic Society, p. 14). Canada quickly followed suit creating its first national park (Banff) in 1885 and adding three more in the next ten years. Underlying these initiatives was the idea that conservation is an issue of democracy. Resources do not belong just to the powerful, but to all. The conservation and preservation movements believed that large tracts of land should be set aside for public enjoyment and preservation purposes.

Sweden was the first European country to introduce national parks when they established nine national parks at the end of the 19th century. Interestingly, Japan was ahead of both France and England in the establishment of national parks. Japan’s first national parks were set up in the mid-1930s. France, in contrast, passed a Law on the Conservation of Natural Sites and Monuments in 1930, but did not establish a national parks law until the 1950s and did not set up its first national park until 1963. Great Britain set up its first national parks in 1949. Spain only created its first national park in 1969. In much of Europe, where little nature remained in its natural state, historical preservation and conservation initiatives found common cause, but they found it more difficult to introduce national parks than the new frontier states (the US, Canada, Australia) and less populated states like Sweden.

Comparatively speaking, Japan was quite early to follow the frontier states’ lead in establishing national parks. This is especially remarkable when one considers the rapid transition to modern culture that Japan had to make during and after the Meiji Restoration. The differences between Japan’s traditional society and the industrializing societies of Europe and North America must have seemed enormous at the time. Japan’s Meiji leaders decided that if Japan was to survive as an independent nation, its only choice would be to follow the path of industrialization and colonization taken by the West. Japan’s goal became catching up with the West and being accepted as an equal. In the period of a few short decades, Japan developed an extensive railroad system and one of the largest shipbuilding industries in the world. Coal was used to fuel Japan’s industrialization. By the 1930s, Japan was the most industrialized nation outside of Europe and North America. It was also the only non-Western imperialist power.

Despite Japan’s strong desire to prove itself to the world as a modern nation and its almost wholesale adoption of many Western practices (ranging from dress, to music, to education, to the political system, and the adoption of capitalism), some traditional aspects of society survived. Traditionally, Japan is a Shintoist and Buddhist society. The essence of Shintosim is harmony with nature and Buddhism places a high value on all forms of life. As a result of these religious proclivities, certain places of tremendous natural beauty have been revered as almost sacred places throughout Japanese history. This is true of the cultivated gardens of Buddhist temples and the more natural aesthetic of Shinto shrines in cities like Kyoto, Nara, and Kamakura as well as natural formations, such as many of Japan’s volcanic mountains. This love of nature may be one reason that mountaineering became a popular Western import in Japan and why a national park movement emerged relatively early on as well. In 1896, the Reverend Walter Weston, an Englishman, wrote a book, *Mountaineering and Exploration in the Japanese Alps* (a name given to the mountains of central Japan by the Englishman William Gowland in his 1888 *Japan Guide*). Weston is credited with popularizing mountaineering in Japan (although the mountains he climbed had been scaled and formally consecrated decades earlier by the Buddhist monk Banryu).6 A conservation ethic began to find roots in Japan in part because of this recreational interest.

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6 Cited in Mary Sutherland and Dorothy Britton, *National Parks of Japan*, pp. 94-95.
The first effort to preserve land in Japan appears to have been a 1911 petition brought by concerned citizens calling for the protection of Nikko. Nikko is a beautiful natural area where the Shogun, Tokugawa Ieyasu had a splendid, albeit somewhat ostentatious Buddhist temple erected. Two years later a National Parks Association was created and in 1931 Japan passed a National Parks Law (See Table 9-2). Between 1934 and 1938, fifteen areas were designated as national parks (the Inland Sea, Unzen, Kirishima, Aso, Nikko, the Japan Alps, Akan, Daisetsuzan, Fuji-Hakone, Yoshino-Kumano, and Daisen). World War II brought a temporary stop to the establishment of national parks, but soon after the war ended, a movement began to designate yet more areas aside for preservation. By 1955, six more national parks had been added and in 1957 a more comprehensive National Parks Law replaced the 1931 legislation. As of 1997, Japan had 28 national parks and 6.8 percent of its land categorized as protected (about half of this amount in national parks). In comparative terms, Japan is closer to the US and Canada in terms of setting aside extensive tracts of land for strict nature preservation (IUCN categories I-III) then the major European states. The total area of national territory under some form of protection recognized by the IUCN (categories I-VI), however, ranks low in Japan compared with other industrial states, and especially the US, Germany, and Britain (Table 9-3).

Table 9-2 Year of Establishment of First National Park

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>1872</td>
</tr>
<tr>
<td>Australia</td>
<td>1879</td>
</tr>
<tr>
<td>Canada</td>
<td>1885</td>
</tr>
<tr>
<td>Japan</td>
<td>1934</td>
</tr>
<tr>
<td>Great Britain</td>
<td>1949</td>
</tr>
<tr>
<td>France</td>
<td>1963</td>
</tr>
<tr>
<td>Spain</td>
<td>1969</td>
</tr>
<tr>
<td>Austria</td>
<td>1992</td>
</tr>
</tbody>
</table>

Table 9-3: Major Protected Areas (IUCN Management Categories I-VI)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total area (km²)</th>
<th>%age national territory</th>
<th>Per 1,000 inhabitants (ha/1000 cap)</th>
<th>By IUCN Category in percentage terms (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I (b)</td>
</tr>
<tr>
<td>Canada</td>
<td>953103</td>
<td>9.6</td>
<td>3146.9</td>
<td>3</td>
</tr>
<tr>
<td>US</td>
<td>1988444</td>
<td>21.2</td>
<td>742.7</td>
<td>20</td>
</tr>
<tr>
<td>Japan</td>
<td>25590</td>
<td>6.8</td>
<td>20.3</td>
<td>1</td>
</tr>
<tr>
<td>Britain</td>
<td>50001</td>
<td>20.4</td>
<td>20.4</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>55723</td>
<td>10.1</td>
<td>95.1</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td>96193</td>
<td>26.9</td>
<td>117.2</td>
<td>0</td>
</tr>
<tr>
<td>Italy</td>
<td>22037</td>
<td>7.3</td>
<td>38.3</td>
<td>0</td>
</tr>
<tr>
<td>Korea</td>
<td>6838</td>
<td>6.9</td>
<td>14.9</td>
<td>0</td>
</tr>
<tr>
<td>Mexico</td>
<td>159759</td>
<td>8.2</td>
<td>162.6</td>
<td>8</td>
</tr>
</tbody>
</table>
a.) International Union for the Conservation of Nature (IUCN) management categories I-VI. National classifications may differ.
b.) Strict nature reserves/wilderness areas: protected areas managed mainly for science/wilderness protection.
c.) National parks: protected areas managed mainly for ecosystem protection and recreation.
d.) Natural monuments: protected areas managed mainly for conservation of specific natural features.
e.) Habitat/species management areas: protected areas managed mainly for landscape/seascape conservation and recreation.
f.) Protected landscapes/seascapes: protected areas managed mainly for landscape/seascape conservation and recreation.
g.) Managed resource protected areas: protected areas managed mainly for the sustainable use of natural ecosystems.


The Rebirth of Conservation Movements

World War II brought conservation initiatives throughout the world to a halt and war added to the rapid destruction of nature that industrialization had begun. In Japan, the military used national parks as military practice ranges. At the end of the war, environmental protection was on the agenda of no government. Rebuilding cities destroyed by bombs, feeding hungry populations, and creating employment opportunities was the primary focus of the time.

Nevertheless, the conservation ethic had survived. In Europe conservation groups slowly began to reestablish themselves after the war to once again try to focus attention on the conservation of land and its recreational uses. The IUCN—The World Conservation Union was set up in 1948 in Great Britain and the Deutscher Naturschutzring formed in Germany as an umbrella organization of conservation groups in 1950. In France the Société Nationale de Portection de la Nature formed in 1958. In Japan, in 1949 volunteers formed the Oze Marsh Conservation Union to protest the building of a hydroelectric dam, which would destroy marshland where birds nested and fed. This group became the basis for the foundation of the Japan branch of the Nature Conservation Society (NCS-J) in 1951. The conservation groups in Japan and abroad played an important role in promoting recreational uses of nature, but they were not the driving force behind the modern environmental movements that sprang up in the US, Europe, and Japan in the 1960s and 1970s.

The Formation of Environmental Administrations and Framework

Environmental Legislation

The 1950s and 1960s were growth years in the US, Western Europe and Japan. Rates of growth were particularly high in Japan and Germany, the economic miracle states. Because of the importance placed on economic development in all of these countries, industrial pollution and infrastructure development was treated as a nuisance that simply had to be tolerated. Only in a few local instances, did protest against pollution become serious enough to gain political attention. This changed in the 1960s when anti-pollution movements and environmental groups began to form and demand that industry and government address pollution problems.

In the early 1970s most of the OECD countries established framework environmental legislation and environmental administrations. Initially, there was much debate about where the responsibility for environmental protection should lie. National governments did not initially want to take on that responsibility. The severity of pollution problems, however, forced national governments to start to pay attention to the problems that the modern industrial world was causing. Great Britain was forced to address air pollution after the killer smog in London in 1952, which led to an estimated 4,000 deaths.
Prior to this incident, the “pea soup fog of London” largely had been accepted as a quasi-natural phenomenon. Parliament enacted a Clean Air Bill in 1956. Smog problems in Los Angeles and New York were treated with similar ambivalence, but the developments in Great Britain and air pollution related fatalities in the US were influential in pushing the US Congress to take action as well. The US Clean Air Act was formed in 1963. Early legislative efforts, however, proved terribly inadequate.

The failure of the air and water pollution control regulations established in the 1960s to do much to improve air and water quality suggest that there were serious scientific, technological, and bureaucratic capacity problems in the advanced industrialized states. They had much learning to do before they began to make some headway in addressing pollution problems. Early air pollution control legislation in Japan, the US, Germany, and Great Britain, for example, proved largely ineffective because of the limited range of pollutants that were targeted and the loopholes in the policies that allowed industry to respond by simply building higher smoke stacks. This did not do much to reduce pollution, it simply spread it over wider areas.

The slow, reluctant, and inadequate responses of national governments to pollution problems led to growing citizen unrest. The 1960s were an explosive decade of social movement unrest in Japan and the West. Citizens began to demand greater governmental accountability and an opening of political processes to greater citizen involvement. In the US, the demands of a rapidly growing environmental movement resulted in the passage of the 1969 National Environmental Policy Act (NEPA) mandating environmental impact assessments and the 1970 amendments to the US Clean Air Act and Clean Water Act, which established strict new limitations on a range of pollutants. In addition, the Environmental Protection Agency was established. NEPA led to the creation of the Council on Environmental Quality, a multi-member council to provide the president and the administration with environmental information.

Legislative changes in Japan resembled developments in the US. In Japan, the Pollution Control Basic Law of 1967 was amended in the 1970 Pollution Diet when numerous laws and amendments addressing air and water quality, nature conservation, and noise pollution were passed. An Environment Agency was established at this time as well. Sweden, Japan, Great Britain and the US were world leaders in the development of new comprehensive environmental laws and the establishment of administrative bodies whose primary function was environmental protection. Environmental pollution control developments in these countries influenced developments in Germany and elsewhere in Europe. In Germany, an environmental division was created in the Ministry of the Interior in 1971, and an Environment Agency in 1974. In 1971, Germany introduced a national environmental program addressing numerous pollution issues. France established the Ministry of the Environment and the Protection of Nature in 1971.

The similarity in the timing of the rise of modern environmental movements and the introduction of framework pollution control legislation in Japan and the West is striking. Equally interesting is that within a decade of the passage of major environmental legislation around 1970 in the US, Japan, and many European countries, the environmental movements and the environmental policy making processes in these countries looked strikingly different. In Japan, thousands of citizens’ movements formed in the 1960s and 1970s to demand that companies and local and national governments act to protect citizens from pollution and urban light. Yet, only a small handful of national environmental groups became established in Japan during this time. Japan’s environmental movement remained locally focused and failed to form the kinds of national networks and major national environmental groups that formed in the US and Europe.

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7 Vogel, National Styles of Regulation, pp. 38-39.
8 For a discussion of the history of early US air pollution laws see Charles O. Jones, Clean Air: the Policies and Politics of Pollution Control.
9 For an overview of environmental politics in France see Brendan Prendiville, Environmental Politics in France.
Japan’s Environmental Movement

Minamata mercury poisoning, itai-itai disease, and asthma from air pollution were just some of the severe pollution problems that focused the Japanese public’s attention on the negative sides of industrialization. Industrialization had helped to make Japan wealthy, but was it worth it at the cost of human health and life? Japan’s modernization had come at a heavy price. Pollution related health problems certainly had existed for decades. What was different in the 1960s is that the causal relationship between pollutants and health problems slowly began to be better understood. There was a growing body of scientific research linking particular pollutants to health problems and the obvious signs of the human suffering experienced by pollution victims.

In the pre-war period, the idea to establish national parks and introduce basic legislation to protect hygiene were imported to Japan, respectively, from the US and Europe. The anti-pollution movements that emerged in Japan in the 1960s were not an import. They were a domestic development. The movement was a grass-roots movement that emerged as a result of the severe pollution problems facing the country. Certainly, the outcome of the movement efforts and the success of some specific movements were influenced by Westerners and Western examples, but the reverse was true as well. Japanese experiences were instrumental in changing attitudes about pollution control in Europe. At the 1972 United Nations Conference on the Human Environment in Stockholm, a group of Japanese lawyers working on behalf of pollution victims were the ones to introduce the idea of environmental protection as a natural right.

By the early 1970s, there were thousands of environmental citizens’ movements protesting about a wide array of pollution and quality of life concerns. These groups were an important force behind the environmental policy changes that were made in Japan between 1967 and the oil shock of 1973. Few of these groups, however, had legal status and many disbanded once their grievances were addressed. In the 1980s, the environmental movement in Japan was not very visible politically. There were still local environmental citizens’ movements and they did have some successes, but few organized at the national level. An interesting exception to this are the Seikatsu Seikyo Clubs that have formed a national network and in recent years have even sponsored green-oriented politicians to run in local elections. This network has focused on creating safer, healthier, and cleaner living environments in local communities by providing pesticide free food and convincing members to recycle milk cartons and to turn waste cooking oil into soap. Unlike developments in the US and in Europe, however, very few large national environmental groups formed until towards the end of the 1980s although at the invitation of the Dutch Prince Bernhard, Japan did form a branch of the WorldWide Fund for Nature in 1971 and a Friends of the Earth Japan formed in 1980 (Table 9-4). The Japanese environmental movement looks distinctly different from either the US or the European models. The Japanese environmental movement has been most influential at the grassroots level. Much of the movement is locally organized and focused on NIMBY issues.

Starting in the late 1980s, Japan’s environmental movement began to become more diverse. Several national environmental groups like Japan Tropical Action Network, the Sarawak Campaign, and environmental NGO networks like Kikô Forum (Climate Forum) formed. Globalization of environmental policy making in the 1990s because of growing concerns about stratospheric ozone depletion, tropical rainforest depletion, desertification, and climate change was a major factor behind the growth of new NGOs in Japan. Other groups established earlier to address other kinds of issues like OISCA International.

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10 On the early environmental movements see esp. Norie Huddle and Michael Reich, Island of Dreams; Margaret McKean, Environmental Protest and Citizen Politics in Japan, and Jeffrey Broadbent, Environmental Politics in Japan: Networks of Power and Protest.
11 See Lam Peng-Er, Green Politics in Japan.
(OISCA Sangyo Kaihatsu Kyoroyku Dan) established in 1961 to promote development in the Third World have incorporated environmental concerns into its agenda.

It has been an uphill struggle for these groups, however. Many, although certainly not all, of the groups initially were formed by Westerners or at the invitation of Western counterparts and even had to rely on the West for support, both in terms of finance and leadership because such resources were not forthcoming or available in Japan.

As a result of domestic pressure and the influence of international norms government and corporate attitudes in Japan towards NGOs has started to change. Corporations and the government have slowly started to accept NGOs as legitimate actors in the policy making process and to recognize the role they play in society in bringing attention to issues and helping to implement policy solutions. The rapid growth in Japan’s ODA environmental budget in the 1990s would not have been possible without support provided by Japanese and non-Japanese environmental NGOs in policy implementation. The change in the non-profit organization (NPO) law in 1998 that was described earlier in this book was a major step towards making it easier for groups to obtain non-profit status. The establishment of an environmental fund by Keidanren is an example of a gradual shift in thinking by industry towards NGOs. Another trend is the establishment of environmental think tanks, like the Institute for Global Environmental Strategies set up in 1998. Others are planned such as parts of the National Institute for Environmental Studies, a government research institution that is to be privatized. These are positive trends, but there are still substantial barriers that must be overcome. One of the largest is that donations to NGOs are not tax deductible. Also problematic is that NGOs do not have the postal benefits they enjoy in the US. Few of the environmental NGOs in Japan can afford to hire professional staff. Thus, most are run by volunteers, many of which have full time jobs. Environmental NGOs in Japan are too small and poorly financed to match their Western counterparts in terms of the extent of their campaigns or the professional quality of their policy recommendations. This is regrettable since there are many ideas based in Japanese culture about the relationship between humans and the environment and in social practices that Japanese NGOs could offer to the rest of the world.

Despite the small size of the national environmental NGOs in Japan, it would be wrong to underestimate the role the environmental movements have played. The environmental citizens’ movements were largely behind the extensive environmental policy changes Japan experienced in the 1970s. Their experiences also led to the formation of Japan’s Pollution Victims’ Compensation Law, which has been a subject of some legal interest in the West. There are also many instances where environmental groups have succeeded in stopping environmentally destructive projects. In 1999, grassroots initiatives (both led by university professors) helped to stop the construction of projects that would have destroyed environmentally important wetlands. The first was a garbage dump planned for Fujimae in Nagoya and the second the Chitose River Diversion Channel in Hokkaido. International pressure and Japanese NGO protests led to the decision by Mitsubishi to give up on plans for the construction of a desalinization plant in a pristine marine environment off of the cost of Mexico.

### European and US Environmental Groups

In Germany and France citizens’ movements formed to protest infrastructure development that was destroying rural landscapes and to protest power plant development within a few years of the time such groups started to form in Japan. Quickly these groups began to form national networks to strengthen their political power and for information sharing. In Germany, the largest such network to form was the Bundesverband Bürgerinitiativen Umwelt. In France, the first protests against pollution caused by automobiles were led by the Federation Nationale des Usagers des Transports, which was established in 1968. The next year a major environmental struggle occurred when plans were approved for a ski resort in the newly established Vanoise National Park, France’s first national park. The French branch of the

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12 I am grateful to Richard Forrest for supplying me with these examples.
Friends of the Earth (Amis de la Terre) formed in 1971 and France saw its first environmental candidate stand in an election in 1973. In the US, the growth of environmentalism led to the birth of many of the environmental groups that are today recognized as among the most influential in the country. These groups include the Natural Resources Defense Council, Environmental Defense (formally, the Environmental Defense Fund), and Greenpeace among many others. These large environmental groups helped to redefine thinking about environmental problems. In the past, protest against pollution problems was primarily from NIMBY groups that dispersed once their grievances were dealt with. The conservation groups of the pre-war period were focused primarily on the setting aside of land for preservation and recreational uses or for making sure that natural resources with an economic value, like timber and fish, were not depleted. The new environmental groups that formed in the 1970s were varied in style and purpose. This diversity in the environmental community helped to further environmental thinking and to promote societal debate about relationships among the government, industry, society, and the natural world.

In the US and Europe environmental groups have obtained funding for their operations from member donations, government grants, and foundation support. In addition, they can easily obtain non-profit status and enjoy the ability to attract tax-deductible donations. In many European countries, NGOs obtain a majority of their funding from government. It is typical for NGOs in the West to hire full time professional staff. Working for an environmental NGO is considered a respectable job. In the US and Europe environmental groups compete with each other for membership, financial support, government contracts, and image. In this process of competition, the environmental groups have pushed each other forward in their thinking as they tried to develop distinct organizational images and to carve out different niches in the world of environmental protection. Not only did they focus on different kinds of environmental problems, they also had distinctly different visions about how best to promote environmental protection. As a result, it is difficult to talk about the environmental movement in the West as a movement with a unified purpose.

Environmental NGOs are typically thought of as critics of environmentally destructive activities by government and industry. This is an important role that environmental groups have played in Japan and in the West. Yet, there is another very important role to be played by environmental groups. Groups like Resources for the Future and World Resources Institute were formed in the US as non-partisan environmental think tanks that have been staffed with highly trained individuals to conduct research on environmental conditions in the US and globally and to make policy recommendations. The reports issued by these groups are used the world over. The Wuppertal Institute and the Max Plank Institutes in Germany have played a similar function on the European continent. The environmental NGOs that formed have some deep ideological differences between them. Deep ecologists like Earth First and Greenpeace have used visible and in the case of Earth First at times, violent protest to bring attention to corporate or governmental activities that destroy the environment. Other groups have tried to court wealthy individuals and corporations to support wildlife protection, such as the World Wide Fund for Nature. Yet others, such as the Natural Resources Defense Council have focused attention on promoting the rights of victims of environmental degradation. Within the German Green Party, this kind of ideological division exists between the Fundis, who are closest to the deep ecologists, and the Realos, who take a more moderate view on how best to protect the environment.

It is this pluralism within the environmental community in the West that has produced important debates and has led to some of the most innovative thinking about how to view environmental matters. Milieu Defensie (Environmental Defense, the Netherlands) was a key promoter of the idea of ecological space. The Wuppertal Institute in Germany has done more than perhaps any other NGO to publicize thinking about ecological space and ecological footprints. Environmental Defense in the US played a

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13 For a comparison of environmental groups in Western Europe see Russell Dalton, The Green Rainbow.
15 Wuppertal Instituts für Klima, Umwelt, Energie, Zukunftsfähiges Deutschland.
key role in promoting the concept of emissions trading. They worked closely with the Bush administration in the formulation of the 1990 Clean Air Act amendments that led to the introduction of a sulfur emissions permit trading system in the US. They are working closely with the US government in analyzing the possibility of introducing an emissions trading system to address CO2 emissions. Environmental Defense also helped to pioneer a new model of NGO-industry cooperation in its work with McDonalds to help the company reduce the volume of waste produced by consumers of its products. Greenpeace in Germany (in the former East Germany) helped to develop the prototype of a refrigerator that does not consume chlorofluorocarbons (CFCs), which are chemicals that deplete the ozone layer. Environmental grassroots groups were instrumental in bringing the idea of ecojustice into national debates.

The kind of philosophical debate and practical policy solutions that have emerged out of the pluralistic environmental movement and the environmental think tanks that are prevalent in the US and Europe have been largely absent in Japan. In Japan, environmental groups are often falsely perceived as simply being opponents of industrial development. Japanese NGOs have had relatively little influence internationally on environmental thinking. The primary reason for this is structural. There has not been much support within Japanese society either in the sense of private philanthropy or governmental support—whether direct or indirect, for environmental groups or environmental think tanks. At the university level, until very recently there were few environmental programs and with the exception of several acclaimed environmental law professors, few environmental policy professors.

The experience of the West has shown that when given the freedom to form and to speak out and provided with sufficient institutional and financial support, environmental groups can play a critical role in advancing societal understanding of the causes and consequences of environmental degradation and coming up with innovative policy proposals and even corporate responses.

Table 9-4 Select Major Environmental Groups

<table>
<thead>
<tr>
<th>JAPAN</th>
<th>Year Established</th>
<th>Membership Size (date of information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan Society for the Protection of Birds</td>
<td>1958</td>
<td></td>
</tr>
<tr>
<td>National Trust, Japan</td>
<td>1968</td>
<td></td>
</tr>
<tr>
<td>Japan Tropical Forest Action Network</td>
<td>1987</td>
<td>1,000 (late 1990s)</td>
</tr>
<tr>
<td>Greenpeace, Japan</td>
<td>1989</td>
<td>4000 (Dec 1995)</td>
</tr>
<tr>
<td>Friends of the Earth Japan</td>
<td>1980</td>
<td>1500 (1992)</td>
</tr>
<tr>
<td>Japan International Volunteer Center (JCDC)</td>
<td>1980</td>
<td>1498 + 15 organizations (1992)</td>
</tr>
<tr>
<td>A SEED Japan</td>
<td>1991</td>
<td>290 + 12 organizations (1992)</td>
</tr>
<tr>
<td>Rainforest Foundation Japan</td>
<td>1989</td>
<td>600 (1992)</td>
</tr>
<tr>
<td>Sarawak Campaign Committee</td>
<td>1990</td>
<td>500 + 50 organizations (1992)</td>
</tr>
<tr>
<td>The Japan Association for Greening Deserts</td>
<td>1991</td>
<td>1200 + 95 organizations (1992)</td>
</tr>
<tr>
<td>Action for Greening Sahel</td>
<td>1991</td>
<td>148 + 5 organizations (1992)</td>
</tr>
<tr>
<td>Institute for Himalayan Conservation, Japan</td>
<td>1986</td>
<td>185 + 11 organizations</td>
</tr>
<tr>
<td>Association Sahel</td>
<td>1987</td>
<td>743 (1992)</td>
</tr>
<tr>
<td>Sumiyaki no Kai</td>
<td>1985</td>
<td>900 + 70 organizations (1992)</td>
</tr>
<tr>
<td>Defense of Greenearth Foundation</td>
<td>1982</td>
<td>1215 + 102 organizations (1992)</td>
</tr>
</tbody>
</table>
Patterns of Institutional Interaction among Government, Industry, Scientists, and NGOs

In all three regions, the 1960s and 1970s were a period of considerable conflict between environmental groups, on the one hand, and corporations and the government, on the other. Environmentalists, industry and government did not talk with each other; they talked at and past each other. This was a period filled with protest activities by environmentalists that felt that they were being given a deaf ear by the powers that be. Litigation against polluters became common even in Japan, which historically has favored mediation over litigation. There were violent protests at the gates of polluting firms and demonstrations at construction sites. Environmentalists and industry viewed each other almost as enemies.

The period of intense conflict that marked environmental policy making in the advanced industrialized states in the 1960s and 1970s has been replaced by greater societal and governmental acceptance of the place that environmental protection has on the political agenda. At somewhat different times, and for somewhat different reasons, new patterns of interaction among environmental groups, government, and industry have formed in all of the advanced industrialized societies. New mechanisms for promoting environmental protection also have started to gain acceptance. Thus, whereas command and control measures and in the case of Japan, administrative guidance, dominated in the 1970s, now the industrialized states tend to favor mixes of policy instruments. The intensity of governmental concern with
environmental protection, however, varies still among the states. Their environmental priorities and the mix of policy instruments they favor also differ.

Japan

The 1960s and early 1970s were a period of pluralistic and contentious policy making in Japan. After this time environmental policy making became far more quiescent. The use of litigation subsided as culturally more acceptable forms of dispute resolution mechanisms were formed. Environmental citizens’ groups continued to influence governmental action through protest and negotiation, yet, the number of such cases declined sharply. Citizens were given some input into planning decisions through the advisory bodies to the ministries known as Shingikai. They also now had an Environment Agency that they could try to persuade to take action. Public hearings on government funded construction plans were also initiated although prior to the formation of the 1997 Environmental Impact Assessment Law, it is not clear that their opinions had much influence over projects.

After the mid-1970s, the Environment Agency was the main champion of environmental interests. The implementation of laws, however, was not within its jurisdiction, but rather was the responsibility of the regulatory ministries. Within the government, the Environment Agency had to compete with the priorities and goals of other ministries and agencies as it attempted to push additional environmental legislation forward. Thus, after the oil shocks and because of its weak position in the bureaucracy, the Environment Agency was only able to get a few new major pieces of environmental legislation enacted in the mid-1970s until the end of the 1980s. In the absence of a strong environmental movement and without a strong green element in any of Japan’s political parties at this time, Japan did not rise internationally as a leader of new environmental policy ideas. Instead, its main success was in the implementation of the environmental laws introduced in the early 1970s.

Policy implementation relied on a number of different policy tools. From a comparative perspective, particularly interesting was the use of flexible mechanisms. Administrative guidance, for example, was favored over the strict enforcement of regulations to bring industry into compliance with government pollution control goals. Supplementing the use of regulation and administrative guidance, the government relied on a creative mix of tax incentives and subsidies to promote its environmental objectives. Furthermore, Japanese local governments, which typically are not viewed as being particularly influential in Japanese politics, actively made use of local voluntary agreements to improve environmental conditions. As early as in the 1960s, local governments were formulating agreements with industry to reduce pollution levels. Since then, thousands of voluntary agreements have been established between local communities and industry.

Europe and the US

A rather different form of environmentalism took root in Europe and the US than in Japan. In the European case, environmental activism did not subside as it did in Japan. Instead, the citizens’ groups of the early 1970s formed national networks and in some countries, like

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16 On the use of environmental litigation in Japan see Frank Upham, *Law and Social Change in Postwar Japan*, esp. ch. 2. On the use of mitigation see Arthur Haley, *Authority Without Power*. 
Germany and France and also within the European Community established Green Parties. A reason for the rise of the Green Parties in Europe may have to do with the limited responsiveness of governments to their early demands and the half-hearted efforts at implementing environmental legislation during the oil shocks. Also important was the opposition that emerged in Europe to nuclear energy. The parliamentary systems in many European states made it easier for the environmental parties, which are niche parties, to win sufficient support to gain representation either at the local or at the national level. Initially, the more traditional parties in Europe viewed the rise of Green Parties with great skepticism. Green Parties were viewed as left-wing idealists and radicals. Yet, the success of the Green Parties in winning representation in national parliaments has made them a force to contend with in Europe. It has brought environmental policy matters directly in the legislative process in a way that is not paralleled in Japan or in the US. It has also helped to instill a greater awareness of environmental matters in the platforms of other parties as they try to win votes away from the Green parties in elections. In addition to the Green Parties there are also large environmental groups and environmental networks in Europe and numerous environmental think tanks.

In the US case, the structure of the political party system and the electoral college system is not supportive of the rise of issue-based parties. Because coalition governments are not a possibility, there is no real chance of a Green Party obtaining power at the federal level in the US (there are some Green Parties at the state level in the US where multiple political parties run in elections). As Ralph Nader’s bid for the presidency in the 2000 campaign suggests, third parties can run on environmental themes in the US and they do have the possibility to take votes away from the two main political parties, but their influence is limited.

Nevertheless, legislatures are confronted by environmental matters because of the highly pluralistic nature of the decision making process. There are thousands of environmental groups in the US, many of which are large in size. Many of the Washington, D.C. based groups spend considerable time trying to educate and lobby the government about environmental matters. The US also has among the best-funded and equipped environmental scientific community in the world. Finally, the federal structure of the political system gives states the opportunity to influence federal policy. California, for example, has had a tremendous impact on the development of environmental policy reforms in the US. This pluralism has helped to stimulate discussion of new environmental ideas and environmental problems and is probably the main reason why the US in the 1970s and 1980s was a leader internationally in bringing attention to many environmental problems and in proposing policy solutions. The pluralism of interest representation in the US also means, however, that there are many groups lobbying government that have positions opposed to those of environmentalists. Thus, policy stalemate is also a common phenomenon in the US.

Europe is now starting to rival the US in terms of its environmental leadership since the rise of Green Parties on the continent has stimulated the greening of many other actors in European societies. At the same time that the pluralism of the US system has helped bring attention to many environmental matters, this aspect of the system and the cultural proclivity towards litigation may also be a reason for the difficulty the US has had in implementing

regulatory measures in a cost-effective manner. Conflicts of interest too often are settled in lengthy and expensive court battles.

**Global Environmental Protection and the Emergence of New Approaches to Environmental Management**

**United States**

In the US the failure to achieve several of the environmental goals established in the first half of the 1970s such as a reduction in SOx and NOx emissions despite involvement by state and local officials and judicial oversight led to a re-evaluation of pollution control measures in the 1980s. The Reagan administration had a critical view of environmental regulations many of which they viewed as an impediment to US economic competitiveness. The administration sought to provide industry with regulatory relief from environmental laws. Ironically, this was a time when Japan was viewed as a fierce economic competitor of the US, a status it had achieved in part because of its success with producing environmentally less damaging automobiles. Compared with the Japanese case where administrative guidance was commonly employed, however, US industry has had less flexibility in determining how to meet environmental standards.

Environmentalists responded to the attacks coming from the Reagan White House with intensive campaigns, including a nation-wide petition against Reagan’s appointee as Secretary of the Interior who was believed to be selling off America’s public lands. Ironically, the friction that existed between the White House and the environmental community worked in favor of environmental groups who saw their membership numbers grow significantly. Yet, the Reagan administration also set in motion a movement away from command and control approaches to environmental protection arguing that environmental regulations are too costly to industry and that Environmental Protection Agency enforcement of regulations is too inflexible.18

In the US where litigation is a popular means of settling disputes, the cost of mitigating pollution has indeed soared. Citizen suits against the EPA for failure to enforce regulations and EPA suits against industry for failing to comply with regulations has made the implementation of environmental regulations in the US more costly than in perhaps any other society in the world. Perhaps the worst example of this is Superfund legislation. Superfund legislation was passed in 1980 to deal with the clean up of hazardous waste sites. It was motivated by Love Canal, where a school and residential area had been built on top of a toxic waste site raising concerns about cancer. EPA efforts to make polluters pay for toxic waste clean up sites however, has resulted in numerous legal challenges so that the average cost to clean up just a single hazardous waste site amounted to $30 million. There are 1,300 sites on the EPA’s priority clean up list.19 An additional challenge to command and control approaches to environmental protection has come from private property owners who are angered by federal restrictions that limit their ability to develop their land as they please. An example is wetlands protection. Combined these powerful movements have led to a search for alternative means of promoting environmental protection.

This is not to say that there are not still strong supporters of environmental regulations. It is still widely accepted that some regulation is necessary. In addition, there has been a proliferation in approaches used to address pollution problems and the protection of ecological systems. There is also considerable domestic debate about the effectiveness and appropriateness of the different approaches. These other means include encouraging voluntary recycling and reuse and mandating recycling in

government offices; encouraging industry to establish voluntary pollution reduction agreements; and market based mechanisms, particularly emissions trading.

Emissions trading has its origins in Title IV of the Clean Air Act Amendments of 1990, which regulates nitrogen oxides and sulfur oxides. It established an emission allowance and trading program for these pollutants. Sources can opt to sell their pollution permits by reducing their pollution loads. The program proved so successful that it is being used as a basis for similar kinds of initiatives in everything from the protection of water bodies in the San Francisco area to dealing with climate change. An emissions trading system in carbon would set up a system whereby sources of carbon dioxide could sell their pollution permits to other companies wishing to expand their operations or to build new plants if they can reduce their pollution levels. The system could work on a national or an international scale. In fact, there are already emissions trades that are being made in the US on an experimental basis. How such a system would work at the international level remains to be seen. In relation to climate change, other ideas getting much attention are joint implementation and the clean development mechanism. The argument behind use of these mechanisms is that in the future developing countries will be the largest emitters of greenhouse gases. Proponents of this approach argue that it would be cheaper to reduce emissions in developing countries where technologies are often old and inefficient than in the advanced industrialized states where the cost of making marginal improvements to energy efficiency or pollution reduction would be very high. Thus, if a system can be developed whereby a firm in a developed country would have an incentive to invest in cleaning up a polluting firm in a developing country, there would be more of an environmental impact.

The European Union

In Europe too there has been a push to reevaluate environmental protection strategies, but the nature of the debate is quite different than in the US. Whereas environmentalism was under attack in the US in the 1980s, it was gaining considerable group in Europe during this period. In Europe, particularly on the continent, the old emphasis on pollution control has been replaced by a new interest in the development of Green Plans and comprehensive environmental management, which requires the integration of environmental considerations into all policy areas, ranging from transportation, to construction, to education, and households. This is a fundamental shift in philosophies and if it succeeds could do much to push Europe in the direction of developing more sustainable socio-economic structures. In Europe, concepts such as the “ecological shadow” and the “ecological footprint” which address the total impact of a society’s socio-economic activities on the environment at the global level are starting to take root, albeit slowly. Green Parties are relatively strong in Europe, thus, environmental politics has become an important component of policy making. Decision makers in the European Commission and Parliament and in national governments are feeling pressured to introduce measures that will reduce the European ecological footprint.

An important change in this regard is in the way that environmental problems are being viewed and goals are being established. The experience of the Netherlands, Denmark, and to some extent Germany have shown that relations between environmental groups and government and industry can go from being primarily adversarial to being complementary and cooperative. Working together does not mean that there is harmony among groups; in fact, conflict is taken as a given. The assumption behind the northern European models of collective decision-making and policy implementation is that public, corporate, and NGO actors need each other to find meaningful solutions. The idea is distinct from the idea of negotiated settlements since cooperative management, which brings different actors together to discuss

20 See Gary Bryner, Blue Skies, Green Politics.
21 Huey Johnson, Green Plans: Greenprint for Sustainability (Lincoln: University of Nebraska Press, 1997).
22 On this point, see for example, Ute Collier, “Towards Sustainability in the European Union—Beyond the Rhetoric.”
environmental protection programs (covenants) may also be employed in advance of a clearly polarized conflict. It can, in other words, be a proactive strategy to environmental management.23

An outcome of this new form of policy making in Europe has been the rise of interest in more comprehensive approaches to pollution control. In the 1970s and 1980s, pollution problems were largely dealt with sector by sector. At times this led to situations where in an effort to control one pollution problem, other pollution problems were being aggravated. Sector specific approaches to pollution control also have severe limitations in their ability to address the underlying causes of pollution. They tend to address the symptoms of pollution rather than the causes. Pollution from automobiles might be viewed as the immediate problem and strengthening pollution control regulations for automobiles is one solution, but underlying the heavy reliance on automobiles is a transportation system and development pattern that encourages use of the automobile. The Netherlands was the first government to introduce the idea of a national, comprehensive approach to environmental policy making in its 1989 National Environmental Plan. This plan called for the greening of government through the integration of environmental decision making into all sectors of society. Many other governments have since adopted Green Plans with varying degrees of effectiveness across Europe.

In relation to climate change, the EU has been the dominant counter-force to the US. EU member states and the EU itself have emphatically called for a cap to be placed on the level of greenhouse gas emissions reductions that can be achieved through emissions trading, the clean development mechanism, or joint implementation. The Europeans have argued that action must be taken domestically to reduce greenhouse gas emissions as well since the developed states set an example for developing countries. In Europe there has been much interest in employing a mix of measures to promote greenhouse gas emissions reductions. These include eco-taxes in a handful of European states, governmental regulations to promote renewable energy use and to improve energy efficiency in the transport and construction sectors, and voluntary agreements. To date, the German climate change mitigation program has depended heavily on industrial willingness to establish voluntary action plans.24

Japan

Pollution control agreements are common at the local level in Japan. They are based on a philosophy that shares some semblance to the collective decision making models now popular in many parts of Europe. The pollution control agreements that are so prevalent throughout Japan have brought actors with different stakes together to discuss pollution control needs and to come up with mutually acceptable pollution control goals.

In contrast with the northern European states where collective decision-making occurs both at the national and the local level, in Japan the pollution control agreements are basically local phenomenon. There also seems to have been less systematic inclusion of NGOs in the process of formulating the pollution control agreements than is the case in the Northern European countries. One final important difference is that the pollution control agreements in Japan tend to focus on NIMBY issues rather than on problem solving around larger structural issues. Pollution control agreements while good at controlling certain forms of pollution are not designed to deal with crosscutting environmental issues or comprehensive environmental planning. Still, the pollution control agreements found throughout Japan have introduced a mechanism to build compromise out of what would otherwise likely lead to conflict and to do so at lower costs to society than would occur through regulation or litigation.

Another method of flexibility in Japan is afforded by administrative guidance. Japan has a long tradition of using administrative guidance in encouraging changes in industrial behavior.25 The Ministry

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23 Pieter Glasbergen, ed., *Co-operative Environmental Governance.*
of International Trade and Industry (MITI) has used administrative guidance to push for changes in industry behavior in many areas, ranging from energy efficiency to recycling. This resembles to some extent the covenants used in the Netherlands, but absent from the equation have been environmental interests. On the positive side, the flexibility that administrative guidance provides both to government and to industry has let Japan avoid much of the costly litigation that embroils US efforts at environmental management. Once goals and targets are agreed upon by administrators and industry (whether at the national or the local level), industry is given considerable flexibility in meeting those goals which allows the industry some leeway in finding the most cost-effective means of implementing a change. On the negative side, the goals established in this process of interaction may not be as environmentally sensitive as might be desired. Because the goals tend to get established in relation to relatively narrowly defined goals (emissions reduction, energy efficiency improvements, recycling goals), broader structural issues are not typically addressed.

More recently several new approaches towards environmental management have been introduced that take Japan in a direction that is bringing it closer to northern European approaches to environmental protection. The emergence of global environmental problems forced Japan to reevaluate its approaches to environmental protection. The bureaucracy-centered model of environmental policy formation at the national level that has dominated since the 1970s is being challenged and pressures to increase the role of NGOs in decision-making have met with some success. Several new approaches to environmental management, some based on old approaches and others that are rather new experiments, are being tried. These include the use of voluntary agreements between government and industry to reduce greenhouse gas emissions (similar to the agreements that exist in Germany), the introduction of national and local Agenda 21 plans to make Japan a more sustainable society (which are also common in Europe, but are not as popular in the US), and the restructuring of the Japanese administrative apparatus planned for 2002 that will create an Environment Ministry. The Federation of Japanese Industry (Keidanren) has established guidelines for Japanese industry in the development of voluntary action plans to reduce greenhouse gas emissions and material consumption. There are now hundreds of voluntary action plans that have been established by entire industries and major corporations. In addition, there is now much interest among Japanese industry in obtaining ISO 14,001 management series certification. ISO 14,001 certification recognizes corporations that have introduced extensive measures to mitigate their environmental impacts. Certification is difficult and costly to obtain, but this has not deterred Japanese industry from pursuing it because of their desire to improve their environmental images.

Japan sits between the US and Europe in its approach to environmental management. It has avoided the ecological taxes adopted by northern European countries and is not as enthusiastic about emissions trading as is the US (See Table 9.5). Japan continues to favor governmental guidance of industrial behavior and voluntary compliance by industry of broadly and mutually defined environmental goals. The broad differences in the orientations towards environmental management that have appeared in these three regions are certainly influenced by the different political cultures of these countries. As a whole, European states have more of a social-welfare orientation than is true in the US, which supports a freer form of capitalism. Japan is positioned between the US and Europe in this regard as well. The different expectations of what the state should provide for citizens are also influencing how environmental protection is addressed.

Table 9.5 Environmentally Related Taxes (1995)

Percent of GDP | Percent of Total Tax Revenue
---|---
Canada | 1.8% | 5.0%
US | 1.0% | 3.7%
Japan | 1.7% | 6.0%
Denmark | 4.5% | 8.7%
Germany | 2.5% | 6.3%
UK | 2.9% | 8.3%

Source: OECD Environmental Data Compendium 1999, pp. 299-300.

**Comparing Environmental Outcomes in Japan, Europe, and the US**

Where Japan has had a lot of impact on the Western world is in the area of environmental policy implementation and particularly in relationship to policies that have been developed between bureaucrats and industry where there have been win-win environmental and economic benefits. In this section, I compare areas of relative success and failure in Japanese environmental policy outcome in comparison with other advanced industrialized economies. To the extent possible judgements are based on available statistical evidence although I also draw upon my own observations while conducting research in all three continents. It is beyond the possibility of this paper to assess all areas of environmental protection. Thus, only a limited, but somewhat diverse set of issues have been selected for examination.

**Energy Diversification and Energy Efficiency Improvements**

**Japan**

Perhaps the area where Japan has done best is in improving energy efficiency of products and production processes. The driving forces behind these changes were the 1973 and 1979 OPEC oil embargos and the strict air pollution control regulations of the early 1970s. There were also structural reasons for energy efficiency improvements. New industrial technologies were introduced as the economy matured. These technologies tended to be more energy efficient and less polluting than older industrial technologies, many of which moved overseas (a kind of pollution export that all of the advanced industrialized states have been involved in).

Japan is heavily dependent on energy imports, far more so than the US or any major European country. At the time of the oil shocks, oil was a major energy source for Japan and remains so today. The quadrupling of oil prices in 1973 hit the Japanese economy particularly hard. Concerned about Japan’s energy security and the health of the economy, MITI responded by actively promoting the development of alternative sources of energy, including hydro and nuclear power. Over the course of the next two decades, nuclear energy grew to account for 30% of electricity production and hydro an additional 9%. In addition to energy diversification, major efforts were made by the government and industry to improve energy efficiency in manufacturing processes. This included tax incentives for energy efficiency improvements. Diversification of energy sources and energy efficiency improvements have helped Japan to limit the growth in emissions that come from the burning of fossil fuels. This has helped limit the growth of SOx, NOx, and CO2 emissions in Japan despite the large growth in Japan’s economy in the 1970s and 1980s. It also helped Japan become a world leader in the production of pollution control technologies.  

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27 See Curtis Moore and Alan Miller, *Green Gold: Japan, Germany, the United States and the Race for Environmental Technology*. 
In the 1990s, growth in the use of air conditioners and other appliances has contributed to a growth in CO2 emissions in Japan. Because of the need to reduce greenhouse gas emissions, various policy options have been considered by MITI and the Environment Agency. To date, carbon taxes have been avoided and while additional nuclear energy development has been proposed as a partial solution by MITI, anti-nuclear movements will likely make this impossible. This is particularly true since the nuclear accident at the Tokaimura uranium reprocessing plant. Thus, there is now growing interest in Japan in the further development of alternative energies (e.g. Japan’s 100,000 solar roof program, waste to energy programs (which have become highly controversial because of dioxin emissions), and wind energy programs) and further energy efficiency gains. To do this, Japan is relying heavily on voluntary agreements with industry but also some legal initiatives such as the introduction of a new energy savings law.

The United States

Japan performs particularly well in energy efficiency when compared with the US. Like in Japan, in the US, the oil shocks led to concerns about the vulnerability of the US economy because of its dependence on imported energy. As a result, companies improved their energy efficiency considerably. The government also promoted nuclear energy development. The Three Mile Island nuclear accident in 1979, however, put a stop to further nuclear energy development in the US. Falling energy prices, moreover, have taken the incentive away from industry to be very concerned about energy use. Under the administration of Jimmy Carter an energy policy designed to promote renewable energies was introduced, but the policy was abandoned by the Reagan administration. Energy taxes on gasoline, moreover, are among the lowest in the industrialized world and are far lower than in either Germany or Japan meaning that the price of gasoline in the US is about 1/3 of the price in Japan or Europe (Table 9-6). Efforts to introduce a small energy tax on gasoline by the Clinton administration failed over strong Congressional opposition. The Clinton administration has also introduced a 1,000,000 roof solar program, but the program has not moved very far because no funds have been appropriated to it. Under the current political context in the US, the best hope for energy efficiency improvements and reductions in greenhouse gas emissions may be voluntary programs with industry, green consumer pressures, and emissions trading. Cultural factors also seem to play a role. Americans feel they have a right to cheap and abundant sources of energy. If the country wanted to, however, the US could learn much from Japan in terms how to reduce energy consumption. This includes everything from reducing energy consumption in the household to expanding the use of public transportation to producing more energy efficient consumer products.

Table 9-6 Gasoline Consumption

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Japan</td>
<td>50,723</td>
<td>1.08</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>42,996</td>
<td>1.11</td>
<td>5</td>
</tr>
<tr>
<td>France</td>
<td>21,808</td>
<td>1.18</td>
<td>38</td>
</tr>
<tr>
<td>UK</td>
<td>29,332</td>
<td>0.92</td>
<td>33</td>
</tr>
<tr>
<td>US</td>
<td>451,853</td>
<td>0.39</td>
<td>0</td>
</tr>
</tbody>
</table>

Europe
Experiences with energy diversification, energy efficiency improvements, and pollution reduction have varied considerably in Europe making it difficult to make direct comparisons to Japan. Germany was heavily hit by the oil shocks and like Japan and the US, responded with a nuclear energy development program. This program, however, resulted in a political backlash for the Social Democratic Party and became a major target of Germany’s environmental groups. The oil shocks also proved something of a blessing in disguise for Germany’s coal industry. Although coal extraction in Germany is expensive because of high labor costs and the quality of German coal is not particularly good, the oil shocks helped to maintain public and political support behind the coal industry. Continued heavy reliance on coal for energy production contributed to Germany’s acid rain problems and to its greenhouse gas emissions. France, on the other hand, despite an anti-nuclear movement and the emergence of two green parties, became almost completely dependent on nuclear energy for its electricity production. This has meant that the country has had fewer problems with air pollution than its northern neighbors although nuclear energy production has produced other concerns. Great Britain also relied heavily on coal for energy production, but more recently the discovery of natural gas has made it possible for Great Britain to switch away from its dependence on coal and reduce air pollution. Sweden joined Japan as one of the most energy efficient nations in the world.

In the northern European states in the 1990s considerable emphasis has been placed on renewable energy policies. The EU is considering similar policies as well. As an example, noting the success of Denmark in producing electricity from wind energy, in the early 1990s, Germany introduced a new regulation requiring that the utility companies purchase at least 5% of their electricity from non-nuclear renewable energy sources. This regulation led to a boom in the development of wind energy. Solar and biomass facilities are also expanding. At the EU level, a proposal for a similar 12% requirement at the EU level is being discussed. In 2000, the Social Democratic Party-Green Party coalition reached an agreement with the nuclear industry regarding a plan to phase out nuclear energy. Austria provides another interesting example. Concerned about the effects of pollution on the sensitive Alpine environment and having voted against nuclear energy development, Austria makes use of its abundant hydropower and biomass to produce electricity. In Spain and Italy, there are now programs that are funded through the Reconstruction and Development program of the EU to promote solar energy. Japan increasingly is combining its own expertise in the production of energy efficient equipment with European ideas promoting renewable energy.

Comparing the Effectiveness of Countermeasures to Address Air Pollution

Sulfur Oxide Emissions and the Challenge of Stationary Source Reduction
Sulfur oxides have long been known to cause health problems. More recently, they have also been associated with acid rain and damage to forest and water ecosystems and to buildings. SOx emissions have been reduced on all three continents. Japan, however, outperformed the US, Germany, and the UK in sulfur oxide emissions reductions in the 1970s. In Japan, there were dramatic drops in SOx emissions levels beginning in the early 1970s and continuing throughout the remainder of the decade. In Europe similar progress was not made until almost a decade later.

Policy implementation in Japan in regards to SOx was successful because of fuel switching, the use of desulfurization technology, and the extensive use of voluntary agreements between industry and
local governments regarding pollution control. Because of the Pollution Victims Compensation Law, there was an added incentive to reduce pollution levels. Japanese industry invested heavily in pollution control technologies in the 1970s, investing as much as 1/6 of all investment in pollution control equipment in 1975. Japan became the world leader in the use of desulfurization equipment.

In contrast with Japan where SOx emissions were perceived as a serious health threat, in Germany health concerns were more diffuse. It was only after SOx emissions from German industry were associated with acid rain and the dieback of German forests that this policy area gained real prominence. The rise of the Green Party in Germany at the local level in the late 1970s and at the federal level in the early 1980s can be explained in part by the failure of the Social Democratic Party and the Christian Democrats to take air pollution issues more seriously. Pressures from the Green Party helped to push the Christian Democratic Party to support the passage of the Large Combustion Plant Directive setting strict controls on major industrial sources of SOx and NOx emissions in 1983. Over initial UK objections, Germany also then successfully pushed for the establishment of a similar directive for the European Community. Change in UK policy was also the result of environmental activism in that country. When acid rain became a big political issue in Europe in the 1980s, many European countries looked to Japan for ideas about how to deal with SOx and NOx emissions from stationary sources.28

In the US, the 1970 Clean Air Act’s SOx and NOx regulations did not extend to older plants. Thus, many of the worst emitters of SOx, including the existing coal-fired power plants of the Midwest were exempt from taking pollution control measures. As a result, SOx emissions levels did not drop as sharply as they did in Japan in the 1970s and Europe in the 1980s. There was also resistance to the establishment of new regulations to address these sources of pollution. Thus, it was not until the passage of the 1990 Clean Air Act Amendments and the introduction of SOx emissions trading that greater progress was made in addressing SOx emissions levels.

The experiences of Japan, the US, and Europe suggest that there are different policy instruments that can be used to address stationary sources of air pollution. They also suggest that political and economic circumstances influence greatly which policy instruments will be employed.

The Challenge of Mobile Source Emissions Reduction

Compared with the relatively high level of success of Japan in addressing SOx emissions, and years later Europe and the US, NOx emissions have remained problematic (Table 9-7). Progress has been made in reducing NOx emissions from stationary sources paralleling the experience with SOx emissions, but mobile sources remain a major problem. The main reason for this is the rise in the number of automobiles and trucks on the road in all three regions. NOx levels are above World Health Organization guidelines in many urban areas, including Paris, Munich, London, Chicago, Denver, Los Angeles, New York, Kawasaki, Osaka, and Tokyo.

The greater difficulty in bringing NOx levels down to levels deemed safe according to national and international standards is a problem shared across the advanced industrialized societies and suggests that there are limitations to the effectiveness of pollution control legislation and voluntary measures when the target of that legislation is the general population.

It is far easier to enforce regulations, establish voluntary agreements, use administrative guidance or establish pollution control agreements with industry than with the general public. Addressing NOx problems will either require a change in infrastructure designs away from heavy dependence on the automobile (an approach that was considered by the SDP-Green Party coalition upon its formation), a change in people’s behavior (an approach that has been met with some success in the Netherlands where the use of bicycles has been heavily promoted), or the introduction of unpopular eco-taxes. The other

28 Miranda A. Schreurs, “Domestic Institutions and International Environmental Agendas in Japan and Germany.”
alternative is to push the problem back to industry and require or encourage the development of new low-polluting automobile technologies (e.g. hybrid cars that make use of fuel cells).

### Table 9-7  City Air Pollution, 1990-95

<table>
<thead>
<tr>
<th>City</th>
<th>Pop 1995 (000)</th>
<th>Mean Annual TSP [a]</th>
<th>Year of Data</th>
<th>Mean Annual SO2[b] (ug/m³)</th>
<th>Year of Data</th>
<th>Mean Annual NO2[c] (ug/m³)</th>
<th>Year of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kawasaki</td>
<td>1,153</td>
<td>52</td>
<td>1994</td>
<td>18</td>
<td>1994</td>
<td>62d</td>
<td>1994</td>
</tr>
<tr>
<td>Osaka</td>
<td>10,609</td>
<td>43</td>
<td>1993</td>
<td>19</td>
<td>1994</td>
<td>63d</td>
<td>1994</td>
</tr>
<tr>
<td>Tokyo</td>
<td>26,959</td>
<td>49</td>
<td>1993</td>
<td>18</td>
<td>1995</td>
<td>68d</td>
<td>1995</td>
</tr>
<tr>
<td>Yokohama</td>
<td>3,178</td>
<td>X</td>
<td>X</td>
<td>100</td>
<td>1995</td>
<td>13</td>
<td>1995</td>
</tr>
<tr>
<td>Munich</td>
<td>2,238</td>
<td>45</td>
<td>1995</td>
<td>8</td>
<td>1995</td>
<td>53d</td>
<td>1995</td>
</tr>
<tr>
<td>Nantes</td>
<td>257</td>
<td>20</td>
<td>1994</td>
<td>10</td>
<td>1994</td>
<td>42</td>
<td>1993</td>
</tr>
<tr>
<td>Birmingham</td>
<td>2,271</td>
<td>X</td>
<td>X</td>
<td>9</td>
<td>1995</td>
<td>45</td>
<td>1995</td>
</tr>
<tr>
<td>Glasgow</td>
<td>900</td>
<td>X</td>
<td>X</td>
<td>18</td>
<td>1995</td>
<td>49</td>
<td>1995</td>
</tr>
<tr>
<td>Manchester</td>
<td>2,434</td>
<td>X</td>
<td>X</td>
<td>26</td>
<td>1995</td>
<td>49</td>
<td>1995</td>
</tr>
<tr>
<td>Atlanta</td>
<td>2,462</td>
<td>X</td>
<td>X</td>
<td>11</td>
<td>1995</td>
<td>32</td>
<td>1995</td>
</tr>
<tr>
<td>Chicago</td>
<td>6,844</td>
<td>X</td>
<td>X</td>
<td>14</td>
<td>1995</td>
<td>56d</td>
<td>1995</td>
</tr>
<tr>
<td>Dallas</td>
<td>3,609</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>26</td>
<td>1995</td>
</tr>
<tr>
<td>Denver</td>
<td>1,609</td>
<td>X</td>
<td>X</td>
<td>11</td>
<td>1995</td>
<td>55d</td>
<td>1995</td>
</tr>
<tr>
<td>Detroit</td>
<td>3,723</td>
<td>X</td>
<td>X</td>
<td>17</td>
<td>1995</td>
<td>41</td>
<td>1995</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>12,410</td>
<td>X</td>
<td>X</td>
<td>9</td>
<td>1995</td>
<td>73d</td>
<td>1995</td>
</tr>
<tr>
<td>Miami</td>
<td>2,080</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>21</td>
<td>1995</td>
</tr>
<tr>
<td>D.C.</td>
<td>3,685</td>
<td>X</td>
<td>X</td>
<td>20</td>
<td>1995</td>
<td>43</td>
<td>1995</td>
</tr>
</tbody>
</table>

Notes: a. Total suspended particulates (TSP) in the air in micrograms per cubic meter. b. sulfur dioxide measured in micrograms per cubic meter. c. Nitrogen dioxide measured in micrograms per cubic meter. d. Level exceeds World Health Organization guidelines.


Greenhouse Gases and the Challenge of Multiple Sources and Multiple Emissions
Neither Japan, the US, nor Europe can boast great success at reducing greenhouse gas emissions. Great Britain has reduced its emissions somewhat but this was primarily due to the luck of discovering natural gas. Germany has reduced its emissions but only because of
reunification and the collapse of the East German economy. The US and Japan have both seen their CO2 emissions rise. Greenhouse gas emissions reduction is an extremely complex challenge that is likely to require a broad mixture of policy tools to be effective. The complexity of the issue requires problem solving on a level never before dealt with by states. Much as was true in the 1960s at the turn of the millennium, the advanced industrialized states are still struggling to figure out how best to deal with this very important, but very complicated challenge. The challenge of greenhouse gas emissions reduction will only be met if all actors in society work together to find innovative solutions, including technology development, changes in societal and industrial behavior, and some combination of regulation, eco-taxes, emissions trading, and, or other flexible mechanisms. Cross-societal learning remains immensely important.

**Promoting Sustainable Development and Protecting Biological Diversity**

The concept of sustainable development was popularized with the 1987 World Commission on Environment and Development’s report, *Our Common Future*. In 1992 at the United Nations Conference on Environment and Development, Agenda 21 was formulated and signed by over one hundred countries. Agenda 21 is an action plan to promote sustainable development through changes in trade policy, the transportation sector, housing, education, and over thirty other areas. Promotion of sustainable development attempts to link national economic and societal behavior to the health of the global environment and to introduce the ideas of equity across societies and across generations into our socio-economic activities. The next generation has the same rights to a rich array of natural resources as today’s generation has.

In none of the advanced industrialized societies has the idea of sustainable development really taken hold at the most fundamental level. Yet, some signs of engagement with the concept at the political level are emerging in some of the advanced industrialized societies. There appears to be more political activity in Europe and Japan in relationship to Agenda 21 than in the US. The US, European governments and Japan have all formulated National Agenda 21 plans and submitted them to the United Nations Commission on Sustainable Development. Only in Japan and Europe, however, do these national plans have any national political recognition. There are now hundreds of local Agenda 21s in Japan and Europe and there is considerable national support behind program implementation. Both the national and the local agenda 21s have resulted in government and at times, corporate, plans to reduce waste and emissions, to limit consumption, and to promote environmental protection. Sustainable development plans broaden the scope of implementation instruments to include economic and fiscal measures, voluntary agreements, information, communication, training, and so forth. They also call for greater integration of environmental considerations into other policy areas. There is considerable resemblance between the local sustainable development plans and pollution control agreements used in Japan in the past although the scope of the local Agenda 21s is broader. Agenda 21 is not on the policy agenda of the US Congress although there is a President’s Council on Sustainable Development. Instead, at the local level in the US, urban sprawl campaigns and smart growth plans are becoming popular; both of these are oriented towards putting a brake to the rapid suburbanization of urban areas that is eating into the rural surroundings and causing increasing traffic congestion problems on the arteries leading into major cities.

Sustainable development requires not only domestic improvements in how environmental considerations are integrated into the socio-economic sphere but also changes to foreign policy. As major consumers of natural resources, the advanced industrialized states cast long ecological shadows on the planet. In Japan’s case, the country received much negative publicity in the 1980s for corporate activities and Official Development Assistance projects overseas that were environmentally destructive. This was particularly true in relation to the import of logs from tropical rainforests and unsustainable fishery

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29 See William Lafferty and James Meadowcroft, *Implementing Sustainable Development*. 
In response to these criticisms, in the 1990s, Japan has done much to incorporate greater environmental considerations into ODA (and now is a world leader in terms of the percentage of its ODA going to environmental protection) and corporations have also become somewhat more sensitive to ecological concerns internationally. Still, this area remains a significant challenge for all of the industrialized states. Host country governments have jurisdiction over the environmental behavior of firms whether domestic or multinational. In the US, there have been some efforts to try to hold US corporations liable in the US legal system for grossly negligent behavior, such as in the case with the Bhopal tragedy where thousands of people died as a result of an accident that stemmed from poor environmental safety standards, but to date these efforts have met with limited success. Thus, changing corporate behavior internationally depends primarily on the voluntary compliance of companies (which can be influenced by their stock holders) and host country regulations and enforcement. To the extent that corporations benefit from governmental ODA, the use of ODA can also have some impact in this area. International efforts to promote the idea of assessing a countries wealth not by its GDP, but by its Green GDP (which takes into account a nation’s natural resource wealth), is one effort that has been launched to try to green economic thinking.

Paralleling the growth in concern with sustainable development, there has been an international effort to get governments to enhance their efforts at nature conservation and wildlife preservation. Historically, the US has viewed nature conservation and wildlife preservation as one of the most important aspects of environmental protection and this is where US environmental groups have placed much of their efforts. Europe has been in a more difficult position than the US in regards to nature conservation and wildlife preservation since European societies largely destroyed their wilderness areas long ago. Due to its mountainous terrain and its many islands, Japan still has substantial green space despite its large population although there are few stretches of large unspoiled land. Whereas the US tends to support conservation initiatives, Japan has been more supportive of sustainable use approaches. Clashes between these philosophies have caused friction between the US and Japan related to whaling and other marine issues.

The past continues to haunt all of the industrialized states in terms of species extinction (Table 9-8). All have lost species to economic and agricultural development and in some cases to plain human stupidity. In all three regions, environmental groups continue to call for greater attention to conservation and the establishment of various kinds of locally, regionally, nationally, and internationally recognized parks. This has resulted in the establishment of new kinds of protected regions, such as biosphere reserves, World Heritage Sites, and Wetlands of International Importance (Table 9-9). In many ways, the early conservation and preservation movements continue to influence environmental thinking in the advanced industrialized states.

<table>
<thead>
<tr>
<th>Table 9-8 Threatened Species</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammals</strong></td>
</tr>
<tr>
<td>All species</td>
</tr>
<tr>
<td>Japan</td>
</tr>
<tr>
<td>Germany</td>
</tr>
<tr>
<td>France</td>
</tr>
<tr>
<td>UK</td>
</tr>
<tr>
<td>US</td>
</tr>
</tbody>
</table>

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30 See Peter Dauvergne, *Shadows in the Forest*. 
Higher Plants

<table>
<thead>
<tr>
<th></th>
<th>All species (flowering plants)</th>
<th>Endemic species</th>
<th>Threatened species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>4,700</td>
<td>2,000</td>
<td>704</td>
</tr>
<tr>
<td>Germany</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>France</td>
<td>4,500</td>
<td>133</td>
<td>117</td>
</tr>
<tr>
<td>UK</td>
<td>1,550</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>US</td>
<td>16,320</td>
<td>4,036</td>
<td>1,845</td>
</tr>
</tbody>
</table>


Wildlife and Biodiversity Protection

Table 9-9: International Protection Systems, 1997

<table>
<thead>
<tr>
<th></th>
<th>Biosphere Reserves</th>
<th>World Heritage Sites</th>
<th>Wetlands of International Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (000 ha)</td>
<td>Number (000 ha)</td>
<td>Number (000 ha)</td>
</tr>
<tr>
<td>Japan</td>
<td>4</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Germany</td>
<td>13</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>France</td>
<td>8</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>UK</td>
<td>13</td>
<td>1</td>
<td>107</td>
</tr>
<tr>
<td>US</td>
<td>21</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>

Concluding Remarks

The experiences of Japan, the US, and European countries with balancing economic development with environmental protection suggest that they have had much learning to do. Their histories are replete with stories of pollution related tragedies and environmental destruction. Still today, they cast long ecological shadows on the planet. Yet, their histories also suggest that there has been much learning about ways to protect the environment and human health while promoting economic growth and technological advancement.

A comparison of these three regions shows that cross-societal learning has been an important element of environmental management. This learning can include the borrowing or adaptation of environmental policy instruments, institutional arrangements, and even norms and values. On their own, these states would not have made as much progress in environmental management had they not had each others’ examples to learn from. In all three regions, there has been a broadening of definitions of the environment. Initially, pollution was categorized by type: air, water, land, waste, noise, etc. Nature
conservation was basically a matter of setting aside land for protection and restricting its use. This meant that at times, policies that were introduced to deal with one pollution problem actually exacerbated other pollution problems. The first generation of environmental laws did not take a comprehensive view of the relationship between human activities and the natural environment. While none of the countries has yet achieved a sustainable system from an environmental perspective, there have been efforts to make environmental protection a more integrated component of all government planning. The emergence of new kinds of environmental problems suggests that environmental learning is not a finite process. It is an ongoing process that continues to challenge the advanced industrialized states.

There has also been a learning process in how governments go about making environmental decisions. It is recognized that environmental policy making requires inputs from all actors who have a stake in the matter. Initially, pollution control was a highly contentious policy area. This is still true to some extent. Yet, today environmental groups are accepted as a necessary and important element of societal efforts to promote environmental protection. More and more, corporations, governments, and NGOs are finding it necessary to talk with each other about how to best promote environmental goals. Consultative decision-making is gaining ground.

There are many similarities in the experiences of the advanced industrialized states in addressing pollution and environmental protection. Yet, there are also important differences among them. These differences stem from differences in geographical constraints and natural resource endowments. They are also strongly influenced by governmental structures and institutions and political culture.

Japan, Europe, and the US have strengths and weakness in different environmental management areas. Japan’s strengths lie primarily with enforcement of pollution control on stationary sources of air and water pollution and in technological innovations that have improved energy efficiency. Government and industry have worked closely together in making it possible for industry to meet pollution control goals with some flexibility. Past experiences with air and water pollution control through pollution control agreements are now being extended to broader environmental challenges such as sustainable development. Japan has been weakest in terms of involving citizens in environmental decision-making processes. This is something that is slowly starting to change as environmental NGOs gain societal acceptance.

The US has dominated scientific and influenced strongly philosophical debates on the environment. It has also been a leading proponent of nature conservation. Today, it is becoming a champion of market-based mechanisms (but not ecological taxation) for promoting environmental protection. Increasingly policy stalemate has made it difficult for the US to maintain its prominence internationally as an environmental leader.

Europe, since the rise of the Green Parties, has become increasingly influential in promoting new ideas about environmental management, including collective decision-making and comprehensive environmental planning. Some of the most innovative programmatic ideas related to environmental protection are now emerging on the European continent.

Environmental learning must continue. Ecological degradation continues within the advanced industrialized states and internationally as a result of their economic activities. The advanced industrialized states must also consider how their policy examples influence the policy decisions of developing states in the world.

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