

ENVIRONMENTAL HISTORY, POLITICS, AND DECISION-MAKING

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INTRODUCTION

Government policy is a key determinant of how natural resources are exploited and conserved. In the United States, the policies that control natural resource use were developed over three centuries by both governmental and private actions. Governmental policy is a product of the political process, constrained by history and precedent. The political process in turn is essentially one of confrontation and compromise among many different interests, both economic and ideological. International environmental policies are the outgrowth of cooperation between nations. Unfortunately, international policy often is difficult to produce because of wide disparities in legal, economic, and social systems, which exacerbate major differences between nations (Hempel 1996). Once these differences are ironed out, however, participation in an international treaty is only voluntary. Nations cannot be compelled to abide by treaties because of the concept of *national sovereignty* (Murphy 1994). In other words, a country has the right to look after its own interests first and foremost, and what happens within its territorial boundaries is that country's business. Thus, the enforcement of international treaties is even more doubtful because there are no international police, no international taxation mechanism to support enforcement, and you can't take a country to court without its permission. One last complicating issue for international environmental policy involves the transboundary nature of contaminants and the common property nature of many resources (Porter and Brown 1996).

This chapter examines the history of human impact on the environment worldwide and the development of natural resource policy, with a particular focus on the United States. The policy process is described, along with the various ideological and economic interest groups that are the major forces behind environmental management practices at both the national and global levels.

NATURAL RESOURCE USE: A HISTORICAL PERSPECTIVE

Human history can be viewed as a process of increasing ability to manipulate and alter usable aspects of the physical environment. For example, in the early stages of human evolution, at least 2 million years ago, the natural environment was largely unaffected by humans. Small numbers of protohumans in their hunting bands, using simple technology (bone, stone, and wood tools and hunting pits), were generally capable of competing with animal species. Like animals, protohumans were also at the mercy of climate and topography and did not have the technological skills to master the earth's more difficult climates. Thus, they were best able to utilize the food and shelter resources of open and coastal lands, locations that were far more vulnerable to natural hazards such as floods than to any alteration by people.

The first human tool to have a major environmental impact was fire. Early humans used it to drive animals into traps; when agriculture was developed between 10,000 and 7000 B.C., fire was used to clear land for crops and to create grazing

areas for livestock. Fire is the only example in which the capacity of modern technology to alter the environment is matched by that of the pretechnological humans. The deliberate use of fire introduced three types of environmental effects: (1) it was widespread, affecting a large area; (2) it was a repetitive process and could cover the same areas at frequent intervals; and (3) it was highly selective in its effects on animal and plant species, having a negative effect on some while encouraging those with rapid powers of recovery or resistance to fire (Pyne 1997). The environmental result was to improve the yield of certain species for human use and to modify the vegetation cover. These early effects were confined largely to tropical, subtropical, and temperate forests and grasslands, as well as some wetlands.

At least 10,000 years ago the human race had spread to all continents except Antarctica. With the shift from hunting and gathering to agriculture, human culture developed more sophisticated food production tools for planting, harvesting, and transporting. Also, in drier areas in the Middle East and later elsewhere, large-scale irrigation works were built. The sedentary life of the agriculturalist went hand in hand with the development of cities. These two developments, agriculture and urbanization, led for the first time to a substantial change in land use, from natural to human-made forms of productivity, in the form of fields, streets, homes, and irrigation ditches. The development of cities led to large-scale environmental disruption and change because of the concentration of large populations and the wide areas in which land was cultivated, grazed, cleared of trees, and subjected to erosion to support the urban population. In addition, through the domestication of plants and animals, people were able to direct the energy and nutrients of an ecosystem to produce more of certain foods than the environment would naturally. This in turn permitted the growth of human populations beyond the limits set by their pre-agricultural patterns. Thus, agriculture raised the *carrying capacity* of the earth to support human beings.

After about 1000 B.C., humans began to move freely around the world, and rulers began to dominate large regions from a distance. Settlements and their impacts were no longer necessarily small in scale or localized in effect. The era of European colonialism that began in the fifteenth century A.D. placed the environments and resources of far-

distant lands under their control. These colonial powers were interested in removing and using resources, with little regard for environmental consequences either abroad or close to home. The advent of industrialization led to a global-scale use of fuel and mineral resources that altered or destroyed local and regional ecosystems, perhaps ultimately affecting global climate and other environmental patterns (Simmons 1996; Turner et al. 1990).

The last three millennia, and particularly the last 500 years, saw a transformation in the kinds and scales of natural resource use in the world (Turner and Butzer 1992). Early societies depended primarily on locally available resources with relatively little trade, whereas now most of the goods we consume come from quite far away. Resource-use systems have become complex, with a wide variety of goods utilized in everyday life. This increasing complexity isolates us somewhat from the basic raw materials provided by the environment and makes us more dependent on human systems of resource manipulation and distribution. There clearly are innumerable ways of making a living in the world today. No single commodity or geographic area is indispensable, and resource management has become a task of selecting which resource utilization techniques are most appropriate for our needs at any given time.

DEVELOPMENT OF NATURAL RESOURCE POLICY

Natural resource policies are established at a variety of levels—local, state, national, regional, and international. As you might expect, the decision-making, mechanisms, and impacts of these policies vary not only between different states in the United States but also from country to country.

U.S. Environmental Policy

The history of natural resource policy in the United States from the seventeenth century to the present can be divided into different phases, but these do not have distinct beginning and ending dates and often overlap. The following is a summary of some of the major actions and events that form the basis of much of contemporary U.S. conservation philosophy and policy.

Phase 1: Exploitation and Expansion

(1600–1870) When the early European settlers arrived in North America, they found a vast continent with natural resources in apparently limitless supply, compared to the more urbanized and developed Europe. Their goal was to establish stable and profitable colonies. To accomplish this goal, the European landholders who controlled settlement promoted population growth and resource extraction to maximize their security and prosperity. The colonial economy was, by design, based on exporting raw materials to industrial Europe, with agriculture for domestic food production. The enormous land area of North America was the primary resource for this economic development, and exploitation of its natural resources was the means to the desired end.

The forests that covered most of the eastern third of the continent were seen partly as a resource and partly as a nuisance. Wood was needed for fuel and construction purposes, but the vast amount of forest compared to productive agricultural land meant that timber cutting was a low-value land use. The forests, then, were cleared as rapidly as possible to make room for agriculture. In addition, the prevailing aesthetic attitudes toward forests were different. Forests were seen as unproductive, undesirable, and dangerous, whereas agricultural land was productive, attractive, and secure (Fig. 3.1). Except in a very few cases, regulations limiting the clearing of forests were unknown, as was the notion of natural resource conservation. This exploitative attitude toward the land prevailed for about the first 250 years of European occupation of North America, until the middle or late 1800s (Cronon 1984). The growth of an industrial economy in the nineteenth century had little effect on this attitude, except perhaps to increase the demands of urban populations for food, timber, and, later, coal. Forests were first culled of the most valuable trees, and later the remaining timber was generally clear-cut and often burned. Agriculture in many areas was largely cash cropping of a very few crop types, and except for liming soils in some areas, little was done to maintain, let alone enhance, soil fertility. As a result, soil erosion was rapid, and declines in fertility forced abandonment of land after only a few years, particularly in the southeastern United States (Dilsaver and Colten 1992).

As the nation expanded westward, political as well as economic goals required rapid settlement



Figure 3.1 A mixed landscape of forest and farms has replaced the near-continuous forest that covered most of the eastern United States when Europeans began migrating here in the seventeenth century. Clearing the forests was viewed by individuals and their governments as an improvement of the resource base.

and development of the Great Plains. With each major territorial expansion from the Louisiana Purchase in 1803 to the Alaska Purchase in 1867 (the annexation of Texas excepted), the federal government acquired possession of vast acreages. In the early nineteenth century, much government land was sold to provide income to the fledgling republic as well as to promote settlement. Several laws were passed in the mid-1800s to promote settlement, largely by transferring government-owned lands to private ownership, either for free or at a nominal cost. The most notable among these laws were the *Homestead Act* of 1862, the *Railroad Acts* of the 1850s and 1860s, the *Timber Culture Act* of 1873, and the *Mining Act* of 1872.

The Homestead Act and the Railroad Acts were specifically designed to encourage settlement, especially in the Great Plains. The Homestead Act gave any qualified settler 160 acres free, and the Railroad Acts granted large rights of way to the railroad companies to finance construction of transcontinental and other rail lines that would further accelerate settlement of the West. Most of the land granted to the railroads was sold to other private interests, but substantial acreages remain in railroad ownership today, particularly in Cali-

fornia. The Timber Culture and Mining Acts granted free access to forests and minerals to anyone willing to exploit them. There were widespread abuses of these privileges, which resulted in land companies and speculators acquiring vast acreages at nominal expense. Although these laws were successful in stimulating settlement and economic development, in many cases they encouraged excessive exploitation by artificially depressing the price of resources. Environmental degradation usually followed, as with the forests of the upper Midwest (Michigan, Wisconsin, and Minnesota), in which much timber was lost to wasteful logging practices and fires and soil was lost to accelerated erosion.

The primary themes of this era included resource exploitation for economic prosperity and land transfers from public to private ownership. In fact, this era is best characterized by the massive land transfers from federal to private ownership, be it individuals, developers, or selected industries such as the railroads.

Near the end of this phase, the practice of promoting exploitation of resources for economic growth was limited somewhat by the growth of the conservation movement. Exploitative policies continued into the twentieth century, however, with legislation such as the Reclamation Act of 1902, which provided for the development of water at public expense for crop irrigation in the arid West. Today, natural resource exploitation for economic prosperity is still the basis of government management of mineral resources such as coal and oil, as well as being an important consid-

eration for other resources such as water and rangelands.

Phase 2: Early Warnings and a Conservation Ethic

(1840–1910) As the westward expansion continued, Americans escalated their efforts to exploit the environment for their own needs, and with improved technology, settlers had a much easier job of “taming the land.” For example, the mechanization of farming enhanced the settlement of the Great Plains. McCormick’s grain reaper allowed the timely harvest of wheat. Steel plows developed by John Deere helped to break up the prairie soil for cultivation (Fig. 3.2). The cotton gin provided a mechanical means to sort lint from the cotton, and barbed wire allowed farmers and ranchers to demarcate property. As a result of many of these mechanical inventions, wildlife populations were particularly hard hit, as they were displaced from their ecosystem, were outcompeted by the domesticated animals (cows and sheep), or succumbed to harsh winters and the rifle.

During the time when settlement rapidly was advancing westward with the government’s stimulation and encouragement, a few individuals were suggesting that the exploitation of resources was too rapid and too destructive. In general, these persons were intellectuals and academics who did not enjoy popular audiences for their criticisms; thus, the effects of their writings were limited at the time. Eventually, however, their warnings were heard by decision-makers in government, and this led to a new concern for conserving and preserving resources.



Figure 3.2 An early tractor plowing prairie soil for wheat production in Oregon about 1890. The development of equipment such as this encouraged specialization in agriculture and strengthened links between agricultural and industrial sections of the economy.

Among the early American writers advocating wilderness preservation were Ralph Waldo Emerson and Henry David Thoreau, who argued on philosophical grounds in the 1840s and 1850s against continued destruction of natural areas by logging and similar activities. George Perkins Marsh's *Man and Nature, or Physical Geography as Modified by Human Action*, published in 1864, was perhaps more influential in the conservation versus exploitation debate. Marsh was both a public servant and a scientist, which led him to advocate government action to protect natural resources. Although a native of Vermont, Marsh traveled widely in the Mediterranean lands, areas long damaged by overgrazing. He saw a parallel between the Mediterranean situation and the damage done by sheep grazing in the Green Mountains in his home state. In *Man and Nature*, Marsh argued that humans should attempt to live in harmony rather than in competition with nature (Fig. 3.3). More important, Marsh argued that natural resources were far from inexhaustible. This book was widely read and had considerable influence on Carl Schurz, who later became Secretary of the Interior under President Rutherford Hayes in 1877.

Phase 2 included a series of developments in the late nineteenth century, when many of the basic doctrines of the government's natural resource conservation policy were established. The primary tenet was that land resources should be managed for long-term rather than short-term benefits to the general population. This phase, dominated by concern for forest resources and to a lesser extent wilderness preservation, began in the

1860s and was marked by the first significant government action aimed at restricting exploitation of natural resources. One important governmental action was the formation, in 1862, of the Department of Agriculture's Land Grant College System, which was designed to help improve the management and productivity of agriculture and forestry through improved education. The establishment of the Cooperative Extension Service by the Smith-Lever Act of 1914 also helped to improve conservation education by linking the local farmer to agricultural experts in the state universities.

By the late nineteenth century, the forests of much of the eastern United States either were entirely cut over or were rapidly disappearing. Thus, it is not surprising that the forest resource was the first focus of the emerging conservation efforts in the 1870s. Carl Schurz launched an attack on corrupt and wasteful practices in timber harvesting on federal lands and brought the severity of the problem to the public eye. In 1872 the Adirondack Forest Reserve Act halted the sale of state forest lands, an action that eventually led to the creation of the Adirondack Forest Preserve (now Adirondack State Park). The most significant development during this period was the passage, in 1891, of a rider on a public lands bill that gave the President the authority to set aside forested lands by proclamation, thus reserving them from timber cutting. President Benjamin Harrison quickly began withdrawing land from timber cutting, and in 1897 additional reservations by President Grover Cleveland brought the total forest reserves to about 40 million acres (16 million hectares [ha]). The fed-



Figure 3.3 Formal gardens like these in Manteo, North Carolina, show our love for nature's forms but, more important, our domination over them.

eral government had established what would later become the National Forest System, but at the time it had no real management policy for these lands. In 1898 Gifford Pinchot was appointed as the first Chief Forester. Pinchot was trained as a forester in Europe, where the field was well established. He brought with him knowledge of the scientific basis for land management, in particular the notion of *sustained yield* forestry. The principle of sustained yield management of renewable resources has now been firmly incorporated into all aspects of official federal policy, although there is some debate as to whether the principle is truly followed in practice.

In 1901 Theodore Roosevelt became president, and his administration represented the culmination of this phase of America's natural resource history. Roosevelt was an adventurer and outdoorsman and thus had a personal appreciation for the values of undeveloped land, particularly the still untouched wilderness areas of the western United States. Pinchot was one of his key advisers, and with the forester's advice, Roosevelt added large acreages to the nation's forest reserves. In 1905 the United States Forest Service was established with Gifford Pinchot as its first chief, and "forest reserves" became National Forests. By the end of Roosevelt's administration, these reserves totaled 172 million acres (70 million ha). Later, large acreages were added to the National Forests in the eastern United States after the passage of the Weeks Act in 1911, which provided for federal acquisition of tax-delinquent cutover lands.

Theodore Roosevelt was also instrumental in expanding what would later become the National Park System. Yellowstone was reserved as a National Park in 1872, and several other parks were created during this period. Roosevelt protected the Grand Canyon from development by invoking the Antiquities Act. Passed in 1906, this act primarily was intended to allow the President to preserve national historic sites such as buildings and battlefields. Roosevelt, however, used it to create the Grand Canyon National Monument, which later became a National Park. Some 90 years later, in 1996, President Clinton used this same act to preserve thousands of acres of wilderness in Utah. Finally, near the end of his presidency, Roosevelt sponsored the first White House Conference on Conservation, further bringing the issue to public attention and concern.

Another important figure during this period was John Muir, who founded the Sierra Club in

1892. Muir was a strong preservationist and wilderness advocate, whose primary area of interest was the Sierra Nevada Range of California. The Yosemite region was one of his favorite spots, and he led the battle to protect the area from damage by sheep grazing by establishing what would later become Yosemite National Park.

One of the most significant battles of Muir's life was fought over the preservation of Hetch-Hetchy Valley. This valley is adjacent to Yosemite Valley and was very similar in scenic beauty. However, Hetch-Hetchy was a convenient source of water for the growing city of San Francisco and an excellent dam site. Muir fought hard to prevent the damming of the Tuolumne River but eventually lost in a battle with a former ally in the conservation movement, Gifford Pinchot (Miller 2001). Although Pinchot was a conservationist, he believed in conservation as a means of maintaining the productive capacity of natural resources. To prevent development was contrary to the notion that resources could be used for the general benefit of the population, and Pinchot opposed Muir in the debate over Hetch-Hetchy. In the end, the development interests prevailed, and today the valley is a reservoir providing water and electricity to the cities of northern California. Almost a century later, there is occasional talk of draining Hetch-Hetchy and restoring the valley to its original state.

The Hetch-Hetchy controversy made clear the distinction between conservationists, who encourage careful husbanding of resources yet do not condemn their use, and preservationists, who would stop all use or development on the basis that some areas and resources are too valuable to be used. This second phase ushered in major achievements in resource conservation and saw the establishment of the principles of both sustained yield management and preservation of outstanding natural features for future generations. This period also witnessed the emergence of two of the major ideological camps, the preservationists and the conservationists, which still dominate debates over natural resources today.

Phase 3: Conservation for Economic Recovery (1930–1940) The Great Depression of 1929–1941 and Franklin Roosevelt's (FDR's) New Deal of the 1930s had more impact on all aspects of modern domestic policy than events in

any other period in American history, and natural resource use was no exception. The Depression provided the impetus for massive programs aimed at relief, recovery, and prevention of similar problems in the future. Most of the major programs of this period were primarily economic rather than conservation-oriented in emphasis. The Civilian Conservation Corps, for example, did not represent a major new policy but rather was a make-work program that put many of the unemployed to work on conservation projects, principally planting trees and maintaining or constructing park facilities. In contrast, two major agencies established by the New Deal, the Tennessee Valley Authority (TVA) and the Soil Conservation Service (SCS), were aimed at correcting problems that, if not major contributors to the Depression, were very much worsened by it.

The Appalachian region of the Southeast had been economically depressed for a long time and was among the areas hardest hit by the Depression. The forests were largely cut over, farms were not competitive with those in the Midwest, soil erosion and flooding were particularly severe, and no significant industrial employment was available. The TVA was the first major effort to address this wide range of problems in an integrated regional resource management and economic development program. The major elements of the program were the construction of dams for hydroelectric power

generation and flood control, with the generated power used to support new industries, particularly fertilizer and later munitions production. Forests were replanted to control erosion, and many smaller erosion control measures were instituted, in part to protect the newly created reservoirs from sedimentation. Today the TVA is mostly an electric power-generating authority, but it has an important legacy in natural resources. It represents the recognition that good natural resource management and economic vitality are interdependent and that to ensure long-term economic stability, both must be undertaken together.

In addition to dam construction in the Tennessee Valley, many large dams were completed in the arid western states, including the Hoover Dam on the Colorado River (Fig. 3.4) and several dams in the Columbia River basin. These were seen as important government investments in agriculture and electric power generation, which would help revitalize agriculture and provide new sources of energy for industry.

The agricultural expansion in the Midwest and Great Plains during the late nineteenth and early twentieth centuries took advantage of the naturally fertile soils of that region, and farming was successful without significant inputs of fertilizers or other means to maintain soil fertility. Severe soil erosion was widespread, but it took the economic collapse of the 1930s and the ensuing dust

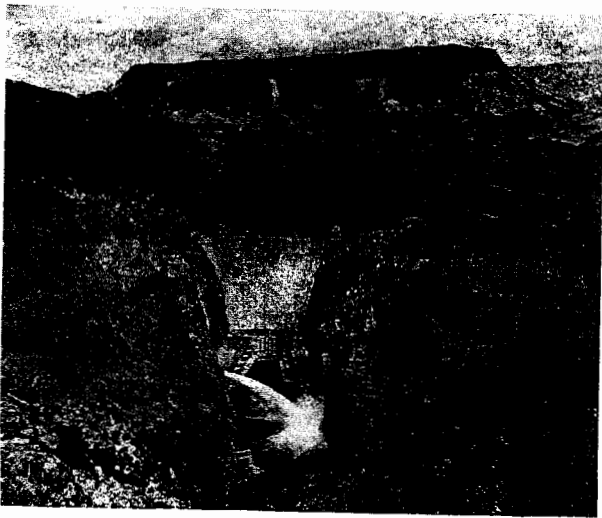


Figure 3.4 Hoover Dam. This 1938 Bureau of Reclamation photo shows the multipurpose dam, which spans the Colorado River at the Nevada–Arizona border. Hoover Dam and its reservoir, Lake Mead, provide flood protection, water storage, hydroelectric power, and recreation. These benefits typify the goals of the governmental public works projects during the 1930s and 1940s.

bowl conditions in portions of the Midwest and Great Plains to focus attention on the problem. Several dry years on land that was marginal for farming, combined with economic hardship brought on by low farm prices, led to severe wind erosion in Oklahoma, Colorado, and nearby areas, forcing thousands off the land (Worster 1979).

The Soil Erosion Service, created in 1933, was established in response to these problems. Hugh Hammond Bennett became the first director of the newly renamed Soil Conservation Service (now known as the Natural Resources Conservation Service) in 1935. He led an extensive research effort to determine the causes of soil erosion and the means to prevent it. This resulted in the development and implementation of many important soil conservation techniques, which yielded dramatic reductions in soil erosion in much of the nation. The Agricultural Adjustment Administration, forerunner to the Agricultural Stabilization and Conservation Service (now known as the Farm Service Agency), was established to provide payments to farmers who reduced crop acreage. This not only reduced farm surpluses but also helped support prices and reduced the rate of soil erosion. Some of the subsidy programs established in the New Deal continued through the 1990s but are being phased out (see Issue 6.3).

Another significant piece of legislation of this period was the *Taylor Grazing Act* of 1934, which established a system of fees for grazing on federal lands, with limitations on the numbers of animals that could be grazed. This law was a partial response to the widespread accelerated erosion caused by overgrazing. The act also closed most of the public lands to homesteading, effectively ending the large-scale transfer of public lands to private ownership that had begun in 1862. Today, these public lands are administered by the Bureau of Land Management. The Natural Resources Planning Board was another milestone of resource management in the FDR years and was a major step toward establishing long-term comprehensive natural resources planning.

In summary, the FDR years saw important advances in federal resource management and conservation activities. Most of the new programs were conceived as a result of the Depression and were designed to alleviate the problems of the time as well as prevent future mismanagement of resources. The need for careful management of re-

newable resources, particularly soil and water, was recognized, and the close relation between economic and resource problems became clear.

Phase 4: The Environmental Movement (1962–1980) The years 1940 to 1960 witnessed few new developments in conservation policy. The 1940s were dominated by war, and the economic recovery and ensuing prosperity of the 1950s diverted attention from natural resources issues. However, there was considerable progress in soil, water, and forest conservation, expanding on the achievements made under FDR. The major federal actions of this period were largely in the area of recreational activities, with the expansion of the National Parks and similar recreational areas in response to increased use by the American public.

By the 1960s, attention became focused on the quality of life available to Americans, and natural resources became more broadly defined. Two significant books published in 1962 and 1963 called attention to this expanded view of natural resources and signaled the beginning of a new era in which environmental pollution was recognized as a major threat to natural resources and the quality of life.

One of these books was *The Quiet Crisis* (1963), by Stewart Udall, Secretary of the Interior under President John F. Kennedy. In this work Udall presented much of the history of natural resource use in the United States, particularly focusing on the destruction of natural environments and wildlife. He called for renewed attention to the human effects on the environment, echoing many of the sentiments of G. P. Marsh 100 years earlier. The other book was Rachel Carson's *Silent Spring* (1962), which described the effects of pesticides on the ecosystem and predicted drastic environmental consequences of continued pollution.

Throughout the 1960s, a popular movement for pollution control grew, led largely by scientists, such as Barry Commoner and Paul Ehrlich, student activists, and a few government officials such as Stewart Udall. Many influential authors argued that the environment was damaged severely already and that urgent action was needed to restore its health and prevent further damage to both natural and managed ecosystems. A major focus of the movement was the disparity between a limited resource base on "spaceship Earth" and a rapidly

growing world population that already faced severe shortages of food and raw materials. A long list of laws was passed in the late 1960s and early 1970s aimed at reducing pollution, preserving wilderness and endangered species, and promoting ecological considerations in resource development. Some of the more important of these were the Wilderness Act of 1964, the Clean Air Act of 1963 and its amendments of 1970 and 1977, the Federal Water Pollution Control Act of 1964 and its amendments of 1972, the Coastal Zone Management Act of 1972, the Endangered Species Act of 1973, and the National Environmental Policy Act of 1970 (NEPA). The laws relating to specific resource problems such as air and water pollution were the most important in terms of improving environmental quality, and they are discussed in more detail later in this and other chapters.

The National Environmental Policy Act (NEPA) represents the first comprehensive statement of United States environmental policy and is illustrative of the character of this phase of American natural resources history. Section 101 of NEPA contains a statement of the federal government's environmental responsibilities. These are to

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (CEQ 1980:426-427).

These are lofty goals, but they reflect the idealism of the time as well as the far-reaching concerns of the environmental movement. They emphasize quality of life, preservation, or maintenance rather than exploitation and the concern with a limited and finite resource base supporting a rapidly growing population. NEPA also established the requirement for environmental impact statements in order to ensure compliance with its policies.

By the late 1970s a complex set of laws, regulations, and procedures was in place, along with a bureaucracy to administer them. The mass of environmental legislation generated in the preceding decade was being translated into everyday action, and the energy crises of the mid-1970s re-emphasized the need for resource conservation. Substantial improvements in environmental quality were made, particularly in the areas of air and water pollution. With an upsurge of public concern about the effects of pollution and toxic chemicals on health, the Toxic Substances Control Act and the Resource Conservation and Recovery Act were signed into law in 1975 and 1976, respectively.

Phase 5: Pragmatism and Risk Reduction (1976-1988)

The next phase focused attention on improving human health by controlling toxic substances in the environment. The Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) was signed into law in 1980. Its purpose was to reduce the toxicity, mobility, and volume of hazardous wastes and to clean up existing hazardous waste sites. The Superfund Amendments and Reauthorization Act (SARA), passed in 1986, further clarified the goals of the Superfund program to enhance the long-term prevention of health effects through waste reduction and better treatment and incineration of wastes. Land disposal of hazardous wastes was not considered a viable policy option. Risk reduction as environmental policy placed the Environmental Protection Agency in the leading role. However, scientific uncertainty regarding the nature of toxic risk, coupled with the scale and complexity of abandoned waste sites and over 5000 known toxic chemicals, resulted in very little cleanup and standard setting during this phase. Inadequate funding for enforcement and cleanup, compounded by a lack of agency and governmental priorities, exacerbated the situation.

At the same time, public debate shifted away from the rather abstract issues of ecological stability and environmental quality toward economic problems. With a downturn in the national and world economy, some began to see the costs of improving environmental quality as contributing to economic problems, and others saw environmental initiatives as simply too expensive for the benefits derived. When President Reagan took office in 1981, he rode a tide of political conservatism that turned away from the idealism of the 1960s and fo-

cused more on stimulating economic development. Public lands policy shifted from federal management and conservation to state or private control of resources and exploitation to improve supplies of raw materials, especially energy. Federally owned coal, which had not been sold during earlier administrations because of an oversupply of minable coal, was once again made available to the industry. In its rush to divest the federal government of its holdings, the Interior Department sold coal leasing rights in many areas at prices below market value. Pollution abatement efforts by the federal government were reduced in favor of state and local control over these policies. Attention also was turned toward reducing the costs of pollution control to industry. Clearly, resource conservation had entered a new phase that considered the economic aspects of resource decisions along with the ecological goals established in the 1960s and 1970s.

Phase 6: The New Environmental Consciousness: Global and Local Responsibility (1988-2000)

During the late 1980s, a new awareness of global environmental issues re-emerged. The spaceship Earth philosophy, which had been popular 20 years earlier, fell out of favor in the intervening years as predicted catastrophes (widespread famines, climate change, and species extinctions) failed to materialize, and environmentalists who voiced these fears were regarded as alarmist or, worse, catastrophists (Gore 1992; McKibben 1989)! But a number of dramatic events in the mid-1980s, including the nuclear accident at Chernobyl and the "discovery" of the Antarctic ozone "hole," made people aware of the global scale of environmental problems. They were no longer problems of the smelly smokestack in town, but a real source of threat to the planet. Environmental protection was fast becoming an international concern, one requiring cooperation between developed and developing nations. A key event in this phase was the United Nations Conference on Environment and Development, discussed later in this chapter.

One of the fundamental tensions facing U.S. leaders in this era, as in many times before, was between isolationism and internationalism. Environmental issues, most notably the debate over global warming and the Kyoto Protocol, were center stage in this debate. George W. Bush campaigned for the presidency in 2000 from a position

that was relatively isolationist, arguing that the U.S. should not be involved in mediating disputes in other countries and rejecting the Kyoto Protocol as damaging to the U.S. economy.

Phase 7: Retrenchment (2000-) The election of President George W. Bush may mark a new phase in the evolution of natural resources policy. Following the September 11, 2001, terrorist attacks, the U.S. called upon many other countries to join in the fight against terrorism and received widespread support. At the same time, many of the countries that supported the U.S. on this issue are in favor of the Kyoto Protocol and resent the fact that the U.S. is the world's largest contributor to global warming, yet has rejected calls to control its emissions. The contrast between U.S. environmental policies and attitudes and those of other regions (especially western Europe) became increasingly stark. It remains to be seen whether economic, political, and military cooperation between the U.S. and other countries will extend to environmental issues in the next few years.

Domestically, natural resource policies are in a period of retrenchment from the gains of the previous decade. The Bush-Cheney agenda for energy and timber resources is to open up more public lands for exploitation, including Alaska (oil development) and the Pacific Northwest (timber harvesting). The balance between public good and private enterprise appears to have shifted more toward private gain, with a subsequent backlash against environmentalists (McCarthy 2001a, b; Goldstein and Cooper 2002).

International Policy

At the international level, the evolution of environmental policy took a different path (Kamieniecki 1993). Prior to World War II, a few international environmental agreements existed, as did a number of international institutions. Most of the early agreements concerned migratory birds and marine life (fur seals, whales). Institution building during this time included the well-known World Meteorological Organization, founded in 1873 (to coordinate weather observations), and the International Council of Scientific Unions, founded in 1919 (to coordinate international science).

The United Nations System, 1944-1972 International environmental policy and institutions got their real start with the founding of the

United Nations in 1945. As this international organization evolved, more specialized programs and subagencies were founded. The International Union for the Conservation of Nature and Natural Resources (IUCN) (1948) included both nation-state and nongovernmental members. Others operated under the auspices of the United Nations, including the International Maritime Organization and the World Health Organization (WHO).

Also established during this period were two important financial institutions—the International Monetary Fund and the World Bank. The World Bank's mission is to provide financial assistance to developing countries in order to help improve economic conditions. Initially, the World Bank was the leading financier of many of the economic development projects that accelerated environmental decline in the developing world, such as large dams. Since 1985, the World Bank has funded environmental restoration projects to minimize resource degradation and pollution of habitats. Finally, the Food and Agriculture Organization (FAO) was established in 1945 to improve nutrition and the standard of living among the world's rural residents. Some of the more important global institutions are listed in Table 3.1.

While this period reflected substantial growth of the United Nations' infrastructure, it also ushered in the era of environmental diplomacy and the negotiation of environmental treaties (Susskind 1994). The enhanced protection of whales was one of the first big success stories for international environmental policy. The 1946 International Convention for the Regulation of Whaling established the International Whaling Commission to preserve and manage these marine mammals, which is still in effect today (see Chapter 9). Similarly, the conservation of transboundary resources and the global commons were of utmost concern and were reflected in a number of important treaties on plant protection (1951), preventing oil pollution of the seas (1954), fishing resources (1958), and pristine Antarctica (1959, 1964). The most significant treaty during this time, however, was the 1963 Nuclear Test Ban treaty, which prohibited the testing of nuclear weapons in the air, under water, or in outer space (CIESIN 1997; Tolba et al. 1972).

The 1972 Stockholm Conference Most of the United Nations' work is done through conferences and the meetings that prepare for them. This

is a slow, deliberative process that allows all member nations to participate in the drafting of the policy (Table 3.2). Once the treaties are drafted, they are presented to member states for signature and ratification.

One such conference that many people point to as the turning point in the international environmental arena was the 1972 United Nations Conference on the Human Environment, held in Stockholm. This conference produced divergent opinions among member nations. The industrialized world was concerned about pollution from increasing industrial activity and the need to preserve natural resources, while the developing nations argued that poverty and the inefficiency of resource use caused by underdevelopment were the primary issues. Despite the often rancorous debate, the Stockholm conference was a defining moment for international environmental policy. It led to the establishment of the United Nations Environment Programme (UNEP), which collects and disseminates environmental data. UNEP now plays a leading role in developing and implementing international environmental policy.

In 1987 the United Nations World Commission on Environment and Development published its influential report *Our Common Future* (WCED 1987), linking resource degradation to unsustain-

able development practices. Ushering in a new emphasis on sustainability, the Brundtland Report (named for the Norwegian Prime Minister Gro Harlem Brundtland, who chaired the Commission) fostered new recognition among the world's countries of the interconnectedness of human development, resource decline, and pollution.

The Earth Summit and the World Summit on Sustainable Development Marking the twentieth anniversary of its Stockholm Conference on the Human Environment (1972), the United Nations held its Earth Summit in Rio de Janeiro in June 1992. The United Nations Conference on Environment and Development (UNCED) was designed to forge a new path in international cooperation on environmental protection and sustainability. The United States sent a large contingent led by the newly elected Vice President, Al Gore. New agreements (on climate change and biodiversity) were signed at the Earth Summit. In addition, a new intergovernmental infrastructure was created to monitor progress on Agenda 21, the series of goals and principles adopted at the conference (Haas et al. 1992; Jordan 1994; Parson et al. 1992) (Issue 3.1). These achievements indicated a new and perhaps unprecedented period of international cooperation to

Table 3.1 Global Institutions with Environmental Interests

<i>Institution</i>	<i>Date Established</i>	<i>Mandate</i>
Food and Agriculture Organization (FAO)	1945	Raise nutritional levels and standards of living, improve food production, better conditions of rural populations
General Agreement on Tariffs and Trade (GATT)	1946	Expand international trade and remove trade/tariff barriers
International Atomic Energy Agency (IAEA)	1957	Monitor nuclear programs for peaceful uses
International Maritime Organization (IMO)	1958	Responsible for sea safety, international shipping, and protection of the marine environment from shipping
UN Educational, Scientific, and Cultural Organization (UNESCO)	1945	Promote peace and security through education, science, and culture
World Health Organization (WHO)	1948	Improve the health of the world's population
UN Children's Fund (UNICEF)	1946	Provide assistance for children's health and welfare services
UN Development Program (UNDP)	1966	Assist developing countries in social and economic development programs
UN Environment Program (UNEP)	1972	Coordinate and stimulate environmental action; monitor global environmental trends

Source: Tolba et al. 1992.

Table 3.2 Selected Major International Treaties/Conventions

<i>Date</i>	<i>Place</i>	<i>Treaty</i>
1959	Washington, DC	Antarctic Treaty and Convention
1963	Moscow	Nuclear Test Ban Treaty
1971	Ramsar	Convention on Wetlands of International Importance
1972	London	Ocean Dumping Convention
1972	London	Biological Weapons Convention
1973	Washington, DC	Convention on International Trade in Endangered Species (CITES)
1978	London	Protocol on the Prevention of Pollution from Ships (MARPOL)
1979	Bonn	Convention on Conservation of Migratory Species of Wild Animals
1982	Montego Bay	Convention on the Law of the Sea (UNCLOS)
1985	Vienna	Vienna Convention for the Protection of the Ozone Layer
1987	Montreal	Montreal Protocols on Substances that Deplete the Ozone Layer
1989	Basel	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
1992	Rio de Janeiro	Framework Convention on Climate Change (FCCC)
1992	Rio de Janeiro	Convention on Biological Diversity
1997	Kyoto	Kyoto Protocol to the Framework Convention on Climate Change

ISSUE 3.1: IN FAIRNESS TO ALL: AGENDA 21 AND ENVIRONMENTAL EQUITY

One of the greatest obstacles in international environmental diplomacy is the sharp divide between industrialized and developing nations. This North/South conflict, as many call it, has led to many divisions among nations, often causing them to fall along the lines of haves and have nots. As part of the Earth Summit, an attempt was made to reduce these sharp economic divisions among nations. Through the application of equity, the Earth Summit tried to convince nations of the need for sustainability—not just in the developing world but among the most industrialized nations as well.

Agenda 21 provides the blueprint for achieving sustainability. But it is much more than that. It also provides a framework for implementing a code of conduct or fairness among nations as they strive to meet the ambitious goals of the Earth Summit.

Equity has many forms. For example, *social equity* refers to the differences in social, economic, and political forces in the consumption of resources and the ability to degrade environments. The transboundary shipment of hazardous wastes from industrialized countries in Europe to poorer nations in Africa is one example of social inequity; closer to home, dumping your garbage in another poor community is another example. *Generational equity* is perhaps the most important form of *environmental equity*. Generational equity embodies the concept of fairness to future genera-

tions. By this we mean that our generation has a responsibility to our children to leave the environment in the same or better condition than what was left to us. This type of generational stewardship is most often seen in the preservation of wild areas (Biosphere Reserves, National Parks) and more recently in biodiversity treaties. The last form of equity is *procedural*, which applies to the ways in which laws and treaties are applied in a fair way.

Agenda 21 has 27 specific principles, and close to half of these directly address some form of equity. For example, Principle 3 states the right of all people to a standard of development that meets the environmental needs of present and future generations (generational equity). Principle 22 recognizes the rights of indigenous people and communities, while Principle 20 encourages the full participation of women in environmental management (social equity). Finally, Principle 11 proposes that environmental standards reflect the context within which they apply (procedural) and argues that universal codes might affect some nations more than others.

It remains to be seen whether these equity goals will be achieved, for it will require not only a rethinking of international relations but a potential redistribution of wealth as well. In other words, Earth's resources must be shared for the benefit of all, not just a select few (United Nations 1992).

facilitate the sustainable use of the earth's natural resources. It remains to be seen how long this new awareness will last or how important it will be in changing policies and behavior. It is clear, however, that unprecedented popular support has developed for the establishment of an international agency to solve environmental problems (Dunlap et al. 1992). In many nations, residents are keenly aware of the linkage between environmental problems and their own health and welfare.

The years following Rio were a mix of successes and failures (Flavin 1997). While the link between environment and development has been recognized, the goal of an environmentally sustainable global economy has not been achieved. Carbon emissions are climbing, biodiversity is de-

clining, world population is increasing, and millions more people are living in poverty. Progress on the ambitious Agenda 21 has been slower than many expected. The United Nations World Summit on Sustainable Development (WSSD), held in Johannesburg, South Africa, in 2002, re-energized the commitment to improving the human condition and environmental protection. Five areas were targeted: water and sanitation, energy, agricultural productivity, biodiversity and ecosystem management, and health (Annan 2002). The redirection of economic growth to encompass environmental sustainability, a tangible commitment from developed nations, and an understanding of the root causes of environmental degradation will be required to achieve the goals established at the

World Summit on Sustainable Development (Speth 2002). Despite widespread pessimism on actually achieving a sustainable future, grass-roots activism has increased through which people are implementing practical plans for solving local environmental problems. This "grass-roots" spirit throughout the world is giving new meaning to the old slogan "Think globally, act locally."

CURRENT NATURAL RESOURCE POLICY

The history of policy development for natural resource use reviewed in the previous section shows that at one time or another government decision-making motivated many important goals, many of which are embodied in present policy. These goals can be grouped into four general categories: to promote economic development; to conserve resources for the future; to protect public health; and to preserve important natural features.

Clearly, the most frequent motivation for government actions with respect to natural resources has been to promote economic development. This began with the land divestitures of the eighteenth and nineteenth centuries and continues today in the management of our national forests, offshore oil resources, rivers, and grazing land. The construction of major dams and reservoirs on rivers for hydroelectric power generation, irrigation, or flood control addresses this goal. Economic development was the motivation when the United States increased mineral lease sales in the 1980s, with development rights being sold at prices below market value to stimulate production. It is also the primary justification for one of the basic tenets of public land management policy in the United States, that of multiple use. The concept of multiple use was incorporated into the U.S. Multiple Use and Sustained Yield Act of 1960 and was restated in NEPA, but it originated much earlier.

In encouraging economic development, the companion to the multiple use concept is the idea of *sustained yield*, which aids in achieving the second goal, to conserve resources for future generations. This is the fundamental principle of renewable resource management established by Pinchot in forest management, but it applies equally to the mission of the U.S. Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, and indeed every agency that manages natural re-

sources. More recently, sustainability has been the approach used to reconcile economic development goals within environmental limits (Chapter 15).

The third goal, to promote public health, is the basis for most pollution control legislation. Many of the early American laws regulating potential health hazards in the environment were enacted at the state level, and major federal actions in this area did not appear until the late nineteenth and early twentieth centuries. Today most of the water and air quality standards established by governments are based on health criteria and risk assessments. At the international level, environmental health is a key objective of the World Health Organization. Treaties limiting emissions of ozone-destroying chemicals are motivated primarily by health concerns.

The fourth major goal of natural resource policy is to preserve significant natural features that are valuable for aesthetic or scientific reasons, if not for economic ones. This is the aim of the extensive legislation enacted regarding wilderness preservation and protection of endangered species, and it is the principal mission of the National Park Service and the United Nations' Biosphere Reserves (Chapter 8). This goal also forms the basis of some water-quality criteria, and it is considered one of the uses of public lands in multiple-use planning.

Many natural resource policies combine these different goals. A U.S. example is water pollution control, which not only protects the public health but also provides recreational, aesthetic, and economic benefits to fisheries. All the agencies involved in managing resources address these multiple goals in devising their plans, and this combination of purposes also plays an important role in creating political coalitions to enact new laws. Together they form the basis for resource management decisions.

After decades of polarization and politicization, environmental issues now have broad political support in the United States and most other industrial nations (Paarlberg 1996). Conservation and environmental issues are part of the national and international agenda in such diverse areas as national security, international trade, and population policies. International concerns over acid rain, global warming, and tropical deforestation, to name but a few, fueled the international debate on how to best manage these resources. Domestic



Figure 3.5 Celebrating Earth Day. Despite three decades of environmental concerns and activism, we still have a long way to go.

concerns such as clean air and toxic emissions still provide a focus for the annual American Earth Day observances (April 22), a gentle reminder not of how far we've progressed but of how much farther we need to go to protect the environment (Fig. 3.5).

a forest ranger charged with managing a particular national forest, or the Secretary of the Interior, who manages the resources under his or her jurisdiction—parks, public lands, and so on.

Resource managers are subject to outside influences or social agents, also called *stakeholders*. These range from the forest rangers' superiors in the Department of Agriculture to the United States President, who oversees the Secretary of the Interior. These social agents provide technical expertise and direction to the individual managers in the field. The goals, objectives, and responsibilities of the social agents are broader than those of the resource manager. Social agents are thus influenced by interest groups who have a stake in how a resource is eventually used. Special interests range from timber companies seeking access to a national forest to supermarket chains buying farm produce to environmental groups seeking to preserve a piece of nature.

Conflicts between participants inevitably lead to disagreement over management policies. One example is whether to manage forests for water

HOW DECISIONS ARE MADE

Resource Decision-Making in the United States

Several different groups are involved in any decision over the use of natural resources: resource managers, social agents, and interest groups. Membership in these groups is not constant, for any individual may shift from one role to another as the decision-making process unfolds (Fig. 3.6).

A resource manager is the individual or agency that is in immediate contact with the resource and has a direct stake in how that resource is used or misused. Examples of resource managers include an individual farmer concerned with soil erosion,

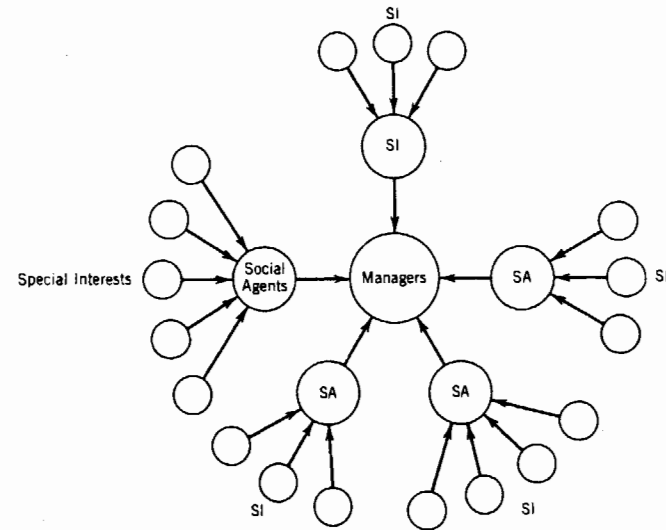


Figure 3.6 Participants in the resource-use decision-making process. Individuals may shift roles, depending on the resource issue under consideration, becoming a manager in one instance, a social agent in another, or even a special interest in yet a third.

yield, timber harvesting, or species habitat. These disagreements are further complicated by goal-oriented and mitigation-oriented management strategies. Some governmental bodies are charged with the management of a resource (U.S. Fish and Wildlife Service or the National Forest Service), that is, they are goal-directed; others are charged with regulation and protection of environmental quality (U.S. EPA), or mitigation-oriented. Often the two conflict, even when they are in the same agency (Table 3.3). Decision-making then becomes very difficult and usually involves conflict, cooperation, and compromise between the resource manager, social agents, and interest groups. In addition, conflicting environmental ideologies complicate the matter further (Pepper 1996).

Ultimately, federal decisions are made by Congress and then implemented by the appropriate agency such as the Environmental Protection Agency or the Department of the Interior (Issue 3.2). Passing an environmental bill in Congress is fraught with partisanship and compromise, and often the finished bill (which is based on the compromise between the House and Senate versions)

is not as strict or as comprehensive as environmentalists would like.

International Environmental Decision-Making

As mentioned previously, environmental decision-making at the international level is conducted through conferences and conventions. However, some regional organizations also have environmental policy interests. Often these organizations also serve as economic or strategic alliances, such as the European Union (EU) and the Organization of American States (OAS). The most successful of these regional environmental efforts is the United Nations' Regional Seas Program. Member nations that border many of these important seas, such as the Caribbean or Mediterranean, participate in multinational treaties designed to protect the sea from the overexploitation of its biotic resources and to reduce land-based pollution originating from the bordering nations. Relatively few conflicts arise inasmuch as every regional nation has a vested interest in protecting this shared common property resource. In many instances, regional alliances are more effective than global treaties in

ISSUE 3.2: POLITICS AND THE ARCTIC NATIONAL WILDLIFE REFUGE (ANWR)

At the national level, the fundamental decision-making process in the U.S. is the congressional legislative process. Laws are initially drafted by individual legislators or, more commonly, groups of legislators and their staffs. They are discussed before the various congressional committees that have responsibility for particular areas of government policy. These committees modify the proposals and, if approved, forward them to the full Senate or House of Representatives for amendment and approval. Usually after much debate and revision, they are passed by both houses of Congress and then forwarded to the President for signing into law. At each stage of the process, resource managers, social agents, and interest groups make their positions known, and their opinions are either incorporated or ignored in the proposed legislation. Each law is unique, and each is subjected to different forces depending on the course the process takes from initial proposal to final enactment. An example of the politics of environmental legislation is the Alaska National Interest Lands Conservation Act (ANILCA), passed in 1980. This act, better known as the Alaska Lands Bill, is a good example because the battles over it were particularly intense and involved many different actors. Few environmental laws in recent decades have been as controversial as this one was and continues to be. It also provides the historical context for understanding the ongoing debates over oil exploration in the Arctic National Wildlife Refuge (ANWR).

Alaska has an area of about 375 million acres (152 million ha), and virtually all of this land was federally owned when Alaska became a state in 1959. The terms of the Statehood Act, however, required that 104 million acres (42 million ha) eventually be turned over to the state. To preserve America's last unspoiled wilderness area, President Eisenhower created the ANWR in 1960, preserving more than 9 million acres in northern Alaska. In 1971 the Alaska Native Claims Act was passed, which paved the way for construction of the Alaska pipeline by providing a settlement of the land claims of the native peoples. This act called for 44 million acres (18 million ha) to be turned over to the natives. But before these lands could be transferred, the federal government had

to decide, by the end of 1978, which lands it would retain in federal ownership, and of these which would be preserved as wilderness and which would be open to development. The Alaska lands issue was thus a classic battle of preservation versus development, and the stakes were high: spectacular and unique natural areas containing potentially very valuable mineral and timber resources. The battle took much longer than was expected and to prevent development of some areas while Congress debated, President Carter proclaimed about 44 million acres (18 million ha) as national monuments and doubled the size of the ANWR.

The House of Representatives was the first to take up the Alaska lands issue, in 1977. Morris Udall, a leading environmentalist in Congress, introduced a bill that would place nearly 170 million acres (69 million ha) in the "four systems": the national parks, wildlife refuges, forests, and wild and scenic rivers. In contrast, a proposal introduced by Alaska Representative Don Young would place only 25 million acres (10 million ha) in the four systems and another 57 million acres (23 million ha) in a joint state-federal management area to be managed for multiple uses. The battle lines were drawn, and the special interests went to work. One of the most effective of these was the Alaska Coalition, a group of conservation organizations that banded together to press for a preservation-oriented bill. On the other side were the state of Alaska, which wanted as much development potential as possible, and industry groups such as the American Mining Congress and the Western Oil and Gas Association. In the numerous negotiations the various proposals were modified, and eventually they were narrowed to two: the Udall bill and another that would have preserved much less land. Public sentiment for preservation was mobilized by the Alaska Coalition, which produced and distributed literature and films depicting the spectacular wilderness. In the end, this sentiment was very important, and the Udall bill passed by a wide margin.

Once the House had passed its bill, the Senate began deliberations on its own versions of the bill. In general the Senate was less conservation-minded than the House, although there was a powerful group of senators who supported a bill very

similar to the House-passed bill. But the bill that finally emerged from committee in the Senate was rather different, including substantial reductions in areas designated as wilderness and more access for development in other areas. This was far from acceptable to the two Alaskan Senators, Ted Stevens and Mike Gravel, who vowed to filibuster to prevent passage of a bill that would not meet the desires of the state. The debate became heated, and at one point the Senate went into closed session after a shouting match between Stevens and Colorado Senator Gary Hart. Eventually, Stevens and Gravel's attempts at a filibuster failed as the Senate voted to cut off debate. The Senate version finally passed and placed 104 million acres (42 million ha) in the four systems, substantially less than the 127 million acres (51 million ha) in the House bill. Wilderness designation was given to 67 million acres (27 million ha) in the House bill but only 57 million acres (23 million ha) in the Senate version, and mineral exploration was permitted in some wildlife refuges.

After the Senate passed its bill, the House again took up the issue under threats of a filibuster if it failed to agree to the Senate version. Finally, it did accept the Senate version of the bill, and in late 1980 the bill was signed by President Carter. It was most certainly a compromise but not an entirely happy one. Morris Udall said that he got most of what he wanted but that some provisions were still unacceptable to him, which he hoped would be modified in the next Congress. Alaska Representative Don Young was pleased that the bill did permit more mineral exploration than the original House bill, but he, too, said he wanted to change things in the next Congress to permit even more exploration and development.

Throughout the debate on the Alaska Lands Bill, the changing strengths and fortunes of the actors could be seen. Conservationists were buoyed by support from the Carter administration, particularly Interior Secretary Cecil Andrus. In the midst of the debate, the Alaska legislature was repealing income taxes and rebating millions of dollars to its citizens as a result of accumulating oil revenues, actions that earned no extra sympathy for their demands for resource development. President Carter and most environmental groups

hailed the bill as his administration's most significant environmental achievement. Mike Gravel was defeated in a primary election during the height of the debate, and one of the major issues was his inability to force the Senate to recognize Alaska's interests. At the same time, industry won some crucial battles, and most of the valuable mineral and timber resources are now open to development.

The congressional process is one of compromise, and the most effective means for compromise is to make sure everyone gets something they want. Each actor and each interest group is given at least token recognition of its interests in an attempt to gain support for the final outcome. The particular characteristics of that outcome—which interests get more of what they want and which get less—are dependent on the strengths of their various power bases. In the case of the Alaska Lands Bill, the environmentalists had much more popular support than their opponents, and the result was a bill that is generally regarded as a significant achievement for conservation.

Two decades later, the controversy continues, only now it revolves around oil development in the Arctic National Wildlife Refuge. During the Clinton administration, Congress wanted to open up 1.5 million acres along the coastal plain for oil drilling and development. The bill was passed but vetoed by President Clinton. The Bush-Cheney administration again is pushing to open this tract of land, called Area 1002, to commercial oil exploration and development as part of their energy policy. There is considerable scientific debate on both the amount of oil in ANWR (4.2–11.8 billion barrels, according to most estimates), its reduction on U.S. foreign dependency (less than 2%), and its effect on caribou herds and other wildlife (under debate). American public opinion is against drilling, but the oil industry believes that the reserves will help reduce foreign oil bills (and, not surprisingly, put money in the pockets of American oil companies). In 2002, Congress voted to block oil and gas drilling in ANWR, thus defeating a large component of the Bush-Cheney energy plan. The debate, which began almost a half century ago, will no doubt continue (Gibbs 2001; McCarthy 2001a; Kerr 2002; Kaiser 2002).

curtailing transboundary pollutants and the degradation of common property resources.

THE DECISION-MAKING PROCESS

The legislative process and diplomacy are not the only ways environmental law is made. For example, over 50 U.S. federal entities are involved in natural resources policy and decision-making (Table 3.3). Many times overlapping jurisdictions, different goals, and antagonistic staffs result in interagency squabbling over the management of specific resources. There are also intra-agency conflicts between temporary political appointees who head the agencies and their professional civil servant staffs. How these agencies go about making decisions and implementing policy is crucial to our understanding of natural resources management, especially in the United States.

Nongovernmental organizations (NGOs) are not-for-profit entities that operate at national and international levels. Increasingly, NGOs are be-

coming a considerable force in environmental decision-making. In the environmental area, their primary purpose is to improve the human condition and manage resources in a sustainable way. They apply pressure to government to act responsibly. In this way, they act like both special interests and social agents. Most NGOs were started in the 1980s, but a few were operating much earlier. Examples of NGOs include the Worldwide Fund for Nature, Catholic Relief Services, Rainforest Action Network, Greenpeace, and the Sierra Club.

Organizations

There are few differences between how organizations make decisions and how you do. Their decisions differ from yours only in scale and complexity. As we saw in the previous chapter, private industry makes decisions based on the "bottom line." Governmental and other public organizations are less motivated by profit margins. Instead, their decisions usually are made in response to human needs and require government efforts for implementation. Government agencies are influ-

enced by the opinions of others, such as lobby groups or political action committees. In addition, these decisions can be influenced by the motivations and political philosophy that underlie the decision-makers' choices. Finally, decisions often are avoided because they are painful in terms of conflict between the governmental entity and the other groups or individuals. This results in nondecision, which in fact becomes a form of decision-making. Non-decision-making is more pervasive in the United States than most people realize (O'Riordan 1981).

In theory, responsible, objective decisions are possible, but in practice many factors bias both decision-makers and their conclusions, resulting in less-than-perfect decisions. One of these factors is the constraint imposed by organizational tradition—we have always done things this way, and there is a tradition to maintain. Moreover, there are constraints imposed by bureaucratic procedures, such as the endless arguments between regional and home offices or between divisions of the same organization. Conflicts between regional offices of the EPA and Washington headquarters are well known. Some constraints on decisions also are imposed by the demands of the executive role. A decision-maker may feel that she cannot show friendliness to subordinates, for it might be construed as a sign of weakness and would hamper negotiations with a lobbyist or other interest groups.

Perhaps one of the most important constraints is the lack of objective standards for assessing alternative outcomes, which can force the decision-maker to be sympathetic to social and political pressures and special interests. Decision-makers often rely on stereotypes, such as believing that the information of uneducated people is always unreliable, resulting in biased decisions. Bias can be introduced by an individual decision-maker's cognition of his or her role and intuitive assessment of the likelihood of the success or failure of the chosen course of action. Last, decisions often are made with insufficient or imperfect information, particularly in the case of environmental contaminants.

Strategies

Given that we live in an imperfect world with many complexities, it is surprising that we are able to make sound environmental decisions at all.

Decision-making in natural resources management is divided into three general categories: satisficing, incrementalism, and crisis management. *Satisficing* is the consideration of two policy alternatives at a time, which are examined sequentially and compared to one another. The best choice is then selected from these two. The goal of the satisficing approach is to look for the course of action or alternative that is just good enough and meets a minimal set of requirements. This type of approach is cost-effective because the full range of alternatives is not researched, which would be too costly in time and money; thus, the collective resources of the decision-maker or agency are used more efficiently. A negative aspect of this strategy is the limited range of alternatives from which to select the best choice. Satisficing is an appealing approach to managers because it is simple, and it is used in many other areas besides resource-use decision-making.

Incrementalism is used when the problem or resource issue is not clearly defined or when there are conflicting goals, values, or objectives. Incremental decisions are made by "muddling through" as they come across an administrator's desk. Administrators may not know what is wanted, but they do know what should be avoided. As a result, incrementalism is not used to set broad policy guidelines, as is the satisficing strategy, but rather to alleviate the shortcomings in the present policy in its day-to-day administration. This approach is regularly used to cope with the bureaucratic politics that often result in compromising and shifting coalitions. Incrementally made decisions are often disjointed and seemingly contradictory and reflect minute changes in policy.

The third strategy, *crisis management*, is the approach most commonly used in government today. Crisis management is the response to an issue once it becomes a critical problem. It begins with a seat-of-the-pants planning effort to come to grips with the looming impact of the problem, and policy is then determined on a piecemeal basis to deal with the immediate problem at hand. There may be little consideration of long-term effects in the rush to get something done quickly. For example, when it was realized that certain industries contributed to local air pollution, regulations were put into effect in the 1970s that required higher smokestacks so that the pollutants would not afflict nearby communities. In the long run, this decision

Table 3.3 Federal Agencies with Major Responsibility for Environmental Policy or Management

Department of the Interior	Department of Defense
National Park Service	Army Corps of Engineers
Bureau of Land Management	Departments of Army, Navy, and Air Force
Fish and Wildlife Service	Department of Transportation
Biological Survey	Department of Labor
Geological Survey	Occupational Safety and Health Administration
Minerals Management Service	Department of Health and Human Services
Bureau of Reclamation	Food and Drug Administration
Surface Mining Reclamation and Enforcement	Environmental Protection Agency
Department of Agriculture	Executive Office of the President
Forest Service	Council on Environmental Quality
Natural Resources Conservation Service	Federal Emergency Management Agency
Farm Service Agency	Other Independent Agencies
Department of Commerce	Tennessee Valley Authority
National Oceanographic and Atmospheric Administration	Bonneville Power Commission
United States Coast Guard	Water Resources Council
Department of Energy	National Science Foundation/National Research Council/National Academy of Science
Federal Energy Regulatory Commission	Nuclear Regulatory Commission
National Center for Appropriate Technology	Great Lakes Basin Commission
Nuclear Waste Policy Act Project Office	

led to larger negative impacts, as these airborne pollutants contributed to the acid rain problem, leading to major deforestation and water pollution problems hundreds of miles from the smokestacks. Thus, with crisis management choices, there is no time for a discussion of larger policy questions. All decisions must be made immediately and implemented as quickly as possible, with very little time to discuss all the alternatives or the implications of new rules and regulations. Unfortunately, many of our environmental regulatory agencies routinely operate in this fashion.

You might think that the cumulative effect of all these imperfections in the decision-making process prevents good decisions from ever being made. Some might agree. In fact, with most deci-

sions of this kind there is a wide range of opinion on how problems should be approached, and in most cases only a portion of the population is satisfied with the result. That, of course, is the nature of the political process. But the important thing to recognize is that the push and pull of politics go on at many levels of decision-making—not just at election time. The administrator and enforcer are just as susceptible to the forces that sway decisions as is the legislator up for re-election.

The Role of Public Interest

The public interest can be defined in many ways because there are many different "publics." At the international level, for example, who constitutes "the public" and what is the public interest? At the

national level, perhaps these are easier questions to address, largely because of our penchant for opinion polls.

There are many types of public interest groups, each with a particular cause and management style. Some groups are politically or socially conservative and work with lobbyists. Other groups are more radical and often take their message to the forest, oceans, or streets, wherever they can command media attention. Table 3.4 lists some of the different types of public interest environmental groups that are active today. This is not an exhaustive list but is provided simply to illustrate the diversity and abundance of different "public interests." It is important to understand that environmental groups make decisions just like any other organization and are subject to the same pressures and stresses. Just because it is the Sierra Club or the Natural Resources Defense Council does not mean that the decisions are perfect and unbiased. These groups operate just like any other organization or governmental agency.

Public opinion regarding environmental issues has always been strong, yet often this support does not translate into electoral power. In the past decade, in particular, the public has endorsed stronger environmental laws even if improved environmental quality means higher prices and costs (Dunlap 1987; Dunlap and Mertig 1992). Polls confirm the notion that public support for environmental protection remains high not only in the United States but in other countries as well (Dunlap et al. 1993).

Despite this overwhelming support, environmental issues still do not decide national elections. At the national level, this concern is often tapped by environmental activist groups that are able to mobilize public support and increase their membership and ultimate lobbying positions. During the early Reagan years, membership in many environmental organizations rose markedly, largely in response to Reagan's anti-environmental policies (Gottlieb 1994). The environment remained a hot political topic in the 1990s with the elections of President Clinton and Vice President Gore (a strong environmentalist). Even Congress was supportive until the environmental backlash of 1994. The attempt to reduce environmental regulations as part of Newt Gingrich's Contract with America was severely denounced by the American people, who have maintained their pro-environment opin-

ion. As a result, the Republican Congress backed off and "rediscovered" environmental issues by the end of that congressional session. From the mid-1990s onward, however, environmental problems took a back seat to more pressing national problems such as the economy, health care, and terrorism (Kaufman 1994).

THE "NEW" ENVIRONMENTAL POLITICS

Two additional factors currently influence environmental decision-making. These include the increased role of private industry as an environmental innovator, and the shift from top-down policies to more localized innovations.

In many countries, especially the United States, private businesses are the major environmental policy innovators. Take, for example, the ISO 14000 program that is a standardized compliance auditing system. ISO 14000 sets up a standardized reporting system so that companies can see whether their customers or vendors comply with a given country's environmental laws. ISO 14000 also sets up periodic third-party audits of vendors to monitor such compliance. For example, Levi Strauss, the blue jeans manufacturer, buys denim from a variety of vendors, some in the United States, others in Singapore, Taiwan, and so forth. If one of these vendors is contaminating the environment in its stone washing (bleaching) process, for example, Levi Strauss (the parent organization), not the local vendor, is sued. In an effort to control product and environmental liability, then, many private industries have agreed to ISO 14000. While motivated by reducing their own liability, private industries actually have helped local manufacturers comply with local environmental regulations, or else the big companies simply take their business elsewhere. Obviously, this provides a strong incentive to follow the letter of the environmental law, be it here in the United States or abroad. The ISO14000 program and its forerunner, ISO 9000, provide the framework for industry to integrate aspects of process design and management into everyday business practice.

The second factor is a shift from the top-down legislative approach, in which Congress passes national laws and states adhere to them, to a more bottom-up one in which individual states set policies that then are nationalized. Compromise

Table 3.4 Selected Public Interest and Environmental Groups

Advocacy	Litigation
Clean Water Action Project	Environmental Defense
Common Cause	Natural Resources Defense Council
Cousteau Society	The Public Citizen
Defenders of Wildlife	Public Interest Research Group
Ducks Unlimited	Research/Education
Earth First!	Center for Marine Conservation
Earth Island Institute	Center for Science in the Public Interest
Environmental Action Foundation	Center for the Study of Responsive Law
Friends of the Earth	Center for Research on Endangered Plastic Pink Flamingos
Fund for Animals	Center for Health, Environment and Justice
Fund for Renewable Energy and the Environment	Conservation Foundation
Greenpeace	Environmental Law Institute
Izaak Walton League	Institute for Local Self Reliance
League of Conservation Voters	Population Reference Bureau
National Audubon Society	Resources for the Future
National Wildlife Federation	World Resources Institute
The Nature Conservancy	WorldWatch
Physicians for Social Responsibility	Industry
Planned Parenthood	American Petroleum Institute
Rainforest Action Network	American Water Well Association
Sierra Club	Atomic Industrial Forum
Trout Unlimited	Chemical Manufacturers Association
Union of Concerned Scientists	Edison Electric Institute
The Wilderness Society	Keep America Beautiful
World Wildlife Fund	National Solid Waste Management Association
Zero Population Growth	

politics is especially important when governmental power is divided between two political parties. Nonetheless, one of the most significant legacies of the Reagan administration was to shift environmental responsibility from the federal government to state and local governments. The result was a fundamental transformation in how laws are made in the United States. Beset by inactivity at the national level, state legislators devised their own laws to tackle pollution issues within their state but not exclusive to them. For example, in 1987 legislators in Sacramento, California, insisted that refiners change the mix of ingredients in gasoline to inhibit evaporation since these vapor fumes were a major source of hydrocarbons in Southern California. New York, New Jersey, and the six states in New England followed suit a year later. By 1989 the EPA announced a major national program for controlling evaporation of unburned fuel. California is clearly the policy innovator for clean air legislation, for it has the worst air quality in the nation and hence the greatest need to clean it up. Another innovative state is New Jersey, which experienced the garbage crisis before anyone else. In response to the mounds of solid waste generated daily by its residents, the state developed a comprehensive recycling master plan that mandates the recycling of 25 percent of the municipal solid waste stream. This program has become a model for the rest of the nation. California continued this innovator role in 2002, passing a law intended to limit carbon dioxide emissions from automobiles.

Why are these interstate problems being solved at the state rather than the national level? Some point to the fact that many states have such severe pollution problems (e.g., smog in Los Angeles) that they cannot wait for Washington to act. As a consequence, if California acts and doesn't fall flat on its face, other states may adopt California's programs. In addition, aggressive national lobbyists don't often frequent state houses, which means that the likelihood of passing a controversial piece of legislation (meaning one that industry does not favor) is greater at the state than the national level. Finally, some argue that state legislators are more in tune with political change and thus more responsive to local environmental concerns. This immediately translates voter support for environmental concerns into political action. The trend at the national level is less clear.

As we have tried to convey in this chapter, natural resource policy is determined by choices and compromise. There is no right or wrong policy, nor is there a good or bad one. To render these subjective evaluations depends on your own perspective and role in the decision-making process.

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STUDY QUESTIONS

1. The phrase "Think globally, act locally" has taken on new meaning in the past decade. What kinds of actions can you take in your local area that might ultimately lead to some reduction in global consumption or pollution?
2. What are the major differences between international environmental policies and those developed for individual countries?
3. How have the following laws/treaties/conventions shaped natural resource policies over the last two decades?
 - (a) NEPA
 - (b) Homestead Act
 - (c) Nuclear Test Ban Treaty
 - (d) Stockholm Conference
 - (e) Superfund
4. Go and visit your local city or town government meeting when officials are holding discussions on an environmental issue. How do they make decisions? How does it compare to what goes on nationally? How is their decision-making process different from yours?
5. Who are the important stakeholders in your area who influence environmental policy? In what ways is this influence manifested?