



US ENVIRONMENTAL POLICY

A Half-Century Assessment

Michael E. Kraft and Norman J. Vig

The United States and the world have come a long way since the beginning of the modern environmental movement, around 1970. Progress was particularly evident for the first half of this period, from 1970 to 1995, when environmental policy enjoyed considerable bipartisan support despite occasional political reaction to prevailing policies and programs, most evident during Ronald Reagan's presidency (1981–1989). As we recount in this introductory chapter, during that 25-year span, the US Congress approved a broad array of new and expansive public policies and guided and funded the development of governmental institutions capable of putting them into effect. The result was striking improvements in environmental quality and public health throughout the nation. We review these achievements at the end of the chapter as we do the policies' collective limitations.

Since 1995, however, the bipartisan consensus on environmental policy has broken down, replaced by an increasingly acrimonious debate between the two major parties. This new partisan polarization emerged in the mid- to late-1990s in Congress and intensified during the George W. Bush administration from 2001 through January 2009. It has been central to environmental policy debate since then, as evident in the stark differences in policies, regulatory actions, budgetary priorities, and personnel appointments during the two most recent presidencies: those of Barack Obama and Donald Trump.

Whether the issue is clean air, clean water, energy use, or climate change, the two parties typically have found little common ground. What one administration struggles to achieve under the sharply critical eye of its partisan adversaries is reversed by the next. Even agreement on the core scientific facts can no longer be assured, adding to public confusion and dismay, and hindering the development of much needed new policies, as evident in debates over how to deal with climate change.

Despite the substantial progress the nation has made in the first half century of environmental policy, there is a real question of whether it can continue if deep partisan differences remain and block the adoption of new and innovative solutions. The timing could hardly be worse because the nation and world desperately need to develop effective policies to combat climate change while also modernizing the environmental, natural resources, and energy policies that we have developed over the past half century. These policies could be made more effective, efficient, and equitable, and more appropriate for the twenty-first century as the chapters in this volume make clear.

How can we best learn from our collective experience of the past 50 years? And how should we respond to the demands of scientists and environmental leaders who call for a new generation of public policies to address the momentous challenges we face today?

National and global actions taken in response to the deadly coronavirus pandemic in 2020 suggest both what is possible as well as the obstacles we must overcome.

This chapter provides a historical and institutional analysis that seeks to explain how policymakers have addressed environmental problems previously and the policy choices they have made. We review the activities of government in addressing environmental problems, including the structure of US government that can facilitate or hinder decisions, the processes of agenda setting and policymaking, major policy decisions made over the past five decades, and what those policies have achieved since their adoption. In the concluding chapter in this volume (Chapter 15), we return to the many remaining challenges of the twenty-first century, and we explore the need for a fresh examination of environmental governance and the possible new directions in policies that better match the problems that the nation and world now face as well as the public's willingness to support them.

THE CHALLENGES OF CONTEMPORARY ENVIRONMENTAL PROBLEMS

In the late 1960s and early 1970s, environmental issues soared to a prominent place on the political agenda in the United States and other industrial nations. The new visibility was accompanied by abundant evidence, domestically and internationally, of heightened public concern over environmental threats and broad support for governmental action.¹ By the 1990s, policymakers around the world had pledged to deal with a range of important environmental problems, from protection of biological diversity to air and water pollution control. Such commitments were particularly manifest at the 1992 United Nations Conference on Environment and Development (the Earth Summit) held in Rio de Janeiro, Brazil, where an ambitious agenda for redirecting the world's economies toward sustainable development was approved, and at the December 1997 Conference of the Parties in Kyoto, Japan, where delegates agreed to a landmark treaty on global climate change. Although it received far less media coverage, the World Summit on Sustainable Development, held in September 2002 in Johannesburg, South Africa, reaffirmed the commitments made a decade earlier at the Earth Summit, with particular attention to the challenge of alleviating global poverty. The far-reaching goals of the Earth Summit and the 2002 Johannesburg meeting were revisited at the 2012 Rio+20 United Nations Conference on Sustainable Development held once again in Brazil, where global commitments were reaffirmed once more.

Despite the positions taken at these and many other comparable meetings in recent decades, rising criticism of environmental programs also was evident throughout the 1990s and in the first two decades of the twenty-first century, both domestically and internationally. So too were a multiplicity of efforts to chart new policy directions. For example, intense opposition to environmental and natural resource policies arose in the 104th Congress (1995–1997), when the Republican Party took control of both the House and Senate for the first time in 40 years. Ultimately, much like the earlier efforts in Ronald Reagan's administration, that antiregulatory campaign on Capitol Hill failed to gain much public support.² Nonetheless, pitched battles over environmental and energy policy continued in every Congress since then (see Chapter 5).

Both antiregulatory actions and fights over them were equally evident in the executive branch, particularly during the George W. Bush administration, as it sought to rewrite environmental rules and regulations to favor industry and to increase development of US oil and natural gas supplies on public lands, and even more directly in the Donald Trump administration, which shared many of the same priorities (see Chapter 4). Yet growing dissatisfaction with the effectiveness, efficiency, and fairness of environmental policies was by no means confined to congressional conservatives and the Bush and Trump administrations. It could be found as well among a broad array of interests, including the business community, environmental policy analysts, environmental justice groups, and state and local government officials, although not always with the ideological agenda that was so evident in the Bush and Trump administrations.³

Since 1992, governments at all levels have struggled to redesign environmental policy for the twenty-first century. Under Presidents Bill Clinton and George W. Bush, the Environmental Protection Agency (EPA) tried to “reinvent” environmental regulation through the use of collaborative decision-making involving multiple stakeholders, public–private partnerships, market-based incentives, information disclosure policies, and enhanced flexibility in rulemaking and enforcement (see Chapters 7, 10, and 14).⁴ Many state and local governments have pursued similar goals with the adoption of innovative policies that promise to address some of the most important criticisms directed at contemporary environmental policy (see Chapters 2 and 11).⁵ The election of President Barack Obama in 2008 brought additional attention to new policy ideas, especially in his second term of office when he pursued strong policies on clean energy and climate change (see Chapter 4).

The precise way in which Congress, the White House, the states, and local governments—and other nations—will change environmental policies in the years to come remains uncertain. The prevailing partisan polarization and policy gridlock of recent years may give way to greater consensus on the need to act; yet policy change rarely comes easily in the US political system. Its success likely depends on the conditions that affect all policymaking: the saliency of the issues, public support for action, media coverage, the relative influence of opposing interests, and the state of the economy. Political leadership, as always, will play a critical role, especially in articulating the problems and potential solutions, mobilizing the public and policy actors, and trying to reconcile the deep partisan and ideological divisions that exist today on environmental protection and natural resource issues. Political conflict over the environment is not likely to vanish anytime soon. Indeed, it may well increase as the United States and other nations struggle to define how they will respond to the latest generation of environmental challenges, particularly climate change.

THE ROLE OF GOVERNMENT AND POLITICS

The high level of political conflict over environmental protection efforts in the past several decades, particularly evident during the Trump administration, underscores the important role a government plays in devising solutions to the nation’s and the world’s mounting environmental ills. Global climate change, the spread of toxic and hazardous chemicals, loss of biological diversity, air and water pollution, and the continued

growth of the world's population and its economic needs require diverse and often demanding actions by individuals and institutions at all levels of society and in both the public and private sectors. These range from scientific research and technological innovation to strong public policy initiatives and significant changes in both individual and corporate behavior. As political scientists, we believe the government has an indispensable role to play in environmental protection and improvement. Because of this conviction, we have commissioned chapters for this volume that focus on environmental policies and the governmental institutions and political processes that affect them. Our goal is to illuminate that role as well as to suggest needed changes and strategies for making them.

Government plays a preeminent role in this policy arena primarily because environmental threats, such as urban air pollution and climate change, pose risks to the public's health and well-being that cannot be resolved satisfactorily through private actions alone. That said, there is no question that individuals and nongovernmental organizations, such as environmental groups and scientific research institutes, can do much to protect environmental quality and promote public health. There is also no doubt that business and industry can do much to promote environmental quality and foster the pursuit of national energy goals, such as improved energy efficiency and increased reliance on renewable energy sources. We see evidence of extensive and often creative individual, nonprofit, and corporate actions of this kind regularly, for example, in sustainable community efforts and sustainable business practices, as discussed in Chapters 11 and 14.

Yet such actions often fall short of national needs without the backing of public policy, without, for example, laws mandating control of toxic chemicals that are supported by the authority of government or standards for drinking water quality and urban air quality that are developed and enforced by the EPA, the states, and local governments. The justification for government intervention lies partly in the inherent limitations of the free market system and the nature of human behavior. Self-interested individuals and a relatively unfettered economic marketplace guided mainly by a concern for short-term gains or profits tend to create spillover effects, or externalities; pollution and other kinds of environmental degradation are examples. As economists have long recognized, collective action is needed to correct such market failures (see Chapter 10). In addition, the scope and urgency of environmental problems typically exceed the capacity of private markets and individual efforts to deal with them quickly and effectively. For these reasons, among others, the United States and other nations have relied on government policies—at local, state, national, and international levels—to address environmental and resource challenges.

Adopting public policies does not imply, of course, that the voluntary and cooperative actions by citizens in their communities or the many environmental initiatives undertaken by corporations cannot be the primary vehicle of change in many instances. Nor does it suggest that governments should not consider a full range of policy approaches—including market-based incentives, new forms of collaborative decision-making, and information provision strategies—to supplement conventional regulatory policies where needed. Public policy intervention should be guided by the simple idea that we ought to use those policy approaches that offer the greatest promise of working to resolve the problem at hand. Sometimes that will mean governments setting and

enforcing public health or environmental standards (regulation), and sometimes it will mean relying on market incentives, such as carbon taxes, or information disclosure, such as data provided to the public on toxic chemicals and drinking water quality. Typically, governments employ a combination of policy tools to reach agreed-upon objectives: improving environmental quality, minimizing health and ecological risks, and helping to integrate and balance environmental and economic goals.

Political Institutions and Public Policy

Public policy is a course of government action or inaction in response to social problems. It is expressed in goals articulated by political leaders; in formal statutes, rules, and regulations; and in the practices of administrative agencies and courts charged with implementing or overseeing programs. Policy states the intent to achieve certain goals and objectives through a conscious choice of means, usually within a specified period of time. In a constitutional democracy like the United States, policymaking is distinctive in several respects: It must take place through constitutional processes, it requires the sanction of law, and it is binding on all members of society.

The constitutional requirements for policymaking were established well over 200 years ago, and they remain much the same today. The US political system is based on a division of authority among three branches of government and between the federal government and the states. Originally intended to limit government power and to protect individual liberty, this division of power translates today into a requirement that one build an often elusive political consensus among members of Congress, the president, and key interest groups for any significant national policymaking to take place. Such fragmented authority may impede the ability of the government to adopt timely and coherent environmental policy, as has been evident for some of the most challenging of modern environmental problems. Weak national climate change policy is something of a poster child for such governmental gridlock, which is an inability to act on problems because of divided authority and prevailing political conflict (see Chapter 5).

Dedication to principles of federalism means that environmental policy responsibilities are distributed among the federal government, the fifty states, and tens of thousands of local governments. Here, too, strong adherence to those principles may result in no agreement on national policy action. Yet a federal structure also means that states often are free to adopt environmental and energy policies as they see fit, as has been the case for natural gas “fracking” where no major national policies have been in force. Some of the states have a track record of favoring environmental policies that go well beyond what is possible politically in Washington, DC. California’s adoption of a strong climate change policy and Minnesota’s successful encouragement of renewable energy sources are two notable illustrations of the considerable power that states have in the US political system (see Chapter 2).⁶ The flip side of that coin is that some states will choose to do far less than others in the absence of national requirements.

Responsibility for the environment is divided within the branches of the federal government as well, most notably in the US Congress, with power shared between the House and Senate and jurisdiction over environmental policies scattered among dozens of committees (see Table 1.1). For example, approximately twenty Senate and

TABLE 1.1 ■ Major Congressional Committees With Environmental Responsibilities^a

Committee	Environmental Policy Jurisdiction
HOUSE	
Agriculture	Agriculture generally; forestry in general and private forest reserves; agricultural and industrial chemistry; pesticides; soil conservation; food safety and human nutrition; rural development; water conservation related to activities of the Department of Agriculture
Appropriations ^b	Appropriations for all programs
Energy and Commerce	Measures related to the exploration, production, storage, marketing, pricing, and regulation of energy sources, including all fossil fuels, solar, and renewable energy; energy conservation and information; measures related to general management of the Department of Energy and the Federal Energy Regulatory Commission; regulation of the domestic nuclear energy industry; research and development of nuclear power and nuclear waste; air pollution; safe drinking water; pesticide control; Superfund and hazardous waste disposal; toxic substances control; health and the environment
Natural Resources	Public lands and natural resources in general; irrigation and reclamation; water and power; mineral resources on public lands and mining; grazing; national parks, forests, and wilderness areas; fisheries and wildlife, including research, restoration, refuges, and conservation; marine affairs and oceanography, international fishing agreements, and coastal zone management; US Geological Survey
Science, Space, and Technology	Environmental research and development; marine research; energy research and development in all federally owned nonmilitary energy laboratories; research in national laboratories; NASA, National Weather Service, and National Science Foundation
Transportation and Infrastructure	Transportation, including civil aviation, railroads, water transportation, and transportation infrastructure; Coast Guard and marine transportation; federal management of emergencies and natural disasters; flood control and improvement of waterways; water resources and the environment; pollution of navigable waters; bridges and dams
SENATE	
Agriculture, Nutrition, and Forestry	Agriculture in general; food from fresh waters; soil conservation and groundwater; forestry in general; human nutrition; rural development and watersheds; pests and pesticides; food inspection and safety

TABLE 1.1 ■ Major Congressional Committees With Environmental Responsibilities^a

Committee	Environmental Policy Jurisdiction
Appropriations ^b	Appropriations for all programs
Commerce, Science, and Transportation	Interstate commerce and transportation generally; coastal zone management; inland waterways; marine fisheries; oceans, weather, and atmospheric activities; transportation and commerce aspects of outer continental shelf lands; science, engineering, and technology research and development; surface transportation
Energy and Natural Resources	Energy policy, regulation, conservation, research and development; coal; oil and gas production and distribution; civilian nuclear energy; solar energy systems; mines, mining, and minerals; irrigation and reclamation; water and power; national parks and recreation areas; wilderness areas; wild and scenic rivers; public lands and forests; historic sites
Environment and Public Works	Environmental policy, research, and development; air, water, and noise pollution; climate change; construction and maintenance of highways; safe drinking water; environmental aspects of outer continental shelf lands and ocean dumping; environmental effects of toxic substances other than pesticides; fisheries and wildlife; Superfund and hazardous wastes; solid waste disposal and recycling; nonmilitary environmental regulation and control of nuclear energy; water resources, flood control, and improvements of rivers and harbors; public works, bridges, and dams

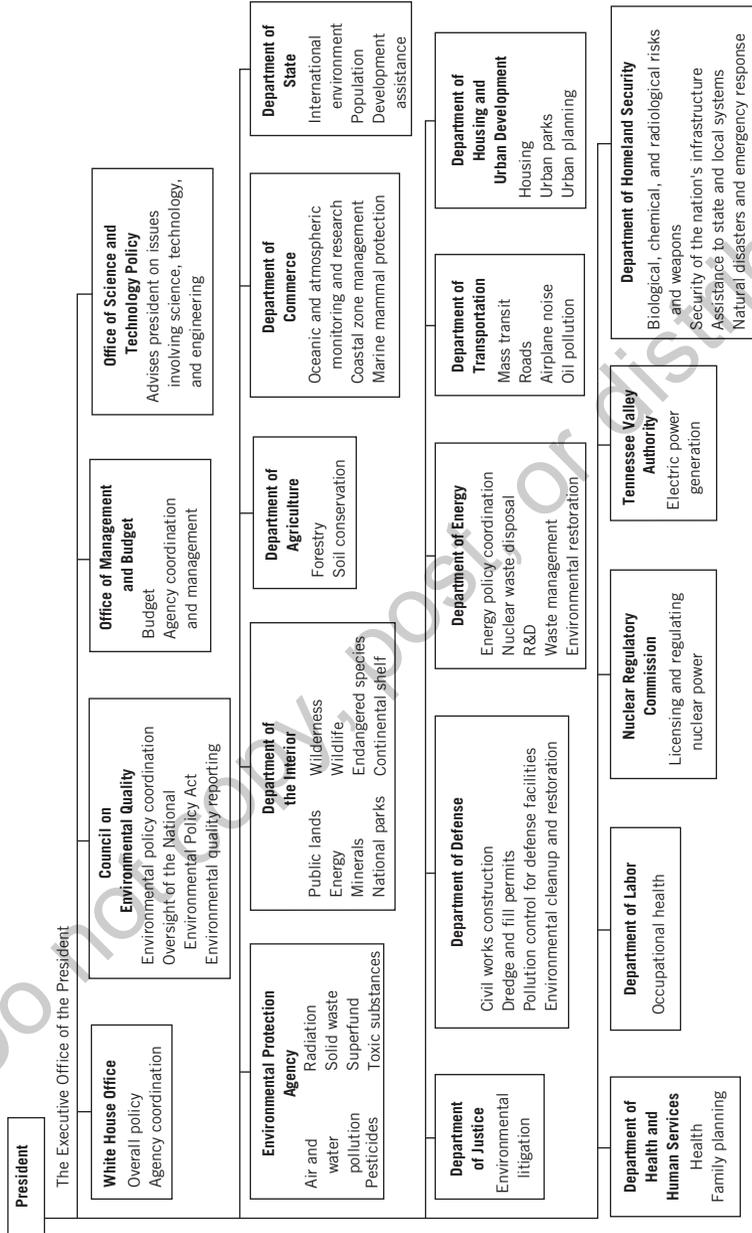
^aIn addition to the standing committees listed here, select or special committees may be created for a limited time. Each committee also operates with subcommittees (generally five or six) to permit further specialization. Committee webpages offer extensive information about jurisdiction, issues, membership, and pending actions, and include both majority and minority views on the issues. See www.house.gov/committees/ and www.senate.gov/committees/.

^bBoth the House and Senate appropriations committees have interior and environment subcommittees that handle all Interior Department agencies as well as the Forest Service and the EPA. The Energy Department, Army Corps of Engineers, and Nuclear Regulatory Commission fall under the jurisdiction of the subcommittees on energy and water development. Tax policy affects many environmental, energy, and natural resource policies and is governed by the Senate Finance Committee and the House Ways and Means Committee.

Sources: Compiled from descriptions of committee jurisdictions reported in Rebecca Kimitch, "CQ Guide to the Committees: Democrats Opt to Spread the Power," *CQ Weekly Online* (April 16, 2007): 1080–83, <http://library.cqpress.com/cqweekly/weeklyreport110-000002489956>, and from current House and Senate committee websites.

twenty-eight House committees and subcommittees have some jurisdiction over EPA activities.⁷ The executive branch is also institutionally fragmented, with at least some responsibility for the environment and natural resources located in twelve cabinet departments and in the EPA, the Nuclear Regulatory Commission, and other agencies (see Figure 1.1). Most environmental policies are concentrated in the EPA and in the

FIGURE 1.1 ■ Executive Branch Agencies With Environmental Responsibilities



Sources: Council on Environmental Quality, *Environmental Quality: Sixteenth Annual Report of the Council on Environmental Quality*, (Washington, DC: Government Printing Office, 1987); *United States Government Manual 2020*, available at www.usgovernmentmanual.gov/.

Interior and Agriculture Departments; yet the Departments of Energy, Defense, Transportation, and State are increasingly important actors as well. Finally, the more than one hundred federal trial and appellate courts play key roles in interpreting environmental legislation and adjudicating disputes over administrative and regulatory actions (see Chapter 6).

The implications of this constitutional arrangement for policymaking were evident in the early 1980s as Congress and the courts checked and balanced the Reagan administration's efforts to reverse environmental policies of the previous decade. They were just as evident in Barack Obama's presidency when the Republican House of Representatives frequently took strong exception to the president's budget recommendations and proposals for new rules and regulations in the agencies, especially the EPA's efforts to reduce toxic pollution from coal-fired power plants and to restrict release of greenhouse gases linked to climate change. Similarly, during the Trump administration, members of the president's own party often voiced objections to the severity of his proposed budget cuts for environmental programs and scientific research, and routinely rejected them, often increasing science budgets over White House objections (see Chapter 5).⁸

During the last two decades, the conflict between the two major parties on environmental issues had one striking effect. It shifted attention to the role of the states in environmental policy. As Barry G. Rabe discusses in Chapter 2, the states often have been at the center of the most innovative actions on environmental and energy policy, including climate change, when the federal government remained mired in partisan disputes. By 2020, for example, well over half of the states had adopted some form of climate change policy, particularly to favor use of renewable energy sources, whereas Congress and the White House could reach no agreement on what to do.⁹

Generally, after broad consultation and agreement among diverse interests, both within and outside of the government, divided authority typically produces slow and incremental alterations in public policy. Such political interaction and accommodation of interests enhance the overall legitimacy of the resulting public policies. Over time, however, the cumulative effect often results in disjointed policies that fall short of the ecological or holistic principles of policy design so often touted by environmental scientists, planners, and activists.

Nonetheless, when issues are highly visible or salient, the public is supportive, and political leaders act cohesively, the US political system has proved flexible enough to permit substantial and fairly rapid policy advancement.¹⁰ Quick and bipartisan congressional actions in response to the coronavirus pandemic in spring 2020 is a recent example. As we shall see, this also was the case in the early to mid-1970s, when Congress enacted major changes in US environmental policy, and in the mid-1980s, when Congress overrode objections of the Reagan administration and greatly strengthened policies on hazardous waste and water quality, among others. Passage of the monumental Clean Air Act Amendments of 1990 is an example of the same alignment of forces. With bipartisan support, Congress adopted the act by a margin of 401 to 25 in the House and 89 to 10 in the Senate. Comparable bipartisanship during the mid-1990s produced major changes in the Safe Drinking Water Act and in regulation of pesticide residues in food. In 2005 and 2007, the same kind of bipartisan cooperation allowed Congress to approve new national energy policies and significantly

expand protection of wilderness areas. In 2016, it also led to approval of major changes to the Toxic Substances Control Act, and in 2019 and 2020 to approval of sweeping land conservation measures (see Chapter 5).

Policy Processes: Agendas, Streams, and Cycles

Students of public policy have proposed several models for analyzing how issues get on the political agenda, how they are defined or framed, and how they move through the policy processes of government. These theoretical frameworks help us to understand both long-term policy trends and short-term cycles of progressive action and political reaction. One set of essential questions concerns *agenda setting*: How do new problems emerge as political issues that demand the government's attention, if they do achieve such recognition, and how are they defined or framed in the public mind?

For example, why was it so difficult for climate change to gain the attention of policymakers over the years, and why did various policy actors frame the issue so differently and interpret climate science in such disparate ways? Climate change's rise on the political agenda was quite slow, and then it became a significant issue by the 2008 presidential election campaign, only to fade again in prominence as the nation's attention was fixed on the economy and persistently high unemployment. In the 2016 elections, it returned as a prominent issue and was given a central role in the Trump administration as it sought to overturn the core elements in Barack Obama's climate policy (see Chapters 3, 4, 5, and 12).

As the case of climate change illustrates, hurdles almost always must be overcome for an issue to rise to prominence. The issue must first gain societal recognition as a problem, often in response to economic, technological, or social changes. It must be defined or framed as a particular kind of problem, which in turn affects the way possible solutions are developed and whether they are seen as acceptable.¹¹ Organized interest groups strongly affect this process, as do the media. Finally, governmental policymakers must consider the issue to be salient enough to warrant action. An issue is not likely to reach this latter stage unless conditions are ripe—for example, a triggering event that focuses public opinion sharply, as occurred with the Deepwater Horizon oil spill in the Gulf of Mexico in 2010 and with wildfires in the West in recent years, which reinforced public concern about the effects of climate change.¹²

John Kingdon describes this kind of agenda setting as the convergence of three streams of information and activity that flow through the political system at any time: (1) evidence of the existence of problems, (2) available policies to deal with them, and (3) the political climate or willingness to act. Although largely independent of one another, these problem, policy, and political streams can be brought together at critical times when policy entrepreneurs (key activists and policymakers) are able to take advantage of the moment and make the case for policy action.¹³

Once an issue is on the agenda, it must pass through several more stages in the policy process. These stages are often referred to as the *policy cycle*. Although terminology varies, most students of public policy suggest five stages of policy development beyond agenda setting itself. These are (1) *policy formulation* (designing and drafting policy goals and strategies for achieving them, which may involve extensive use of environmental

science, economics, and policy analysis), (2) *policy legitimation* (mobilizing political support and formal enactment by law or other means), (3) *policy implementation* (putting programs into effect through provision of institutional resources such as agency budgets and staffs and making key administrative decisions, such as regulatory advances or retreats, as well as judicial rulings on them), (4) *policy evaluation* (how well policies are working in terms of meeting their goals at a reasonable cost), and (5) *policy change* (modifying program goals or the means used to achieve them, or ending programs altogether).¹⁴

The policy cycle model is useful because it emphasizes all phases of policymaking. For example, how well a law is implemented by agencies such as the EPA or the Interior Department and how the courts rule on it is as important as the goals and motivations of those who designed and enacted the legislation. The model also suggests the continuous nature of the policy process. No policy decision or solution is final because changing conditions, new information, and shifting opinions will require policy reevaluation and change. Other short-term forces and events, such as presidential or congressional elections or environmental accidents, can profoundly affect the course of policy over its life cycle. Thus, policy at any given time is shaped by the interaction of long-term social, economic, technological, and political forces as well as short-term fluctuations in the political climate. These factors are manifest in the development of environmental policy.

THE DEVELOPMENT OF ENVIRONMENTAL POLICY FROM THE 1970S TO THE TWENTY-FIRST CENTURY

As implied in the policy cycle model, the history of environmental policy in the United States is not one of steady improvement in human relations with the natural environment. Rather, it has been highly uneven, with significant discontinuities, particularly since the late 1960s. The pace and nature of policy change, as is true for most areas of public policy, reflect the dominant social values at any given time, the saliency of the issues, and the prevailing economic and political conditions.

Sometimes, as was the case in the 1970s, the combination facilitates major advances in environmental policy, and at other times, such as during the early 1980s, early 2000s, and late 2010s, we have periods of reaction and retrenchment. A third possibility, evident in the 2010s during President Obama's second term, is that no political consensus exists on what to do and consequently no major legislative actions take place. Yet, even in times like this, we see governments responding to changing environmental challenges through executive authority, rulemaking in administrative agencies, state-level actions, and court decisions. These responses were evident both in the Obama administration and in the Trump administration. As noted earlier in the chapter, Trump sought to reverse many Obama initiatives through executive orders and through deep cuts in agency budgets even as Congress resisted those cuts (see Chapters 4 and 5). That is, policy change need not come only through the adoption of new legislation; it can be accomplished through administrative actions as well, and that route to policy change may be preferred when a presidential administration seeks rapid change with minimal public visibility.¹⁵

Despite these variations in political conditions and policy responses, it is fair to say that since the late 1960s, generally we have seen substantial public support for environmental protection and expanding government authority to act (see Chapter 3).¹⁶ We focus here on the major changes from that time through the middle of the second decade of the twenty-first century, and we discuss the future challenges for environmental politics and policy in the concluding chapter of the book.

Policy Actions Prior to 1970

Until about 1970, the federal government played a sharply limited role in environmental policymaking—public land management being a major exception to this pattern. For nearly a century, Congress had set aside portions of the public domain for preservation as national parks, forests, grazing lands, recreation areas, and wildlife refuges. The multiple use and sustained yield doctrines that grew out of the conservation movement at the beginning of the twentieth century, strongly supported by President Theodore Roosevelt, ensured that this national trust would contribute to economic growth under the stewardship of the Interior and Agriculture Departments.

Steady progress was also made, however, in managing the lands in the public interest and protecting them from development.¹⁷ After several years of debate, Congress passed the Wilderness Act of 1964 to preserve some of the remaining forestlands in pristine condition, “untrammeled by man’s presence.” At the same time, it approved the Land and Water Conservation Fund Act of 1965 to fund federal purchases of land for conservation purposes and the Wild and Scenic Rivers Act of 1968 to protect selected rivers with “outstandingly remarkable features,” including biological, scenic, and cultural value.¹⁸

During the mid-1960s, the United States also began a major effort to reduce world population growth in developing nations through financial aid for foreign population programs, chiefly voluntary family planning and population research. President Lyndon B. Johnson and congressional sponsors of the programs tied them explicitly to a concern for “growing scarcity in world resources.”¹⁹

Despite this longtime concern for resource conservation and land management, and the new interest in population and development issues, federal environmental policy was only slowly extended to the control of industrial pollution and human waste. Air and water pollution were long considered to be strictly local or state matters, and they were not high on the national agenda until around 1970. In a very early federal action, the Refuse Act of 1899 required individuals who wanted to dump refuse into navigable waters to obtain a permit from the Army Corps of Engineers; however, the agency largely ignored the pollution aspects of the act.²⁰ After World War II, policies to control the most obvious forms of pollution were gradually developed at the local, state, and federal levels, although some of the earliest local actions to control urban air pollution date back to the 1880s and the first limited state actions to the 1890s.

By the late 1940s and 1950s, we see the forerunners of contemporary air and water pollution laws. For example, the federal government began assisting local authorities in building sewage treatment plants and initiated a limited program for air pollution research. Following the Clean Air Act of 1963 and amendments to the Water Pollution

Control Act of 1948, Washington began prodding the states to set pollution abatement standards and to formulate implementation plans based on federal guidelines.²¹

Agenda Setting for the 1970s

The first Earth Day was April 22, 1970. Nationwide “teach-ins” about environmental problems demonstrated the environment’s new place on the nation’s social and political agendas. With an increasingly affluent and well-educated society placing new emphasis on the quality of life, concern for environmental protection grew apace and was evident across the population, if not necessarily to the same degree among all groups.²² The effect was a broadly based public demand for more vigorous and comprehensive federal action to prevent environmental degradation. In an almost unprecedented fashion, a new environmental policy agenda rapidly emerged. Policymakers viewed the newly salient environmental issues as politically attractive, and they eagerly supported tough new measures, even when the full impacts and costs were unknown. As a result, laws were quickly enacted and implemented throughout the 1970s but with a growing concern over their costs and effects on the economy and an increasing realization that administrative agencies at all levels of government often lacked the capacity to assume their new responsibilities.

Congress set the stage for the spurt in policy innovation at the end of 1969 when it passed the National Environmental Policy Act (NEPA). The act declared that

it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.²³

The law required detailed environmental impact statements for nearly all major federal actions and established the Council on Environmental Quality to advise the president and Congress on environmental issues. President Richard Nixon then seized the initiative by signing NEPA as his first official act of 1970 and proclaiming the 1970s as the “environmental decade.” In February 1970, he sent a special message to Congress calling for a new law to control air pollution. The race was on as the White House and congressional leaders vied for environmentalists’ support.

Policy Escalation in the 1970s

By the spring of 1970, rising public concern about the environment galvanized the 91st Congress (1969–1971) to action. Sen. Edmund Muskie, D-Maine, the then leading Democratic hopeful for the presidential nomination in 1972, emerged as the dominant policy entrepreneur for environmental protection issues. As chair of what is now called the Senate Environment and Public Works Committee, he formulated proposals that went well beyond those favored by the president. Following a process of

policy escalation, both houses of Congress approved the stronger measures and set the tone of environmental policymaking for much of the 1970s. Congress had frequently played a more dominant role than the president in initiating environmental policies, and that pattern continued in the 1970s. This was particularly so when the Democratic Party controlled Congress during the Nixon and Ford presidencies. Although support for environmental protection was bipartisan during this era, Democrats provided more leadership on the issue in Congress and were more likely to vote for strong environmental policy provisions than were Republicans.²⁴

The increase in new federal legislation in the next decade was truly remarkable, especially since, as we noted earlier, policymaking in US politics usually takes place through incremental change. Appendix 1 lists the major environmental protection and natural resource policies enacted from 1969 to 2020. They are arranged by presidential administration primarily to show a pattern of significant policy development throughout the period, not to attribute chief responsibility for the various laws to the president.

These landmark measures covered air and water pollution control (the latter enacted in 1972 over a presidential veto), pesticide regulation, endangered species protection, control of hazardous and toxic chemicals, ocean and coastline protection, improved stewardship of public lands, requirements for the restoration of strip-mined lands, the setting aside of more than one hundred million acres of Alaskan wilderness for varying degrees of protection, and the creation of a “Superfund” (in the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA) for cleaning up toxic waste sites. Nearly all of these policies reflected a conviction that the federal government must have enough authority to compel polluters and resource users to adhere to demanding national pollution control standards and new decision-making procedures that ensure responsible use of natural resources. There were other signs of commitment to environmental policy goals as Congress and a succession of presidential administrations (through Jimmy Carter’s term) cooperated on land conservation issues, such as wilderness protection, national parks, and wildlife refuges. Throughout the 1970s, the Land and Water Conservation Fund, financed primarily through royalties from offshore oil and gas leasing, was used to purchase additional private land for park development, wildlife refuges, and national forests.

Congress maintained its strong commitment to environmental policy throughout the 1970s, even as the salience of these issues for the public seemed to wane. For example, it revised the Clean Air Act of 1970 and the Clean Water Act of 1972 through amendments approved in 1977. Yet, by the end of the Carter administration, concerns over the impact of environmental regulation on the economy and specific objections to implementation of the new laws, particularly the Clean Air Act, began creating a backlash.

Political Reaction in the 1980s

The Reagan presidency brought to the federal government a markedly different environmental policy agenda (see Chapter 4). Virtually all environmental protection and resource policies enacted during the 1970s were reevaluated in light of the president’s desire to reduce the scope of government regulation, shift responsibilities to the

states, and depend more on the private sector. Whatever the merits of Reagan's new policy agenda, it was put into effect through a risky strategy that relied on ideologically committed presidential appointees to the EPA and the Agriculture, Interior, and Energy Departments and on sharp cutbacks in budgets for environmental programs.²⁵

Congress initially cooperated with Reagan, particularly in approving budget cuts, but it soon reverted to its accustomed defense of existing environmental policy, frequently criticizing the president's management of the EPA and the Interior Department under Anne Gorsuch (later Burford) and James Watt, respectively; both Burford and Watt were forced to resign by the end of 1983. Among Congress's most notable achievements of the 1980s were its strengthening of the Resource Conservation and Recovery Act (Hazardous and Solid Waste Amendments, 1984); the enactment of the Superfund Amendments and Reauthorization Act (1986), which toughened the act and also established the federal Toxics Release Inventory (TRI); and amendments to the Safe Drinking Water Act (1986) and the Clean Water Act (1987; see Appendix 1 for a list of major federal environmental laws from 1969 to 2020).

As we discuss later in this chapter, budget cuts and the loss of capacity in environmental institutions took a serious toll during the 1980s. Yet even the determined efforts of a popular president could not halt the advance of environmental policy. Public support for environmental improvement, the driving force for policy development in the 1970s, increased markedly during Reagan's presidency and represented the public's stunning rejection of the president's agenda.²⁶ Paradoxically, Reagan strengthened environmental forces in the nation. Through his lax enforcement of pollution laws and prodevelopment resource policies, he created political issues around which national and grassroots environmental groups could organize. These groups appealed successfully to a public that was increasingly disturbed by the health and environmental risks of industrial society and by threats to ecological stability. As a result, membership in national environmental groups soared, and new grassroots organizations developed, creating further political incentives for environmental activism at all levels of government.²⁷

By the fall of 1989, there was little mistaking congressional receptivity to continuing the advance of environmental policy into the 1990s. Especially in his first 2 years as president, George H. W. Bush was eager to adopt a more positive environmental policy agenda than his predecessor; this eagerness was particularly evident in his support for the demanding Clean Air Act Amendments of 1990. Bush's White House, however, was deeply divided on environmental issues for both ideological and economic reasons.

SEEKING NEW POLICY DIRECTIONS: FROM THE 1990S TO THE TWENTY-FIRST CENTURY

Environmental issues received considerable attention during the 1992 presidential election campaign. Bush, running for reelection, criticized environmentalists as extremists who were putting Americans out of work. The Democratic candidate, Bill Clinton, took a far more supportive stance on the environment, symbolized by his selection of Sen. Al Gore, D-Tennessee, as his running mate. Gore was the author of a

best-selling book, *Earth in the Balance*, and had one of the strongest environmental records in Congress.

Much to the disappointment of environmentalists, Clinton exerted only sporadic leadership on the environment throughout his two terms in office. However, he and Gore quietly pushed an extensive agenda of environmental policy reform as part of their broader effort to “reinvent government,” making it more efficient and responsive to public concerns. Clinton was also generally praised for his environmental appointments and for his administration’s support for initiatives such as the restoration of the Florida Everglades and other actions based on new approaches to ecosystem management. Clinton reversed many of the Reagan- and Bush-era executive actions that were widely criticized by environmentalists, and he favored increased spending on environmental programs, alternative energy and conservation research, and international population policy.

Clinton also earned praise from environmental groups when he began speaking out forcefully against the antienvironmental policy decisions of Republican Congresses (see Chapters 4 and 5), for his efforts through the President’s Council on Sustainable Development to encourage new ways to reconcile environmental protection and economic development, and for his “lands legacy” initiatives.²⁸ Still, Clinton displeased environmentalists as often as he gratified them.

The environmental policy agenda of George W. Bush’s presidency is addressed in Chapter 4 and at points throughout the rest of the book, as are actions taken during Barack Obama’s presidency from January 2009 through January 2017. As widely expected from statements Bush made on the campaign trail and from his record as governor of Texas, he and his cabinet departed significantly from the positions of the Clinton administration. The economic impact of environmental policy emerged as a major concern, and the president gave far more emphasis to economic development than he did to environmental protection or resource conservation.

Like his father, Bush recognized the political reality of popular support for environmental protection and resource conservation. Yet as a conservative Republican, he was also inclined to represent the views of the party’s core constituencies, particularly industrial corporations and timber, mining, agriculture, and oil interests. He drew heavily from those constituencies, as well as from conservative ideological groups, to staff the EPA and the Interior, Agriculture, and Energy Departments, filling positions with what the press termed industry insiders, a practice that reappeared by 2017 in the Trump administration.²⁹ In addition, Bush sought to further reduce the burden of environmental protection through the use of voluntary, flexible, and cooperative programs and to transfer to the states more responsibility for the enforcement of federal laws. Bush also withdrew the United States from the Kyoto Protocol on global climate change, significantly weakening US leadership on global environmental issues.

The administration’s tendency to minimize environmental concerns was equally clear in its 2001 proposal for a national energy policy (which concentrated on the increased production of fossil fuels) and, throughout Bush’s two terms, in many decisions on clean air rules, water quality standards, mining regulations, and the protection of national forests and parks, decisions that were widely denounced by environmentalists.³⁰ Many of these decisions received considerably less media coverage than might have been expected. In part, this neglect appeared to reflect the

administration's strategy of keeping a low profile on potentially unpopular environmental policy actions, a pattern that also was evident in the Trump administration from 2017 through 2020. But President Bush benefited further from the sharply altered political agenda after the terrorist attacks of September 11, 2001, as well as from the decision in 2003 to invade Iraq.³¹

Barack Obama's environmental policy priorities and actions are described in some detail in Chapter 4 and in many of the chapters that follow. Hence, we leave much of that appraisal until later in the volume. However, we address budgetary and administrative changes during the Obama presidency in the next section as well as comparable changes in budgets, institutions, and staffing in the Trump administration.

BUDGETS AND POLICY IMPLEMENTATION

In this review of environmental policy development since 1970, we have highlighted the adoption of landmark policies and the political conflicts that shaped them. Another part of this story is the changes over time in budgetary support for the agencies responsible for implementing the policies.

Agency budgets are an important part of institutional capacity, which in turn affects the degree to which public policies might help to improve environmental quality. Although spending more money hardly guarantees policy success, substantial budget cuts can significantly undermine established programs and hinder the achievement of policy goals. For example, the massive reductions in environmental funding during the 1980s had long-term adverse effects on the government's ability to implement environmental policies. Equally sharp budget cuts proposed by Congress in the mid- to late 1990s, by the Bush administration in the 2000s, and by the Trump administration from 2017 through 2020.

Changes since the 1980s in budgetary support for environmental protection merit brief comment here. The appendices offer more detail. In constant 2020 dollars (that is, adjusting for inflation), the total spending authorized by the federal government for natural resource and environmental programs was about 27 percent higher in 2020 than it was in 1980 (see Appendix 4). However, in some program areas reflecting the core functions of the EPA, such as pollution control and abatement, spending declined substantially (about 32 percent) from 1980 to 2020, in constant dollars. In contrast, spending on conservation and land management rose appreciably between 1980 and 2020, more than tripling, again in constant dollars. For most budget categories, spending decreased during the 1980s before recovering under the administrations of George H. W. Bush and Bill Clinton, and to some extent under George W. Bush and Barack Obama. A notable exception, other than the case of pollution control, is spending on water resources, where the phaseout of federal grant programs resulted in a significant decline in expenditures between 1980 and 2010 before recovering somewhat by 2020; overall, spending dropped by about 17 percent between 1980 and 2020.

Even when the budget picture was improving, most agencies faced important fiscal challenges. Agencies' legal responsibilities rose substantially under environmental policies approved between the 1970s and 2020, and the agency staffs often found

themselves with insufficient resources to implement new policies fully and to achieve the environmental quality goals they embodied.

These constraints can be seen in the budgets and staffs of selected environmental and natural resource agencies. For example, in constant dollars, the EPA's operating budget as we calculate it (the EPA determines it somewhat differently) was only a little higher in 2020 than it was in 1980, despite the many new duties Congress gave the agency during this period (see Appendix 2). The agency's budget authority rose from 2000 to 2010, enjoying a big boost in Obama's first year in office. It then declined in 2011, rose modestly to \$10.8 billion in 2012, but declined again in his last few years in office, ending at \$8.3 billion in proposed spending in fiscal year 2017.

In early 2017, the Trump administration proposed a 31 percent cut from this level of funding, including a 26 percent cut in the environmental program and management budget. However, Congress approved a budget agreement that year that included only a 1 percent cut in EPA's budget and no further reduction in its staff. The administration proposed similar agency budget cuts in succeeding years, with much the same result. By fiscal year 2019, EPAs reported that its budget stood at \$8.85 billion, and for fiscal year 2020 at an estimated \$9.1 billion. The Trump administration proposed for fiscal year 2021 that it be reduced by 26 percent to \$6.7 billion, a level that Congress once again is likely to reject.³²

The EPA's staff grew by a greater percentage than its budget, rising from slightly fewer than 13,000 in 1980, the last year of the Carter administration, to around 17,360 by 2011; however, the agency saw its staff decline substantially after 2011; by 2016, the fiscal year 2017 budget, it stood at about 15,400.³³ Most other agencies saw a decrease in staff from 1980 through 2010, some remained at about the same level, and a few enjoyed an increase in staff size (see Appendix 3).

The Trump White House proposed a large reduction in the EPA's staff of some 2,500 people below its modern low point in 2016, as the administration sought to diminish the agency's role in environmental protection significantly and turn over many of its responsibilities to the states. As noted, however, Congress did not go along fully. Even so, by 2019, EPA staff levels had declined to about 14,000, a level not seen since the late 1980s. The administration's fiscal year 2021 budget proposal put the desired staffing much lower yet, at 12,610.³⁴ For the near term, it seems likely that both budgets and staffing levels will remain at their present levels, which almost certainly will continue to adversely affect the capacity of the agency to achieve the objectives set out for it by Congress.

IMPROVEMENTS IN ENVIRONMENTAL QUALITY

It is difficult, both conceptually and empirically, to measure the success or failure of environmental policies.³⁵ Yet one of the most important tests of any public policy is whether it achieves its stated objectives. For environmental policies, we should ask if air and water quality are improving, hazardous waste sites are being cleaned up, and biological diversity is protected adequately. Almost always, we also want to know what these improvements cost, not just to government, but for society as a whole. There is no simple way to answer those questions, and it is important to understand why that is, even if some limited responses are possible.³⁶

Measuring Environmental Conditions and Trends

Environmental policies entail long-term commitments to broad social values and goals that are not easily quantified. Short-term and highly visible costs are easier to measure than long-term, diffuse, and intangible benefits, and these differences often lead to intense debates over the value of environmental programs. For example, should the EPA toughen air quality standards to reduce adverse health effects or hold off out of concern for the economic impacts of such a move (see Chapter 7)? The answer often seems to depend on which president sits in the White House and how sensitive the EPA is to public concerns over the relative benefits and costs.

Variable and often unreliable monitoring of environmental conditions and inconsistent collection of data over time also make it difficult to assess environmental trends. The time period selected for a given analysis can affect the results, and many scholars discount some data collected prior to the mid-1970s as unreliable. One thing is certain, however. Evaluation of environmental policies depends on significant improvements in monitoring and data collection at both state and federal levels. With better and more appropriate data, we should be able to speak more confidently in the future about policy successes and failures. Of course, any such judgments require that policymakers examine the data objectively and evaluate programs on the evidence as opposed to acting on ideological leanings. This assumption is difficult to make today as scientific data and professional expertise are not necessarily valued as consistently by policymakers and other political actors as both were previously.

In the meantime, scientists and pundits continue to debate whether environmental conditions are deteriorating or improving, and for what reasons. Many state-of-the-environment reports that address such conditions and trends are issued by government agencies and environmental research institutes. For the United States, EPA and other agency reports, discussed below, are available online and offer authoritative data. Not surprisingly, interpretations of the data may differ. For instance, critics of environmental policy tend to cite statistics that show rather benign conditions and trends (and therefore little reason to favor public policies directed at them), whereas most environmentalists focus on what they believe to be indicators of serious environmental decline and thus a justification for government intervention. The differences sometimes become the object of extensive media coverage and public debate.

Despite the many limitations on measuring environmental conditions and trends accurately, it is nevertheless useful to examine selected indicators of environmental quality. They tell us at least something about what we have achieved or failed to achieve after nearly five decades of national environmental protection policy. We focus here on a brief overview of trends in air quality, greenhouse gas emissions, water quality, toxic chemicals and hazardous wastes, and natural resources.³⁷

Air Quality

Perhaps the best data on changes in the environment can be found for air quality, even if disagreement exists over which measures and time periods are most appropriate. The EPA estimates that, between 1970 and 2018, aggregate emissions of the six principal, or criteria, air pollutants decreased by 74 percent even while the nation's

gross domestic product (GDP) grew by 275 percent, its population grew by 56 percent, vehicle miles traveled increased by 173 percent, and energy consumption grew by 44 percent, all of which would likely have increased air pollution without federal laws and regulations.³⁸

Progress generally continues. For example, between 2000 and 2018, monitored levels of the six criteria pollutants (that is, ambient air concentrations) showed improvement, with all declining during this period by between 16 and 93 percent. Ozone concentrations (using the 8-hour standard) declined by 16 percent, particulate matter by 31 percent and fine particulates (which pose a greater health risk) by 39 percent, lead by 93 percent, nitrogen dioxide (annual measure) by 49 percent, carbon monoxide by 59 percent, and sulfur dioxide by 80 percent. The changes are far more modest for these pollutants for the period 2010–2018, indicating a substantial slowing of progress in recent years.

Consistent with these trends, the number of days with unhealthy air quality in major US cities generally has been trending downward since 1990, although it has leveled off over the past decade. The EPA celebrates these achievements, saying that the “air quality benefits will lead to improved health, longevity, and quality of life for all Americans.”³⁹ Despite the history of impressive gains in air quality, as of 2018, over 137 million people (about 41 percent of the US population) lived in counties with pollution levels above the standards set for at least one of these criteria pollutants, particularly ozone and fine particulates. These figures vary substantially from year to year, reflecting changing economic activity and weather patterns, including wildfire-related air pollution. For example, air quality improved in many areas in the spring of 2020 due to a coronavirus-related decline in economic activity and vehicle traffic, and thus reduced use of fossil fuels.⁴⁰

One of most significant remaining problems is toxic or hazardous air pollutants, which have been associated with cancer, respiratory diseases, and other chronic and acute illnesses. The EPA was extremely slow to regulate these pollutants and had established federal standards for only seven of them by 1989. Public and congressional concern over toxic emissions led Congress to mandate more aggressive action in the 1986 Superfund amendments as well as in the 1990 Clean Air Act Amendments. The former required manufacturers of more than 300 different chemicals (later increased by the EPA to over 650) to report annually to the agency and to the states in which they operate the amounts of those substances released to the air, water, or land. The EPA’s TRI indicates that for the core chemicals from industry that have been reported in a consistent manner over time, total releases on- and off-site decreased by over 60 percent between 1988 and 2015, an impressive improvement in reducing public exposure to toxic chemicals. For a more recent period, 2007 through 2018, however, releases declined by only 9 percent.⁴¹

The annual TRI reports also tell us that industries continue to release very large quantities of toxic chemicals to the environment—3.8 billion pounds a year from about 21,000 facilities across the nation, based on the latest report. About 600 million pounds of the chemicals are released into the air, and those may pose a significant risk to public health.⁴² It should be noted, however, that the TRI and related numbers on toxics do not present a full picture of public health risks. For instance, many chemicals and industries were added to TRI reporting requirements from the 1990s to the 2010s,

complicating the determination of change over time. Using the original or core list of chemicals obviously doesn't account for those put on the list more recently. In addition to the TRI, under the 1990 Clean Air Act Amendments, the EPA regulates 188 listed air toxics, but nationwide monitoring of emissions is not standard.

Greenhouse Gas Emissions

The United States is making significant progress in addressing climate change despite fairly weak policies, largely because of improved energy efficiency, increased reliance on natural gas rather than coal for energy production, lower emissions from vehicles because of tougher fuel economy standards, and rapid growth in the use of renewable energy sources such as wind and solar power. The Obama administration advanced vehicle fuel economy standards and a Clean Power Plan designed to reduce reliance on coal-fired power plants. The Trump administration weakened both policies.⁴³ Even so, the new trends emerging in the nation's energy use are likely to continue.

According to the EPA's 2020 inventory of greenhouse gases, US emissions in 2018 totaled 6,678 million metric tons of CO₂ equivalent, a common way of accounting for emissions of all forms of greenhouse gases. Total US emissions of greenhouse gases peaked in 2007 at 7,414 million metric tons, and declined slowly after that, with some years showing a small increase or decrease. Emissions declined in 2015, 2016, and 2017, but increased by 3.1 percent in 2018, the last year covered in the report.⁴⁴ Global emissions, however, have been increasing, hitting a new high in 2019, even though emissions declined temporarily in early 2020 during the coronavirus pandemic.⁴⁵ The most notable declines in carbon dioxide releases in the United States have been in electricity generation even as there have been slight increases in emissions from transportation and industrial activity. Projections for the next several years depend on the pace of the nation's movement away from extensive reliance on coal for generating electricity and on its shift to cleaner-burning natural gas or renewable forms of energy, such as wind and solar power.

Despite this reduction in emissions, data from the National Oceanic and Atmospheric Administration's Annual Greenhouse Gas Index (based on highly precise atmospheric measurements) show the global concentration of the most important greenhouse gases continued to increase in recent years, reflecting a growth in "radiative forcing" or warming impact of nearly 60 percent since 1990.

Measurements of carbon dioxide concentrations at Hawaii's Mauna Loa Observatory, a long-time test site, show years of continuous increases, with levels reaching 417 parts per million in May 2020. In addition, the International Energy Agency (IEA) reported that global carbon dioxide emissions (that is, releases to the atmosphere) grew significantly in recent years, reflecting an increasing global economy, although emissions leveled off in 2019. Given what the IEA called a "continuing decoupling of emissions and economic activity," the pattern may change in coming years. The explanations for this trend include the growing reliance on renewable sources of energy, switching from coal to natural gas for electricity generation, and gains in energy efficiency.⁴⁶ In this context, it is worth adding that the United States remains by far the world's leading emitter of greenhouse gases by large nations on a per capita basis (see Chapter 12).

Water Quality

The nation's water quality has improved since passage of the Clean Water Act of 1972, although more slowly and more unevenly than has air quality. However, monitoring data are far less adequate for water quality than for air quality, making judgments about improvement difficult. For example, the best evidence for the state of water quality can be found in the EPA's consolidation of state reports (mandated by the Clean Water Act), which are accessible at the agency website. For the most recent reporting period (which often is not current due to lax state reporting), the states collectively assessed only 31 percent of the entire nation's rivers and streams; 45 percent of lakes, ponds, and reservoirs; 64 percent of estuaries and bays; and a mere 8 percent of coastal shorelines and 13 percent of oceans and near coastal areas.

Based on these very limited inventories, 47 percent of the surveyed river and stream miles were considered to be of good quality and 53 percent impaired. Some 71 percent of lakes, ponds, and reservoirs also were found to be impaired. A classification of impaired means that water bodies are not meeting or fully meeting the national minimum water quality criteria for "designated beneficial uses" such as swimming, fishing, drinking-water supply, and support of aquatic life. The same survey found that 80 percent of the nation's assessed estuaries and bays were impaired, as were 72 percent of assessed coastal shorelines and 90 percent of assessed oceans and near coastal waters.⁴⁷

The latest data on water quality show very little improvement in recent years, and in some of the categories, a decline in quality. In the face of a growing population and strong economic growth, prevention of significant further degradation of water quality could be considered an important achievement. At the same time, water quality clearly falls short of the goals of federal clean water acts.

The causes of impaired waters today are well understood. The EPA reports that the leading identifiable sources of impairment of rivers and streams, for example, are agriculture, human modification of waterways, atmospheric deposition of chemicals, habitat modification, unspecified nonpoint sources, and municipal discharges (in that order). That is, the causes no longer are point sources of pollution, such as industrial discharges, which have been well controlled with regulation under the Clean Water Act. Rather, they are largely nonpoint sources that are much more difficult to control and will take longer to affect.

To date, little progress has been made in halting groundwater contamination despite passage of the Safe Drinking Water Act of 1974, the Resource Conservation and Recovery Act of 1976, and their later amendments. Heading the list of contaminant sources are leaking underground storage tanks, septic systems, landfills, spills, fertilizer applications, large industrial facilities, hazardous waste sites, and animal feedlots. With about half of the nation's urban population relying on groundwater for drinking water (99 percent in rural areas), far more remains to be done.⁴⁸

The surge in natural gas drilling around the nation through hydraulic fracturing or fracking has sparked additional concerns over groundwater quality and its possible impacts on human health. Fracking involves the injection of massive amounts of water mixed with sand and various chemicals under high pressure to release natural gas from shale formations. There were over 1.7 million active wells in the nation in recent years,

and they yielded about two-thirds of natural gas production; natural gas is now the leading source of the country's electricity generation. One consequence, however, is increasing citizen concern about the risks posed by fracking's possible contamination of groundwater. Fracking is regulated primarily by the states rather than the federal government.⁴⁹

Toxic Chemicals and Hazardous Wastes

Progress in dealing with hazardous wastes and other toxic chemicals has been the least satisfactory of all pollution control programs. Implementation of the major laws has been extraordinarily slow due to the extent and complexity of the problems, scientific uncertainty, litigation by industry, public fear of siting treatment and storage facilities nearby, budgetary limitations, and poor management and lax enforcement by the EPA. As a result, gains have been modest when judged by the most common measures.

For example, the nation has yet to agree on how to dispose of high-level radioactive wastes from civilian nuclear power plants, despite several major national policies that date back decades. There also is the enormous task of cleaning up contaminated federal facilities, such as former nuclear weapons production plants, as well as tens of thousands of abandoned mines on federal lands in the West for which the federal government is liable for remediation. One comprehensive assessment in 2016 put the total federal environmental liability at over \$400 billion, with the eventual cleanup cost likely to be much higher than that.⁵⁰

One of the major federal programs aimed at toxic and hazardous chemicals is Superfund. For years, the government made painfully slow progress under the program in cleaning up the nation's worst hazardous waste sites. By the late 1990s, however, the pace of action improved significantly. Even so, by 2020, the EPA reported 1,335 sites remained on the program's National Priorities List or NPL; the NPL includes the top 1,600 or so sites out of some 40,000 Superfund sites in the country.⁵¹ Many cleanup efforts have been successful to date, and those sites are removed from the list. Yet the pace of future cleanup remains in doubt given scarce federal funds for the program. In addition, some of the costliest cleanups, including chemical containments in rivers and bays, remain to be addressed. The EPA captured the challenge well in a report from several years ago. It noted that the "Superfund cleanup work EPA is doing today generally is more difficult, is more technically demanding, and consumes considerable resources at fewer sites than in the past."⁵²

Historically, the EPA has set a sluggish pace in the related area of testing and acting on toxic chemicals, including pesticides. For example, under a 1972 law mandating control of pesticides and herbicides, only a handful of chemicals used to manufacture the fifty thousand pesticides in use in the United States had been fully tested or retested. The Food Quality Protection Act of 1996 required the EPA to undertake extensive assessment of the risks posed by new and existing pesticides. Following a lawsuit, the EPA began moving more quickly toward meeting the act's goal of protecting human health and the environment from these risks. The agency has said in recent years that it has begun a new program to reevaluate all pesticides in use on a regular basis, at least once every 15 years.⁵³

Similarly, limited progress in implementing the relatively weak Toxics Substances Control Act of 1976 finally led to the act's amendment in 2016 with congressional approval of the Frank R. Lautenberg Chemical Safety for the 21st Century Act. That act mandated that the EPA evaluate existing chemicals with a new risk-based safety standard, that it do so with clear and enforceable deadlines, with increased transparency for chemical information, and with assurances that the agency would have the budgetary resources to carry out its responsibilities for chemical safety. A list of the first ten chemicals to be studied was released in late 2016. However, it remains unclear whether the Trump administration will accord the new law the priority that Congress intended, particularly in light of the budgetary and staff cuts that are likely to hinder the act's implementation.⁵⁴

Natural Resources

Comparable indicators of environmental progress can be cited for natural resource use. As is the case with pollution control, however, interpretation of the data is problematic. We have few good measures of ecosystem health, and controversies continue about how best to value ecosystem services. Moreover, the usual information supplied in government reports details only the area of land set aside for recreational and aesthetic purposes rather than how well ecosystem functions are being protected.⁵⁵ Nonetheless, the trends in land conservation and wilderness protection suggest important progress since the 1960s.

For example, the national park system grew from about 26 million acres in 1960 to over 84 million acres by 2020, and the number of units (that is, parks) in the system doubled. Since adoption of the 1964 Wilderness Act, Congress has set aside more than 111 million acres of wilderness through the national wilderness preservation system. Since 1968, it has designated parts of 226 rivers in 41 states as wild and scenic, with over 13,400 river miles protected by 2020. The Fish and Wildlife Service manages more than 150 million acres in more than 560 units of the national wildlife refuge system in all fifty states, far in excess of the total acreage in the system in 1970; about 95 million acres of this total are set aside as wildlife habitat.⁵⁶

Protection of biological diversity through the Endangered Species Act has produced some success as well, although far less than its supporters believe essential. By March 2020, 47 years after passage of the 1973 act, more than 1,661 US plant and animal species had been listed as either endangered or threatened, and more than 1,169 active recovery plans were in effect. Yet only a few endangered species have recovered fully. The Fish and Wildlife Service reported in 2008 (no similar assessments have been made in more recent years) that 41 percent of those listed were considered to be stable or improving, but that 34 percent were considered to be declining in status, and that for 23 percent their status was unknown. About 2 percent were presumed to be extinct.⁵⁷

ASSESSING ENVIRONMENTAL PROGRESS

As the data reviewed in the preceding sections suggest, the nation made impressive gains between 1970 and 2020 in controlling many conventional pollutants and in expanding parks, wilderness areas, and other protected public lands. Despite some

setbacks, progress on environmental quality continues, even if it is highly uneven from one period to the next. In the future, however, further advances will be more difficult, costly, and controversial. This is largely because the easy problems have already been addressed. At this point, marginal gains—for example, in air and water quality—are likely to cost more per unit of improvement than in the past. Moreover, second-generation environmental threats such as toxic chemicals, hazardous wastes, and nuclear wastes are proving even more difficult to regulate than the “bulk” air and water pollutants that were the main targets in the 1970s. In these cases, substantial progress may not be evident for years to come, and it may well be expensive.

The same is true for the third generation of environmental problems, such as global climate change and the protection of biodiversity. Solutions require an unprecedented degree of cooperation among nations and substantial improvement in institutional capacity for research, data collection, and analysis, as well as for policy development and implementation. Hence, success is likely to come slowly and will reflect the extent to which national and international commitments to environmental protection grow and capabilities improve.

Some long-standing problems, such as population growth, will continue to be addressed primarily within nation-states, even though the staggering effects on natural resources and environmental quality are felt worldwide. By mid-2020, the Earth’s population of about 7.7 billion people was increasing at an estimated 1.1 percent (or about 85 million people) each year, with a middle-range projection for the year 2050 at about 9.8 billion. The US population had a natural rate of growth (that is, not counting immigration) of 0.3 percent a year, and middle-range projections by the Population Reference Bureau put the US population at about 388 million by 2050 (see Chapter 13).⁵⁸

CONCLUSION

Since the 1970s, public concern and support for environmental protection have risen significantly, spurring the development of an expansive array of policies that substantially increased the government’s responsibilities for the environment and natural resources, both domestically and internationally. The implementation of these policies, however, has been far more difficult and controversial than their supporters ever imagined. Moreover, the policies have not been entirely successful, particularly when measured by tangible improvements in environmental quality. Further progress will likely require the United States to search for more efficient and effective ways to achieve these goals, including the use of alternatives to conventional command-and-control regulation, such as the use of flexible regulation, market incentives, and information disclosure or public education.⁵⁹ Despite these qualifications, the record since the 1970s demonstrates convincingly that the US government is able to produce significant environmental gains through public policies. Unquestionably, the environment would be worse today if the policies enacted during the 1970s and 1980s, and since then, had not been in place.

Emerging environmental threats on the national and international agenda are even more formidable than the first generation of problems addressed by government in the

1970s and the second generation that dominated political debate in the 1980s. Responding to these threats will require creative new efforts to improve the performance of government and other social institutions, as well as effective leadership to design appropriate strategies to combat these threats, both within government and in society itself. Some of these strategies might include sustainable community initiatives and corporate social responsibility actions. This new policy agenda is addressed in Part IV of the book and in Chapter 15.

Government obviously is an important player in the environmental arena, and the federal government will continue to have unique responsibilities, as will the fifty states and the more than ninety thousand local governments across the nation. President Obama assembled an experienced and talented environmental policy team to address these challenges and, at the launch of his administration, vowed to make energy and environmental issues “a leading priority” of his presidency and a “defining test of our time.”⁶⁰ The Donald Trump administration adopted a dramatically different environmental policy agenda and set of priorities, the effects of which will become apparent only over the next few years. Readers can judge for themselves how well recent presidents and their appointees have lived up to the promises they made as they peruse the chapters in this volume. It is equally clear, however, that government rarely can pursue forceful initiatives without broad public support. Ultimately, society’s values and priorities will shape the government’s response to a rapidly changing world environment that, in all probability, will involve major economic and social dislocations over the coming decades.

NOTES

1. See survey data reviewed in Chapter 3; Riley E. Dunlap, “Public Opinion and Environmental Policy,” in *Environmental Politics and Policy: Theories and Evidence*, 2nd ed., ed. James P. Lester (Durham, NC: Duke University Press, 1995), 63–114; Riley E. Dunlap, George H. Gallup Jr., and Alec M. Gallup, “Of Global Concern: Results of the Health of the Planet Survey,” *Environment* 35, no. 9 (1993): 7–15, 33–40; and David P. Daniels, Jon A. Krosnick, Michael P. Tichy, and Trevor Tompson, “Public Opinion on Environmental Policy in the United States,” in *The Oxford Handbook of U.S. Environmental Policy*, ed. Sheldon Kamieniecki and Michael E. Kraft (New York: Oxford University Press, 2013), 461–86.
2. Norman J. Vig and Michael E. Kraft, eds., *Environmental Policy in the 1980s: Reagan’s New Agenda* (Washington, DC: CQ Press, 1984).
3. See Robert Durant, Rosemary O’Leary, and Daniel Fiorino, eds., *Environmental Governance Reconsidered: Challenges, Choices, and Opportunities*, 2nd ed. (Cambridge, MA: MIT Press, 2017); Daniel Fiorino, *The New Environmental Regulation* (Cambridge, MA: MIT Press, 2006); Marc Allen Eisner, *Governing the Environment: The Transformation of Environmental Regulation* (Boulder, CO: Lynne Rienner, 2007); and Christopher McGroarty Klyza and David Sousa, *American Environmental Policy: Beyond Gridlock*, updated and expanded edition (Cambridge, MA: MIT Press, 2013).
4. For example, see Daniel A. Mazmanian and Michael E. Kraft, eds., *Toward Sustainable Communities: Transition and Transformations in Environmental Policy*, 2nd ed. (Cambridge, MA: MIT Press, 2009); Durant, O’Leary, and Fiorino, *Environmental Governance Reconsidered*; Klyza and Sousa, *American Environmental Policy*; and Michael E. Kraft,

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