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# Introductory Chapter to Elgar Encyclopedia of Environmental Law: Decisionmaking in Environmental Law

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<entry heading>Introduction

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<a>Abstract

This introductory chapter provides an overview of the growth of environmental law and the decision making structures that governments have developed to adopt, administer, and enforce it. It traces the manner in which cooperative federalism and public participation have affected decision making structures in environmental law, primarily in the United States. It summarizes key challenges that policymakers continue to face in designing environmental laws, including choices on the allocation of authority among different levels of government, the appropriate mix of regulatory and non-regulatory tools to use in environmental protection initiatives, efforts to accommodate environmental protection and economic growth objectives, techniques to spur useful government action in the face of political stalemates, balancing the benefits of public participation with the potential for participatory procedures to slow or derail the implementation of environmental laws, and determining the role of judicial review. The chapter concludes with a road map of the all of the other chapters in the book.

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#### <a>1.1 The birth of modern environmental law

This introductory chapter focuses on the development of environmental law and associated decision making processes in the United States because the country pioneered many of the decision making processes that are now common around the world. The US system is also particularly informative because the federalism issues in the US, which result in a complicated set of interactions among various levels of government, are now shared by other federal countries, such as Brazil, and are present in the relationship between law making at the European Union level and within the nations that make up the EU. By understanding the structure and processes of US environmental law, the reader should gain a broad understanding of the critical steps in, and the complexity of, environmental decision making that will then be explored in more detail in the individual chapters.

Environmental laws can be traced back centuries, certainly as early as the first century AD in Roman law. The Justinian Institutes in 535 AD provided that ‘by the law of nature these things are common to all mankind: the air, running water, the sea, and consequently the shores of the sea’. Smoke abatement ordinances appeared as early as the thirteenth century in London.<sup>1</sup> However, what we now consider modern environmental law first developed in the United States in the 1960s and 1970s. Before that time, environmental law in the United States was largely a product of state and local action. Rudimentary local ordinances to abate air pollution problems such as smoke emerged as early as the 1800s.<sup>2</sup> But the predominant mechanism for halting pollution and other commercial and industrial activity that posed threats to health and property throughout the nineteenth century and the first half of the twentieth century was a common law action seeking abatement of the offending activity or damages to compensate for harms resulting from it. The principal theories used to halt environmentally damaging conduct were nuisance

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<sup>1</sup> Glicksman et al (2015) 432.

<sup>2</sup> Andreen (2012) 640–41.

(both public and private), trespass, negligence, and, in limited contexts, strict liability for ultrahazardous or abnormally dangerous activities. In the United States, which developed these theories based on decisions by the British courts, common law doctrines were almost entirely the province of the state courts. As a result, although the doctrines tended to develop in similar ways throughout the country, each state's courts were free to adjust the doctrines to meet local needs and conditions. The same was true of the ordinances and statutes adopted by state and local legislatures.

The federal government's role in the development of environmental law dates to early statutes such as the River and Harbors Act of 1899.<sup>3</sup> Although that law was principally a navigation protection device, the United States Supreme Court interpreted it decades later to also restrict discharges of water pollution.<sup>4</sup> Congress adopted legislation in 1948 that authorized investigations by federal officials into the consequences of water pollution, provided grants to state and local agencies to construct sewage treatment plants, and declared interstate water pollution to be a nuisance.<sup>5</sup> Federal air pollution legislation followed a similar pattern. Statutes passed in 1955 and 1960 authorized a federal program of research and technical assistance on the causes and effects of air pollution. A 1963 law authorized a federal agency to provide the states with scientific information on the effects of different air pollutants. Gradually, the federal role expanded and became more substantive. The 1963 statute authorized enforcement proceedings against those who emitted air pollution that endangered health or welfare, although no effective enforcement occurred due to a diffusion of responsibility. In 1965, Congress authorized the Department of Health, Education, and Welfare to establish air pollution emission standards for new motor vehicles. Two years later, Congress ordered the states to adopt ambient air quality standards, subject to federal agency approval, and plans specifying emission limits for individual sources needed to achieve the standards.<sup>6</sup>

This activity was merely a prelude to the adoption of a series of statutes beginning in 1969 that transformed the landscape of environmental law in the United States, greatly

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<sup>3</sup> Rivers and Harbors Appropriation Act of 1899, Act of 3 March 1899, 30 Stat 1151.

<sup>4</sup> See, eg, *United States v Standard Oil Co*, 384 US 224 (1966); *United States v Republic Steel Corp*, 362 US 482 (1960).

<sup>5</sup> Glicksman et al (2015) 609.

<sup>6</sup> *ibid* 432–33.

expanding its scope as well as the federal government's role in implementing the new legislation. Whereas before 1970, the federal government's footprint tended to be 'sporadic and relatively minor',<sup>7</sup> after 1970 its presence was pervasive. Congress kicked off what became known as 'the environmental decade' by enacting the National Environmental Policy Act (NEPA).<sup>8</sup> That statute is perhaps the most widely emulated environmental statute in the world, providing a model for similar legislation elsewhere. NEPA was designed to force federal agencies otherwise inclined to ignore the environmental consequences of their actions to consider and disclose those consequences. It requires agencies to prepare an environmental impact statement for every major federal action that significantly affects the quality of the human environment that details the potential environmental impacts of proposed action as well as available alternatives that would reduce those impacts.<sup>9</sup> NEPA declares a national policy of encouraging productive harmony between humans and the environment and of promoting efforts to prevent or eliminate environmental damage.<sup>10</sup> The statute's lack of substantive content limits its ability to force environmentally beneficial decisions. The judicial enforceability of NEPA's procedural duties (and the fear of delays in favoured agency projects) nevertheless has forced agencies to identify environmental risks and consider less environmentally damaging alternatives.

The enactment of NEPA, and the policies it announced, symbolized a heightened commitment on the part of the federal government to lead the effort to protect the environment. NEPA applied only to actions undertaken by agencies of the federal government. Beginning in 1970, however, Congress in short order passed broader laws that addressed air,<sup>11</sup> water,<sup>12</sup> and land pollution.<sup>13</sup> These new initiatives were not confined to anti-pollution efforts. In 1972, Congress adopted the Endangered Species Act,<sup>14</sup> which authorizes two federal agencies to list terrestrial and aquatic species as endangered or threatened, prohibits federal agencies from engaging in action that jeopardizes listed species or adversely affects their critical habitat, and

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<sup>7</sup> Andreen (2012) 651, 658 (referring to 'a major expansion of federal authority' in controlling air pollution).

<sup>8</sup> Pub L No 91-190, 83 Stat 852 (1970).

<sup>9</sup> 42 USC s 4332(2)(C).

<sup>10</sup> 42 USC s 4321.

<sup>11</sup> Clean Air Act of 1970, Pub L No 91-604, 84 Stat 1676.

<sup>12</sup> Federal Water Pollution Control Act Amendments of 1972, Pub L No 92-500, 86 Stat 817.

<sup>13</sup> Solid Waste Disposal Act, Pub L No 94-580, 90 Stat 2796 (1976).

<sup>14</sup> Endangered Species Act of 1973, Pub L No 93-205, 81 Stat 884.

bars both federal agencies and private individuals from ‘taking’ listed species members.<sup>15</sup> Congress also enacted legislation to protect specific species, such as marine mammals,<sup>16</sup> wild horses and burros,<sup>17</sup> and ocean fisheries.<sup>18</sup> It also passed legislation to govern the management of lands owned by the federal government, administered by agencies such as the US Forest Service within the Department of Agriculture<sup>19</sup> and the Bureau of Land Management within the Interior Department.<sup>20</sup> Congress capped the environmental decade by enacting the Comprehensive Environmental Response, Compensation, and Liability Act,<sup>21</sup> also known as the ‘Superfund’ law. This statute authorizes the federal Environmental Protection Agency (EPA), which President Richard Nixon had created in 1970, to clean up releases of hazardous substances and then recover its costs through litigation against responsible parties, such as facility owners and operators and generators of wastes disposed of at facilities at which releases later occur.<sup>22</sup>

#### <a>1.2. Cooperative federalism in environmental law

In each of these statutes, Congress delegated to federal agencies, including EPA, the power to implement and enforce the new laws. The creation of new federal agencies and the expansion of the authority of existing agencies however, did not divest the states of their role in protecting the environment. Instead, many of the federal environmental laws adopted in the 1970s—principally those aimed at controlling pollution—reflect a ‘cooperative federalism’ model.<sup>23</sup> These laws create a joint federal-state venture to achieve prescribed environmental protection goals.

Although Congress quite clearly made EPA the dominant partner under laws such as the Clean

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<sup>15</sup> 16 USC ss 1533, 1536(b), 1538(a)(1)(B).

<sup>16</sup> Marine Mammal Protection Act, 16 USC ss 1461 to 1407.

<sup>17</sup> Wild Free-Roaming Horses and Burros Act of 1971, 16 USC ss 1331 to 1340.

<sup>18</sup> Fisheries Conservation and Management Act of 1976, 16 USC ss 1801 to 1822.

<sup>19</sup> National Forest Management Act of 1976, Pub L No 94-588, 90 Stat 2949.

<sup>20</sup> Federal Land Policy and Management Act of 1976, Pub L No 94-579, 90 Stat 2743.

<sup>21</sup> Comprehensive Environmental Response, Compensation, and Liability of 1980, Pub L No 96-510, 94 Stat 2767.

<sup>22</sup> 42 USC ss 9604(a), 9607(a).

<sup>23</sup> For discussion of cooperative federalism in US environmental law, see Glicksman (2006); see also Robbins (2015).

Air Act and the Clean Water Act,<sup>24</sup> it chose to preserve a significant role for the states in making certain policy choices and performing certain tasks.<sup>25</sup>

The allocation of authority between EPA and the states under the Clean Air Act is representative of the US cooperative federalism model. Congress adopted national policies, including the protection and enhancement of air quality,<sup>26</sup> and delegated to EPA the power to adopt national ambient air quality standards whose function is to protect the public health and welfare.<sup>27</sup> The statute assigns to each state the responsibility of formulating plans that limit emissions from individual sources within the state to an extent sufficient to achieve and maintain the standards.<sup>28</sup> Within boundaries set by Federal law, the states have discretion to allocate emission control responsibilities in ways consistent with their own environmental, economic, and social policies, provided the plan meets minimum federal standards.<sup>29</sup> EPA has the authority to review state plans, and may adopt a federal plan for any state that fails to submit an adequate plan.<sup>30</sup> The states and EPA share enforcement authority so that the federal government may enforce state emissions limits even if the state does not.<sup>31</sup> States also may adopt permit programs to help administer their plans and implement other statutory programs. EPA may reject inadequate state permit programs and administer federal programs in delinquent states,<sup>32</sup> although EPA clearly never had the resources to issue permits in all but a few states. Congress vested in EPA the authority to adopt nationally applicable emission standards for certain source categories, such as new stationary sources,<sup>33</sup> sources of hazardous air pollutants,<sup>34</sup> and new

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<sup>24</sup> See Andreen (2012) 629 ('EPA was clearly the senior partner' under the Clean Air Act); Andreen (2009) 258–59 (referring to EPA as 'the senior partner in most aspects of the relationship' between it and the states under the Clean Water Act).

<sup>25</sup> For discussion of the reasons for Congress's expansion of federal environmental regulatory authority, see Glicksman and Levy (2008) 591–616 (discussing collective action rationales for federal environmental regulation).

<sup>26</sup> 42 USC s 7401(b).

<sup>27</sup> *ibid* s 7409(b).

<sup>28</sup> *ibid* s 7410.

<sup>29</sup> *Train v Natural Res Def Council, Inc*, 421 US 60, 79 (1975).

<sup>30</sup> 42 USC s 7410(c), (k).

<sup>31</sup> *ibid* s 7413.

<sup>32</sup> *ibid* ss 7661–7661f.

<sup>33</sup> *ibid* s7411.

<sup>34</sup> *ibid* s 7412.

motor vehicles,<sup>35</sup> but, for the most part, the states retain the power to adopt standards that are more stringent than EPA's.<sup>36</sup>

The Clean Water Act similarly divides up authority between EPA and the states. Under that statute, EPA has the power to establish nationally applicable emission standards for point sources of water pollution based on the best available technology for point source categories.<sup>37</sup> States must adopt and submit for EPA review water quality standards, with EPA deciding whether they are sufficient to promote federal goals, such as the achievement of fishable-swimmable water quality.<sup>38</sup> States apply to EPA for permission to administer the statute's program for issuance of discharge permits to individual point sources. EPA must approve state programs that meet mandatory statutory requirements, but it may veto individual state permits and withdraw authorization of entire programs if states do not properly implement them.<sup>39</sup> EPA issues permits in states without approved programs. As under the Clean Air Act, EPA and the states share enforcement authority.<sup>40</sup> States are free to adopt effluent limitations or standards that are more stringent than those adopted by EPA.<sup>41</sup>

Not all of the environmental statutes that originated during the environmental decade were built on a cooperative federalism foundation. The Toxic Substances Control Act,<sup>42</sup> which creates testing and pre-market review requirements for chemical substances, and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA),<sup>43</sup> which establishes liability for disposal of hazardous wastes and procedures for cleaning up old hazardous waste sites, are administered by EPA without significant participation by state agencies. Similarly, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA),<sup>44</sup> which requires federal registration prior to the marketing or use of chemical insecticides and herbicides, is largely a federal program, although states participate in enforcement of FIFRA's mandates.

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<sup>35</sup> *ibid* ss 7507, 7521(a), 7543.

<sup>36</sup> *ibid* s 7416.

<sup>37</sup> 33 USC ss 1311(b), 1314(b).

<sup>38</sup> *ibid* ss 1251(a), 1313(c).

<sup>39</sup> *ibid* s 1342(b)–(d).

<sup>40</sup> *ibid* s 1319.

<sup>41</sup> *ibid* s 1370.

<sup>42</sup> 15 USC ss 2601–2629.

<sup>43</sup> 42 USC ss 9601–9675.

<sup>44</sup> 7 USC ss 136–136y.



The statutes that govern management of the lands and resources owned by the federal government also vest in the federal land management agencies control over most management policy choices, with input in some instances from state and local governments, but without the kind of significant delegation of administrative responsibilities to those entities that characterize the cooperative federalism-based pollution statutes.<sup>45</sup>

The enactment of this vast body of administrative law beginning in the 1970s reflected Congress's perception that state law, including state common law tort claims for environmental injuries, had not proved adequate to the task of improving key aspects of environmental quality. One of the main reasons why the common law gave way to a more complex body of statutory or regulatory law was its essentially reactive nature; common law tort actions tend to be more effective at redressing harm through monetary compensation after the fact than at preventing such harm from occurring in the first place. In addition, agencies' greater expertise made them better situated than courts to devise solutions to the increasingly complex environmental problems, as the courts themselves have recognized.<sup>46</sup> Despite the creation of a litany of statutes addressing a broad array of environmental problems, each of which generated a substantial body of regulatory law administered by federal and state agencies, Congress chose not to completely displace common law remedies for environmental harm. Instead, in almost all of the pollution control statutes, it included 'savings clauses' that preserve these remedies.<sup>47</sup>

### <a>1.3 Public participation

The shift of the locus of power to adopt and implement environmental law from state and local governments to the federal government, and from courts to agencies, was one of the defining characteristics of the environmental legislation adopted by the US Congress in the 1970s. Another groundbreaking development was the enhancement of opportunities for public participation in the environmental lawmaking process. The expanded array of participatory

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<sup>45</sup> For discussion of federalism issues in public natural resources law, see Fischman (2005); Fischman and King (2007); Fischman and Williamson (2011).

<sup>46</sup> See, eg, *Am Elec Power Co v Connecticut*, 131 S Ct 2527 (2011).

<sup>47</sup> See, eg, 33 USC s 1365(e) (Clean Water Act); 42 USC s 6972(f) (Resource Conservation and Recovery Act); 42 USC s 7604(e) (Clean Air Act). The enactment of federal statutes may displace federal common law even if it does not preempt state common law. See *Am Elec Power Co v Connecticut*, 131 S Ct 2527 (2011).

opportunities took several forms. Since the late 1940s, the federal Administrative Procedure Act (APA) has provided members of the public a right to petition an agency for issuance of regulations.<sup>48</sup> Agencies such as EPA have created regulatory procedures for doing so, and citizen rulemaking petitions have prompted the adoption of significant new rules, such as those establishing emission limits on greenhouse gases from new motor vehicles.<sup>49</sup> The APA provided other opportunities for public participation in agency rulemaking proceedings, most prominently in requiring agencies to issue a notice of proposed rulemaking and provide an opportunity for public comment prior to adoption of a final rule.<sup>50</sup> Statutes such as the Clean Air Act<sup>51</sup> and the Toxic Substances Control Act<sup>52</sup> create even greater participatory rights in rulemaking proceedings.

Similar opportunities exist under other US environmental laws. For example, regulations issued by the Council on Environmental Quality, the agency responsible for supervising compliance with NEPA,<sup>53</sup> require an agency proposing to take a major federal action with significant environmental impacts to prepare a draft environmental impact statement (EIS) and solicit comments from other federal agencies with expertise, state and local agencies, Native American tribes, and interested members of the public before issuing a final EIS.<sup>54</sup> Under the Endangered Species Act, the US Fish and Wildlife Service and the National Marine Fisheries Service must provide an opportunity for public comment before deciding whether to issue a permit authorizing the incidental take of listed species.<sup>55</sup>

While APA-based participation provided new opportunities for citizen engagement, these procedures have more recently been criticized as ‘too little, too late’. A substantial literature exists discussing the need to provide the public with earlier notice of agency actions and more frequent opportunities to participate in the decision making process.<sup>56</sup> EPA’s ‘Public

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<sup>48</sup> 5 USC s 553(e).

<sup>49</sup> See *Massachusetts v EPA*, 549 US 497 (2007).

<sup>50</sup> 5 USC s 553(b)–(c).

<sup>51</sup> 42 USC s 7607(d).

<sup>52</sup> 15 USC s 2605(c)(2)–(3).

<sup>53</sup> 42 USC s 4344.

<sup>54</sup> 40 CFR s 1503.1.

<sup>55</sup> 16 USC s 1539(a)(2)(B).

<sup>56</sup> See King (1998) 317; Paddock (2004) 255–60.

Involvement Policy<sup>57</sup> adopted in 2003 sets out a comprehensive set of steps designed to assure earlier and more complete opportunities to participate, but it is only a policy and not legally binding. Early and effective public involvement procedures are a critical element of assuring environmental justice.<sup>58</sup>

The most innovative form of public participation created by US environmental law—also emulated widely in other countries’ environmental laws—is the citizen suit mechanism. As one scholar has put it, ‘[p]erhaps the most pervasive, prominent, and continuing innovation in the modern environmental era has been the involvement of citizens in the enforcement of environmental laws.’<sup>59</sup> Following a model advocated in scholarship by pioneering environmental law professor Joseph Sax<sup>60</sup> and incorporated into early state environmental legislation in Michigan and Minnesota, Congress included a citizen suit provision in most of the pollution control statutes<sup>61</sup> and the Endangered Species Act.<sup>62</sup> These provisions allow two kinds of suits. First, they authorize any person able to meet jurisdictional requirements, such as standing to sue to bring an action in federal court, against any person alleged to be in violation of any statutory, regulatory, or permit requirement. This citizen enforcement mechanism is designed partly to provide a backstop in case neither the federal government nor the state in which the violation occurs has pursued appropriate enforcement. Citizens have been particularly active in enforcing regulatory requirements, such as discharge limits in Clean Water Act permits, under statutes that make important compliance-related documents publicly available. Second, they allow citizens to sue agencies such as EPA or the agencies that implement the Endangered Species Act to force them to take nondiscretionary actions (such as the issuance of regulations) mandated by statute. This mechanism provides a safeguard against failure to abide by statutory responsibilities through inaction driven by agency capture or resource shortages. Citizen suits of this second kind have been important in prompting important policy initiatives, such as the adoption of total

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<sup>57</sup> US EPA, ‘Introducing EPA’s Public Involvement Policy’ (2003), available at <<http://nepis.epa.gov/Exe/ZyPDF.cgi/100045RR.PDF?Dockey=100045RR.PDF>> accessed 15 Jan 2016.

<sup>58</sup> See Chapter **\_\_\_ (Paddock Environmental Justice chapter)**.

<sup>59</sup> Thompson (2000).

<sup>60</sup> See Sax (1971).

<sup>61</sup> eg 33 USC s 1365 (Clean Water Act); 42 USC s 6972 (Resource Conservation and Recovery Act); 42 USC s 7604 (Clean Air Act).

<sup>62</sup> 16 USC s 1540(g).

maximum daily loads under the Clean Water Act.<sup>63</sup> These citizen suit opportunities exist on top of more traditional avenues for judicial review of agency actions, such as suits challenging the issuance of agency regulations or permits.

#### <a>1.4 The challenges of environmental decision making by governments

Modern environmental law is approaching the end of its fifth decade. In many countries, this body of law has done a great deal to reduce health risks and to bolster protection of biodiversity linked to pollution, land development, and other environmentally damaging activity. Yet, considerable challenges remain; statutory goals, such as air quality sufficient to protect public health and water quality that is suitable for drinking and recreational use, remain unachieved aspirations, at least in some places. Both acute and chronic air pollution problems are evident in many areas around the world, some of which are subject to rudimentary or unenforced environmental laws. Even in developed nations of the West, where environmental law has the oldest and strongest pedigree, the promise of environmental law has not yet been fully achieved. The challenges with which policymakers are grappling and will continue to confront in designing environmental protection programs include how to allocate authority among different levels of government; what mix of regulatory and non-regulatory tools to rely on in seeking higher levels of environmental protection; how best to accommodate both environmental protection and economic growth objectives; how to spur useful government action in the face of political stalemates; how to balance the benefits of public participation with the potential for participatory procedures to slow or derail implementation of environmental laws; and determining the role of judicial review.

As indicated above, the US environmental legislation adopted beginning in the 1970s shifted the balance of policymaking authority from the states to the federal government, while reserving important roles for the states under the cooperative federalism model. The choices reflected in that legislation, however, were controversial at the time they were made and continue to generate debate. Courts, on occasion, have invalidated US environmental legislation that was insufficiently respectful of state sovereignty.<sup>64</sup> They have construed the scope of federal

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<sup>63</sup> See generally Glicksman (2004). The article is part of a symposium on ‘Environmental Citizen Suits at Thirtysomething’.

<sup>64</sup> See, eg, *New York v United States*, 505 US 144 (1992).

regulatory authority narrowly to avoid raising constitutional federalism questions.<sup>65</sup> Scholars question whether a major federal role was ever necessary or whether it is time to enhance the role of the states,<sup>66</sup> some of which have been innovators in dealing with problems such as climate change.<sup>67</sup> Difficult questions concerning the appropriate allocation of authority among different levels of government will continue to confront policymakers, particularly in countries with a federal structure of government.

Another ongoing debate concerns the selection of tools to pursue environmental protection goals. In the early years of environmental regulation, regulatory strategies tended to focus on what are now referred to as traditional regulatory techniques such as establishing emission or discharge limits for individual sources. These tended to take the form, in the United States, of performance standards, which establish a required level of emissions reduction or specified a maximum level of emissions discharges (often in the form of a numerical limit), but leave regulated entities free to choose the method of achieving that level. The rationale for relying on performance standards is that regulated entities have continued incentives to seek the least costly means of reaching the required performance level. Less frequently, regulatory programs rely on design standards, which dictate not only the level but the method of performance. In the United States, some of the performance standards, such as effluent limits under the Clean Water Act, became de facto design standards, as companies choose simply to adopt the reference technology for the performance standard rather than try to establish that another technology meets the required level of performance. Rather than driving technology innovation, as the drafters of the Clean Water Act had planned, this conservative approach by facility operators has tended to freeze old technology in place because the underlying performance standards were not regularly updated.

Economists urged regulators to incorporate into environmental law techniques that mimic markets, arguing that doing so would improve the efficiency of regulatory compliance without sacrificing environmental quality. Although many economists favoured the adoption of pollution taxes, policymakers, for political reasons, often preferred other incentive-based techniques, such

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<sup>65</sup> See, eg, *Rapanos v United States*, 547 US 715 (2006); *Solid Waste Agency of N Cook County v US Army Corps of Eng'rs*, 531 US 159 (2001).

<sup>66</sup> See, eg, Adler (2005); Adler (2007).

<sup>67</sup> See, eg, Markell (1994).

as marketable permits. Those programs created the potential for those with relatively low costs of control to do better than their regulatory obligations in order to generate ‘allowances’ that could then be sold (at a profit) to others with higher control costs. The upshot would be lower total expenditures to achieve the same aggregate level of environmental performance. In the United States, EPA experimented with different versions of emissions trading<sup>68</sup> before Congress adopted the first large-scale cap-and-trade program as part of the 1990 Clean Air Act Amendments.<sup>69</sup> This program was designed to abate acid rain in the eastern half of the country. The acid rain cap and trade program proved very effective in reducing pollution at a much lower than anticipated cost. However, the acid rain trading system is rather unique in that it only applies to about 200 electric power plants, all of which are required to have continuous emissions monitors and report sulphur dioxide emissions to EPA in real time. Most other trading schemes involve more complex and less homogeneous settings.

Still, based in part on the success of this program in improving environmental quality at a lower cost than traditional regulation would have required, other nations and international agreements have expanded the use of incentive-based techniques such as cap-and-trade programs, which often work in conjunction with more traditional regulatory programs. One example is the Kyoto Protocol’s program for reducing greenhouse gases that contribute to climate change.<sup>70</sup> Notwithstanding the expansion of non-traditional regulatory techniques, they remain controversial, at least in some contexts. Among the concerns are the possibility that environmental markets are subject to manipulation, just as stock and commodities markets are.<sup>71</sup> As a result, policymakers continue to struggle with whether to rely on market-based regulatory options, and, if so, how to design them in ways likely to minimize efforts to undermine their efficacy in achieving the government’s regulatory goals.

Some scholars and policymakers support even greater movement away from traditional regulatory mechanisms. Some urge greater use of information disclosure in lieu of regulation, in

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<sup>68</sup> See, eg, *Chevron USA Inc v Natural Res Def Council, Inc*, 467 US 837 (1984) (upholding EPA’s approval of the ‘bubble’ concept, a form of internal emissions trading).

<sup>69</sup> 42 USC ss 7651–7651o.

<sup>70</sup> Kyoto Protocol to the UN Framework Convention on Climate Change, 2303 UNTS 148 (1997); Glicksman and others (2015) 1279–91.

<sup>71</sup> See, eg, Glicksman (2014).

the hope that those creating health or environmental risks will choose to minimize the extent to which they create them to avoid adverse reactions from consumers and investors.<sup>72</sup> The US Congress has relied on information disclosure to promote environmental goals in statutes such as NEPA and the Emergency Planning and Community Right-to-Know Act.<sup>73</sup> Other scholars urge greater reliance on government-private partnerships or voluntary actions by business in light of the failures of some regulatory programs<sup>74</sup> and the limited resources available to oversight agencies. These debates over the proper roles of the public and private sector will continue to arise in many contexts. One interesting new development has been the adoption by many companies of sustainability goals and the related use of environmental supply chain requirements. These goals and requirements sometimes address regulatory requirements, but they also can reach beyond legal requirements to deal with issues such as energy efficiency that are not currently regulated.<sup>75</sup>

A third area of recurrent controversy and litigation is the manner in which the economic impact of environmental regulations should affect the identification and pursuit of environmental protection goals. To some observers, environmental protection laws inevitably impair economic growth, as costly compliance obligations cause job losses or prevent job creation. A frequent argument made in the United States and elsewhere is that unilateral adoption by one nation of stringent environmental regulations reduces the competitiveness of domestic businesses with firms in countries with less protective regimes and drives domestic businesses offshore. Others reject this antagonistic characterization. They respond that environmental protection and economic prosperity go hand in hand because, for example, environmental protection laws result in a healthier and more productive population. In addition, environmental protection laws can generate new industries, such as the manufacture of pollution control technology, that generate job growth. Proponents of greenhouse gas emission limitations contend that constraints on generation of electricity from the combustion of fossil fuels provide an opportunity for domestic participants in the business of renewable energy development to get a head start on foreign competitors.

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<sup>72</sup> See Karkkainen (2001).

<sup>73</sup> 42 USC ss 11001–11050.

<sup>74</sup> See, eg, Marchant, Sylvester, and Abbott (2010); Freeman and Farber (2005).

<sup>75</sup> See Chapter \_\_\_\_ (Light/Vandenbergh chapter).

It is therefore not surprising that one of the most frequent issues in environmental litigation is whether a particular environmental statute allows or requires the implementing agency to consider cost as a factor relevant to determining the appropriate level of regulation.<sup>76</sup> The battle over how to factor cost considerations into environmental regulatory decisions also manifests itself in the fierce and ongoing debate over the propriety and utility of using cost-benefit analysis to make these decisions.<sup>77</sup> A similar dynamic arises in natural resource management, as policymakers and affected interests battle over how much resource extraction and commodity use to allow in ecologically important areas.

One of the problems that environmental policymakers have confronted since the inception of environmental law is the dynamic nature of the problems it addresses and associated scientific uncertainty. Nature is never static, so environmental regulation is sometimes built on information, assumptions, or models that quickly become obsolete. The challenge for policymakers is to design programs that are responsive to current conditions but that also provide sufficient flexibility to address the issues posed by changed circumstances or newly discovered problems, such as ozone depletion in the 1980s. This challenge has become particularly critical in the United States, where environmental law has become politicized to an unprecedented degree, creating legislative stalemate over almost all environmental issues. Congress has adopted few significant pieces of environmental legislation over the last 25 years. It has yet to adopt a comprehensive climate change statute, for example, forcing EPA to confront climate change under 45-year-old provisions in the Clean Air Act, which was adopted before human contributions to climate change were widely appreciated. One response has been to urge policymakers to rely on strategies that accommodate change by experimenting with different solutions, gathering information on the results, and making necessary adjustments. Adaptive management is a decision making technique that has been highly touted,<sup>78</sup> but that has also raised concerns about the resulting lack of agency accountability.<sup>79</sup>

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<sup>76</sup> See, eg, *Entergy Corp v Riverkeeper*, 556 US 208 (2009); *Whitman v Am Trucking Ass'ns, Inc*, 531 US 457 (2001); *Union Elec Co v EPA*, 427 US 246 (1976).

<sup>77</sup> Compare Livermore (2014); Revesz (2014) with Sinden (2004); McGarity (1998).

<sup>78</sup> Craig and Ruhl (2014).

<sup>79</sup> See Doremus and others (2011).



Another problem that contributes to the difficulty of nimble responses by government to emerging environmental problems is the laborious process of adopting agency regulations. Over the years, the time needed to complete a major rulemaking in the United States has increased significantly.<sup>80</sup> The phenomenon is so widely discussed that it has been given a name—regulatory ossification.<sup>81</sup> To some extent, these delays are intentional; some opponents of regulation have endorsed regulatory impact analysis requirements that impose burdensome analytical duties on agencies that are bound to reduce regulatory output.<sup>82</sup> But delay is also a by-product of the proliferation of requirements for agencies to provide opportunities for public participation. Some have urged reduced participatory requirements in some instances to facilitate quick agency decision making.<sup>83</sup> Debate over how to strike a balance between allowing public input without shackling agencies is likely to continue, particularly in light of recent evidence that the participatory process in some instances is dominated by well-heeled regulated entities.<sup>84</sup>

Finally, the role of the courts in the implementation of environmental law has been controversial since the inception of modern environmental law. From early on, judges debated whether they are competent to review the merits of environmental decisions steeped in scientific evidence, and, even if so, whether they would overstep the appropriate judicial role through review of the substantive merits of agency decisions on environmental matters.<sup>85</sup> That debate has never abated, and courts, scholars, and policymakers still disagree on the appropriate judicial role. In the United States, that debate is reflected, for example, in continuing turmoil over the extent to which courts should defer to agency interpretations of the statutes they administer,<sup>86</sup> an issue which the Supreme Court addressed recently when a divided Court extended that deference to agency jurisdictional determinations.<sup>87</sup> Similarly, some members of the Court have signalled their amenability to abandoning the traditional posture of deference to agency interpretations of

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<sup>80</sup> See Copeland (2013). But see Yackee and Yackee (2012).

<sup>81</sup> McGarity (1992); Pierce ((2012).

<sup>82</sup> Glicksman and Levy (2014) 402.

<sup>83</sup> See, eg, Craig and Ruhl (2014).

<sup>84</sup> See Wagner (2013).

<sup>85</sup> See, eg, *Ethyl Corp v EPA*, 541 F2d 1 (DC Cir 1976).

<sup>86</sup> See *Chevron USA Inc v Natural Res Def Council, Inc*, 467 US 837 (1984).

<sup>87</sup> *City of Arlington, Texas v Federal Communications Comm'n*, 133 S Ct 1863 (2013).

their own regulations.<sup>88</sup> Judges also differ on when litigants should be afforded access to the courts through the application of jurisdictional doctrines such as standing, based on disparate conceptions of the separation of powers and rule of law implications of allowing or not allowing such access.<sup>89</sup>

Governmental efforts to address the threats posed by climate change encapsulate the challenges posed to modern environmental law. The global impact of CO<sub>2</sub> and other greenhouse gas emissions on increasing surface and water temperatures, coupled with the site-specific nature of climate change effects, such as sea level rise or drought, pose difficult choices in allocating policymaking authority. Instrument choice has been controversial, as debates over the relative merits of a carbon tax or a cap-and-trade program illustrate. Debate over both the degree of the environmental threat (if any) posed by climate change and the nature and magnitude of the economic impact of addressing (or failing to address) it has been heated. The courts have played an essential role, at least in the United States, endorsing EPA's authority to regulate greenhouse gas emissions under the Clean Air Act and prompting it to take regulatory action.<sup>90</sup> At the same time, persistent judicial challenges to every significant regulatory action EPA has taken to address climate change have delayed the implementation of regulatory solutions and created pervasive uncertainty about the nature of future regulatory obligations for sectors such as the electric power industry, to the dismay of even some regulated entities. Climate change issues therefore present a microcosm of environmental law's most significant challenges, and the manner in which governments address them will significantly shape the future of government environmental decision making.

This brief discussion of the issues that nearly fifty years of environmental decision making by all arms of government have failed to resolve is not meant to be exhaustive. Nor is it meant to suggest that the same issues will arise in the same ways, if at all, in every country. The salience of some of the problems referred to here will turn on the nature and structure of government. Federalism questions, for example, necessarily will be confined to countries with a federalist system. Other issues, such as the appropriate mechanisms for public participation and

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<sup>88</sup> See, eg, *Perez v Mortgage Bankers Ass'n*, 135 S Ct 1199 (2015) (Scalia and Thomas JJ, concurring in the judgment).

<sup>89</sup> See *Lujan v Defenders of Wildlife*, 504 US 555 (1992).

<sup>90</sup> *Massachusetts v EPA*, 549 US 497 (2007).

the role of the courts in reviewing decisions with environmental implications, are likely to be common to most governmental systems. The function of this book is to provide an entrée into these kinds of issues, both generally and in the context of the environmental laws of particular nations.

#### <a>1.5 Chapter summaries

The chapters in this volume address all of the issues discussed in this introduction as well as other important aspects of government decision making concerning environmental law. The first group of chapters deals with the sources of authority to enact and implement environmental law and the goals of this body of law. Erin Daly and James May provide a chapter that addresses the increasingly important phenomenon of environmental constitutionalism, which recognizes that the environment is an appropriate subject for constitutional protection. The chapter explores the interrelationships between domestic and international environmental protection and surveys the various provisions found in national constitutions around the globe. International law and process is the focus of a chapter by Carl Bruch and John Broderick. The authors review the nature and role of different forms of international law and emphasize four emerging trends in international environmental law, including globalization, linkages of international environmental law to other fields, the rise of non-State actors, and greater implementation, compliance, and enforcement. Karen Morrow's chapter traces the history of common law nuisance claims in Great Britain to address environmental problems, highlighting its recent reinvigoration by the expansion of human rights law. Sandra Zellmer addresses the extent to which, and the issues that arise when legislatures enact legislation that preempts statutory or common law remedies for environmental harms by subordinate levels of government or that displace common law remedies provided by courts at the same level of government. She draws on examples from the United States, the British Commonwealth countries, Brazil, and Germany. Maria Lee also covers the intersection between the statutory and regulatory components of environmental law and tort law, focusing on the manner in which regulatory law contributes to the resolution of tort disputes. Mary Wood and Gordon Levitt explore the public trust doctrine, which they characterize as a fundamental precursor to modern environmental law. Their chapter assesses recent judicial expansions of the doctrine and its potential to protect planetary assets such as the atmosphere. Kirsten Engel's chapter considers the emergence of a dynamic model of federalism as it applies

to environmental law, identifying the tension between rationales for allocating authority among levels of government in a federalist system that strive for efficiency or for the benefits of overlapping authority. Guilherme Leal's chapter covers environmental federalism in Brazil. He assesses the importance of the 1988 Constitution in setting federalism ground rules, arguing that it initiated unprecedented engagement by states and municipalities, but that both legal and political obstacles remain to achieving a smoothly functioning system of environmental federalism. Local government decision making to protect the environment is the subject to Sean Nolon's chapter. The chapter identifies the important functions played by local governments in regulating land use and development and provides examples of effective local government approaches to environmental protection.

Another pair of chapters involves administrative procedures that apply to various aspects of environmental decision making. Jessica Makowiak covers opportunities for public participation in the European Union, primarily under the Aarhus Convention and implementing legislation. The chapter by Eric DeGroff investigates the triggers for international development of laws assuring public access to information, with a focus on the European Union.

Several chapters analyse the choices available to policymakers in identifying environmental protection goals and in choosing control strategies for pursuing them. John Dernbach's chapter explores the goals reflected in environmental laws, both domestic and international, which bear on not only environmental protection, but also social, economic, and national security matters. This chapter also analyses translating these broad objectives into specific goals based on targets and timetables can make environmental law more effective. William Buzbee explains the richly nuanced strategies reflected in US environmental laws, the reasons for choosing each of them, and the reliance in many statutes on an integrated mix of these strategies. Victor Flatt explores market-based (or economic incentive) strategies. He analyses the theoretical basis for relying on markets to achieve environmental goals and identifies when such strategies are most and least likely to be appropriate. David Driesen focuses on a particular form of market-based tools: emissions trading. He identifies the key choices governments face in designing trading programs at various decision points in seeking to achieve cost-effective pollution control while avoiding opportunities for evasion and manipulation—setting a cap, choosing between auctioning and administratively distributing allowances,

deciding whether to allow trading outside of a cap, and establishing monitoring requirements. A chapter by Bradley Karkkainen addresses information mandates as a form of environmental regulation, focusing on three types of stand-alone information production and disclosure requirements: environmental impact assessment, pollutant release registries, and duties to warn. Karkkainen provides prominent examples of each technique from both domestic and international law contexts and assesses the performance of each. Dave Owen addresses the role of planning in environmental law, its appeal to policymakers, academic criticism of environmental law's reliance on planning, and the impact of adaptive management and technological advances on the value of planning. The chapter by Cary Coglianese and Jennifer Nash provides an empirical assessment of the value of voluntary programs that seek to motivate private firms' environmental protection efforts through positive incentives such as public recognition and limited regulatory relief. The authors conclude that the most effective voluntary programs depend on a robust backdrop of community pressure and regulatory threat. The chapter by Sarah Light and Michael Vandenberg covers the emergence of private environmental governance as an important aspect of environmental law, highlighting how programs such as government-hybrid initiatives and privatization of traditionally public services have both complemented and competed with positive, public law. Amy Sinden tackles the controversy surrounding the use of cost-benefit analysis, distinguishing between cost-benefit analysis and other analytical techniques and among different forms of cost-benefit analysis. She evaluates the theoretical and practical challenges posed by the use of cost-benefit analysis as an analytical technique.

A couple of chapters are devoted to environmental review. Daniel Mandelker explores the main issues arising under the National Environmental Policy Act, the US environmental impact assessment law on which similar laws across the globe have been modelled. Jessica Wentz's chapter discusses how climate change is considered in environmental assessment. She highlights emerging trends, addressing assessment of both a project's contribution to climate change and of how climate change may impact a project or exacerbate environmental risks.

Public engagement issues are addressed in another group of chapters. William Murray Tabb analyses the growing trend in both national and international environmental law to foster public engagement at all stages of the decision making process. He traces this trend to pluralistic

views derived from notions of democratic participation, self-determination, and human rights, but argues that to date, no unified understanding of precise procedural mechanisms best suited to fostering public engagement has surfaced. LeRoy Paddock assesses the role of equity by addressing how environmental justice concerns have been integrated into environmental decision making by governments. The chapter explains how the concept of environmental justice has become a global issue relating to human rights protection. Geert Van Hoorick addresses the role of permitting in environmental law, with a focus on the laws of the European Union. He discusses permitting's potential to improve environmental decision making, particularly for large scale projects. William Andreen's chapter dissects the allocation of authority among different levels of government to administer permit programs. He compares and contrasts federal systems in Australia, Germany, and the United States that rely on permitting regimes that run the gamut from traditional to dynamic, largely using water pollution permitting as an example of the benefits of overlapping authority.

The final group of chapters engages the topics of access to justice and final decision making. The chapter by Randolph Hill, Michelle Wenisch, and Suzanne Krolikowski surveys the process of administrative review, such as internal appeals of agency decisions. The authors rely on examples from the United States and China to illustrate the role of administrative review in vindicating notions of justice and due process. Bradford Mank's chapter investigates the use of justiciability doctrines such as standing, finality, and ripeness to control access to the courts in the United States on environmental matters. He identifies ambiguities in existing doctrine and the potential for judicial manipulation of these critical doctrines that govern access to judicial remedies. Heather Elliott takes on the approaches different countries have adopted to judicial review of regulatory agencies' interpretations of the statutes they administer, exploring the justifications for and against judicial deference as well as the unpredictability that different review frameworks may create. Emily Hammond's chapter investigates judicial review of environmental decision making, focusing on the nature of science and its use by environmental regulatory agencies. She explores the limits of the concept of judicial deference to agency technical expertise and conceptualizes a continuum of deference doctrines, assesses criticisms of each approach, and recommends a moderate approach. Karl Coplan devotes his chapter to citizen enforcement, focusing on the citizen suit mechanism pioneered in the United States and on alternative approaches such as direct citizen prosecution of criminal violations in Canada, and

citizen enforcement opportunities in China and the European Union. The chapter by Nicholas Bryner is devoted to discussion of the role of public intervenors and public funding in environmental decision making. Building from the Rio Declaration's endorsement of public participation and effective access to justice, Bryner uses Brazil's Ministério Público as an example of an effective public intervenor mechanism and explores public funding models from Canada and the United States. Izchak Kornfeld addresses the emergence of international courts as a forum for the resolution of environmental disputes, using the International Court of Justice and the International Tribunal for the Law of the Sea as examples, and endorses the use of ad hoc arbitration as an international dispute resolution forum. The book closes with a chapter by George Pring and Catherine Pring on specialty environmental courts and tribunals, evaluating the arguments for and against such tribunals, the reasons for their emergence, how they differ from general courts, and the potential advantages they may provide.

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