CHAPTER 1

Environmental Law and Its Evolution in Canada

LEARNING OBJECTIVES

After reading this chapter, students will be able to:

- Discuss environmental law and how it can be used to protect and improve the environment.
- Evaluate the scope and importance of environmental regulatory and assessment laws.
- Describe the ideas underlying modern environmental law.
- Compare general application and sectoral laws and how they relate to environmental law.
- Discuss the four evolutionary phases in the development of Canadian environmental law and the implications of these phases.
- Describe the four trends that have affected the core concerns, design, application, and effects of environmental laws in different jurisdictions in Canada.
- Discuss sustainability, complexity, and transformation.

CHAPTER OUTLINE

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I. Introduction: What Is Environmental Law?

Environmental law is the body of statutes and **common law** that is and will continue to be used to protect and improve environmental conditions. Some of it deals with pollution control, waste management, endangered species preservation, and other issues that clearly involve the natural environment. The term *environment* is often defined broadly to cover land, water, air, and living organisms, including humans and their built environment, and the interaction of these elements. The scope of this definition is sensible because many aspects of the biophysical environment and the human social and economic environment are deeply intertwined.

environmental law the body of legislated statute and common law that can be used to protect and improve environmental conditions

common law a system of law based on the English legal tradition, which relies on precedent rather than on codified rules; may also refer to (1) decisions by courts exercising their "common law" jurisdiction as opposed to their "equitable" jurisdiction based on broad principles of fairness, or (2) case law generally as opposed to legislation

CASE STUDY

Who Is Responsible for Environmental Law in Canada? R v Hydro-Québec, [1997] 3 SCR 213

In the 1980s and 1990s, the courts were increasingly called on to determine whether the federal or provincial government has **jurisdiction** to address particular environmental issues. One case example is *R v Hydro-Québec*. In 1990, Hydro-Québec was charged with dumping polychlorinated biphenyl (PCB) contrary to an Interim Order under the *Canadian Environmental Protection Act* (CEPA, 1985).[1] Hydro-Québec challenged the authority of the federal government to charge it with an offence under CEPA on the grounds that the toxic substance provisions of the legislation fell outside federal powers. A majority of the Supreme Court of Canada ultimately held that the provisions were within the jurisdiction of the federal government under its criminal law power. As part of its decision, the court made the following statement about the importance of the environment and the need to address environmental concerns:

> LA FOREST J: This Court has in recent years been increasingly called upon to consider the interplay between federal and provincial legislative powers as they relate to environmental protection. Whether viewed positively as strategies for maintaining a clean environment, or negatively as measures to combat the evils of pollution, there can be no doubt that these measures relate to a public purpose of superordinate importance, and one in which all levels of government and numerous organs of the international community have become increasingly engaged.[2]

Questions

Canada's Constitution does not refer specifically to environmental jurisdiction. How can the matter of environmental jurisdiction be addressed? What are the appropriate roles of each level of government?

Although a number of environmental laws exist, many laws of more general application can be used to advance environmental objectives. Examples include the body of common law (focused on property) and **tort** law (centred on private legal actions concerning harm to person or property). Both may be used to prevent environmental harm or compensate those harmed.

Some environmental laws focus on the prevention of damage. Others are intended to require, or at least to facilitate and encourage, the rehabilitation of degraded environments or the correction of environmentally damaging or dangerous behaviour. All of these laws have a positive environmental agenda. They aim to make things better or, at least, less bad. In this respect, environmental law is unlike the neutral rules of, for example, contract law, which is used to resolve disputes involving individuals or corporations. Environmental law is highly and openly value laden.

Most of this positive agenda centres on human purposes, including immediate economic interests as well as long-term health and well-being and the democratic benefits of participation in decisions that affect our lives. At least to some degree, environmental law also seeks to benefit the environment itself and the biophysical and ecological systems that sustain it. But this agenda too serves human interests ultimately, since we are permanently dependent on our environment for the basic prerequisites of survival and for the foundations of most of what enriches our lives.

Another way to understand environmental law is this: environmental law is the process whereby the common resources of society—the air we breathe, the water we drink, the minerals in the ground, the trees, and the lakes—are allocated to, and protected from degradation by, the public and private interests that use those resources to provide goods and services for the public

jurisdiction the power to legislate or make a decision

tort civil wrong other than a breach of contract, for which damages may be sought to compensate for any harm or injury sustained

at large. Hence, conditional licences are granted to extract aggregate from the ground for highway construction; limited permits to take water are granted to industry for bottling water; and controlled discharge approvals are granted to steel-making facilities to emit pollutants into the air. Environmental law addresses whether such allocations should be made, how much is appropriate, and who should participate in such decisions. Where it is well designed, environmental law also respects the interests of future generations.

BOX 1.1 Environmental Protection: "One of the Major Challenges of Our Time"

In the Supreme Court's 1992 decision in *Friends of the Oldman River Society v Canada (Minister of Transport)*, La Forest J stated:

> The protection of the environment has become one of the major challenges of our time. To respond to this challenge, governments and international organizations have been engaged in the creation of a wide variety of legislative schemes and administrative structures. In Canada, both the federal and provincial governments have established Departments of the Environment, which have been in place for about twenty years. More recently, however, it was realized that a department of the environment was one among many other departments, many of which pursued policies that came into conflict with its goals. Accordingly at the federal level steps were taken to give a central role to that department, and to expand the role of other government departments and agencies so as to ensure that they took account of environmental concerns in taking decisions that could have an environmental impact.[3]

Environmental law aims to protect and restore or improve the environment. It does not do so simply because some legislator or court had an idea. Rather, it reflects the values of many Canadians. Opinion polls have confirmed again and again that Canadians value their environment and support action to protect it. Environmental law supports these fundamental values.

II. The Scope of Environmental Law

Many laws affect efforts to protect or improve the environment. Some of them do so directly, for example, by requiring pollution abatement. Others address environmental matters indirectly or as part of a related agenda, such as protecting health or property. As a result, the boundaries of environmental law are inexact.

The core of environmental law clearly includes **environmental regulatory law**, which governs discharges of harmful substances into the air and water and onto land. **Environmental assessment law**, which requires the study of and attention to environmental considerations in the planning and approval of new undertakings, is also at the core of environmental law. So too is legislation that confers environmental rights on citizens—especially rights to receive environmental information, to participate in environmental regulatory decisions, and to demand that legally required standards be applied. Laws that protect endangered species and natural areas, and the environmental provisions in laws concerning agriculture, forestry, energy, fisheries, and

environmental regulatory law law governing the discharge of harmful substances into the air and water and onto land

environmental assessment law law requiring careful attention to environmental considerations in the planning and approval of new undertakings

other major sectors of the economy, are also important components of environmental law. Finally, many international laws, conventions, and treaties are focused on environmental concerns such as persistent organic pollutants, substances that deplete the ozone layer, transboundary movement of hazardous wastes, and greenhouse gases. All of these subjects are discussed in later chapters.

Beyond this core, environmental law could include many other areas:

- wildlife management and national and provincial park legislation;
- community and regional planning law that regulates the built environment and its infrastructure;
- laws that establish and regulate health and related social programs;
- tax and economic benefit laws that affect environmental protection activities;
- common law elements of property and tort law that can limit property or natural resource developments;
- laws concerning Indigenous rights and interests, which necessarily involve environmental matters; and
- laws concerning sustainability that link environmental goals with long-term socio-economic well-being, and related matters.

In all of these areas, the law can be used or adapted for the protection and enhancement of the environment. Moreover, the environment underlies and supports everything. It is fundamental to the viability of all the social and economic structures that serve human lives and livelihoods. Recognizing that environmental law overlaps with other legal fields, we have included in this text sections on environmental laws in a variety of important sectors, as well as sections on common law tort, property rights, Aboriginal law and the rights of Indigenous peoples,[4] environmental offences, constitutional law, and the arcane administrative law concerning judicial review of environmental regulatory decisions.

A broad range of legal tools is also important. In the practice of environmental law, we may look first to the core environmental rights and regulations or to specific environmental provisions in other laws. But we should remember that sometimes the environment can be protected most effectively by a court ruling that a threatening proposal is unconstitutional, or that granting approval for an undesirable project is outside the legal powers of a government board or official, or that the relevant decisions were made in a procedurally unfair way.

III. Ideas Underlying Modern Environmental Law

Formal environmental law can be traced back centuries, if not millennia, and customary rules about human–environment relations likely go back to our earliest ancestors. Most of what we now call environmental law, however, was introduced within the last few decades. It reflects rising environmental concerns and increased environmental understanding and has also been influenced by ideas about public welfare, citizen participation, philosophy, and ethics that have occupied recent debate on important public issues.

Public Welfare and Citizen Participation

Modern environmental laws are as much about how we govern ourselves as about how we treat the environment. Many of the environmental laws in place today in Canada and other developed countries originated in a burst of environmental law-making in the late 1960s and early 1970s. These new laws focused on preventing as well as reducing pollution and signified three new understandings: that environmental damage was a serious problem, that easy technical fixes were not always available, and that prevention is often wiser and cheaper than repair. The new

laws responded to a wave of public concern about environmental abuses. Concerned citizens, often led by public interest advocates and assisted by media attention, drove the process.

This pattern has continued throughout the evolution of environmental law in Canada. Few innovations in environmental legislation and few major advances before the courts have been the product of government zeal. Virtually all progressive steps in environmental law have required public initiative, public ingenuity, and persistent public pressure.

Not surprisingly, then, Canadian environmental law rests as much on ideas about democracy as on understandings about how to deal with the environment. Two linked aspects of democracy have been particularly important. These are the public welfare role of governments and the importance of citizen participation in policy deliberations. The public welfare idea is that governments in democracies have a responsibility to defend and advance public well-being. Long-recognized priority areas for government action for public welfare include national security, public safety, education, and transportation. Environmental protection became an important item on the list more recently, largely because of public concern and pressure.

Getting governments to act on environmental concerns has been only part of the story, however. The development of environmental law in Canada also reflects an unwillingness to trust government officials to do what is necessary. From the late 1960s to the present, Canadian campaigns for stronger environmental laws have consistently included demands for participative rights—that is, legal requirements for the interested and concerned public to be notified about important findings and initiatives, to have timely and convenient access to information, to have opportunities for effective involvement in deliberations well before irrevocable decisions are made, and to be able to enforce environmental laws when governments fail to act. Environmental lawyers acting in the public interest have often used common law principles, along with available statutory provisions, to assert the legal rights of citizens to participate in environmental regulatory decisions and to stop or delay proposed projects likely to harm the environment. Increasingly, they have sought similar opportunities in the development of broader strategic undertakings, including environmentally significant policies, plans, and programs. They have also pushed, often successfully, for environmental bills of rights centred on opportunities for effective participation.

Efforts to strengthen environmental protection through regulatory laws—by raising standards, extending the reach of government requirements, and expanding the narrow array of public environmental rights—continue today. But these approaches are recognized as having limits and may never be sufficient by themselves. As a result, the public welfare and citizen rights foundations of environmental law are now increasingly being supplemented by efforts to mobilize other players and motivators, including direct communication with policy-makers and legislators, petitions, the strategic use of social media, and greater use of law-based economic instruments to drive shifts to greener practices.[5]

Philosophy and Ethics

The second set of big ideas underlying modern environmental law centres on philosophy and ethics. As we noted previously, environmental law has a positive agenda to improve lasting well-being. That is not to say that environmental lawmakers and practitioners always agree on what is required for well-being, or what the priority objectives should be, or even who and what should be included as the intended beneficiaries. But there are some common themes.

Most environmental laws emerged from concerns about threats to human health or other material interests. The initial assumption was that any problems serious enough to merit legal attention could be dealt with satisfactorily, one by one, usually through some technological repair. The role of the law was to force attention to problems and to require application of economically viable technological solutions.

But the real world turned out to be inconveniently complex. The technical fixes did not always work, or they had unsavoury side effects, or they were far too expensive, or the needs for fixes came too thick and fast to be manageable. Years of experience gradually taught that prevention was preferable to repair, that considering overall effects was better than dealing with problems one by one, and that we should adopt **precautionary approaches** because we will never know enough to be able to predict, much less fix, all of the problems we might cause.

The real world also turned out to pose problems that are much bigger than we initially imagined and well beyond the reach of nations and provinces. To deal with greenhouse gas emissions that contribute to global climate change and a host of other transboundary pollution, resource depletion, and ecological damage problems, we have also needed to develop better means of designing and applying international controls.

The biggest issues for environmental law are now global as well as local. While development through economic growth and technological innovation has brought huge gains in many fields, it has also been undermining the world's ecological foundations and leaving a dangerous gulf between rich and poor. In 1987, the World Commission on Environment and Development, convened by the United Nations and chaired by then Norwegian Prime Minister Gro Harlem Brundtland, officially declared that our current path was not viable in the long run and that a substantial shift to **sustainable development** was necessary.[6]

These sustainability and complexity concerns have major implications for environmental law and we will return to them at the end of the chapter. For now, the key point is that environmental laws today are beginning to reflect a new understanding of the world and our place in it. That understanding is as follows:

- We are permanently dependent on a natural environment made of highly complex and interrelated systems at every level, from global climate chemistry to soil bacteria.
- We will never control nature in any complete and fully competent way.
- We must find better ways to live in and with the rest of nature by establishing carefully integrated socio-ecological systems that are farsighted, fair, and adaptable enough to serve present needs without sacrificing the prospects of future generations.

We are just beginning to understand our permanent dependence on highly complex and imperfectly knowable natural systems and the implications are much debated. There is (and perhaps should be) a great diversity of views about how best to express, order, and apply the main principles in corrective action, including correction through environmental law. Some views focus on economic tools, while others stress links between social justice and ecological protection or between women and nature. Yet others advocate a less or non-anthropocentric (human-centred) approach that recognizes the intrinsic value of nature and assigns legal rights of some sort to the environment. Emerging versions of sustainability ethics attempt to pull all of these together in an integrated package.

As we will see in the chapters that follow, little of this new perspective is entirely unprecedented. Many old laws include components that anticipate the new understanding. The objectives of many environmental statutes extend beyond benefits for humans and recognize interactions

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precautionary approaches an approach to evaluations and decision making that recognizes uncertainty and favours steps to anticipate and avoid or mitigate risks that are potentially significant but not fully delineated

sustainable development "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987); it involves improving the quality of human life and enhancing equity in the distribution of well-being while living within the carrying capacity of the planet's biophysical systems over the long term

between human beings and natural systems.[7] Humans are sometimes included as merely one category of "living organism."

Many long-standing proposals for the law also anticipate recent ideas. For example, in 1948, Aldo Leopold proposed a "land ethic" that would extend ethical or moral considerations to reflect the interconnections of ecosystems so that soil, plants, and animals, along with humans, would merit moral consideration as important parts of the land on which all live.[8] In a 1972 law journal article,[9] Christopher Stone argued in favour of giving trees **standing** (capacity) to sue, with the help of human "next friends" (substitute litigants), to protect themselves and their habitat. And in 1973, Laurence Tribe published a paper entitled "Ways Not to Think About Plastic Trees,"[10] in which he proposed moving beyond transcendence (human domination over natural objects) to immanence (respect for natural objects and systems).

Proposals for sustainability ethics also predate the Brundtland Commission's introduction of "sustainable development" to everyday vocabulary. Indeed, the idea that we should integrate moral commitment to environmental protection with advocacy for basic livelihood security, race and gender equality, participative political rights, and other aspects of human justice has a long and distinguished pedigree. Implementation, however, remains slow. Because the sustainability agenda challenges well-entrenched practices, the difficulties are not surprising.

The relationship between environmental law and the world of concerns about human–nature relations will no doubt continue to evolve. Law is one field, among many, in which the big ideas of the day are introduced, tested in practice, and adjusted or supplanted by new ideas, ideally better ones that have been built on the lessons learned from past failures as well as past successes.

IV. The Role and Place of Environmental Law

Law carries the weight of societal consent and authority. It is composed of the rules and prohibitions that society prescribes through its recognized law-making institutions: the legislatures and the courts. It is not just a set of guidelines, suggestions, or practices that we can choose to follow or not. It lays down requirements that can be enforced through regulatory agencies or the courts.

It is important to keep this mandatory feature of environmental law in mind because so much human activity, including building structures and extracting natural resources, seems to happen under policies, guidelines, codes of practice, and simple convention ("the way we do this"). But policies, guidelines, codes, and customary practices are only convenient recipes for complying with the basic expectations that underlie or are embedded in environmental (and other) legal requirements. They are not themselves legally enforceable unless they are incorporated in law.

While practitioners of environmental assessment have developed extensive guides and handbooks for doing assessment work, environmental assessment law, and the regulations and formal decisions made under the law, set the legally enforceable requirements concerning such matters as which proposed undertakings must be assessed, what the scope of an assessment must be, what factors and options must be considered, how public involvement must be facilitated, what standards must be met, and what follow-up and monitoring must be carried out.

Environmental law is not just about prohibitions and penalties. Many environmental laws are principally devoted to providing legal frameworks for processes that may involve information dissemination, review and research, consultation, planning, actual environmental protection, and remediation actions. Environmental assessment and land use planning laws, for example, centre on establishing structured approaches to decision-making that consider specified factors and provide opportunities for participation by interested and affected parties.[11]

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standing the capacity to sue

We can put environmental laws into two main categories: environmental **laws of general application** and **sectoral laws** (laws dealing with a resource sector such as water or forests, or an industrial sector such as fisheries or waste management).

Laws of General Application and Sectoral Laws

Environmental laws of general application are typically devoted to conventional environmental issues such as pollution control and natural resource protection, and they apply to everyone and all activities. Laws focused on the activities of particular industrial sectors may be less obviously environmental but can be just as important. They include the many broadly environmental laws that deal with the allocation and use of natural resources (such as land, water, forests, agriculture, and fisheries) and have significant effects on environmental systems.[12]

BOX 1.2 Acts Administered by Environment and Climate Change Canada

Environment and Climate Change Canada (ECCC) administers a number of Acts of Parliament, either in whole or in part, and is responsible for meeting several obligations in these acts.

Environmental Protection

- *Department of the Environment Act*
- *International Rivers Improvement Act* (IRIA)
- *Canada Water Act*
- *The Lake of the Woods Control Board Act, 1921*
- *Weather Modification Information Act*

Pollution Prevention

- *Canadian Environmental Protection Act, 1999* (CEPA 1999)
- *Fisheries Act*
- *Antarctic Environmental Protection Act* (AEPA)
- *Arctic Waters Pollution Prevention Act*

Biodiversity and Conservation

- *Species at Risk Act* (SARA)
- *Migratory Birds Convention Act, 1994* (MBCA)
- *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPRIITA)
- *Canada Wildlife Act*

Sustainable Development

- *Federal Sustainable Development Act* (FSDA)
- *Canada Foundation for Sustainable Development Technology Act*

Other Significant Acts

- *Impact Assessment Act*[13]
- *Environmental Enforcement Act* (EEA)
- *Canadian Environment Week Act*
- *National Wildlife Week Act*
- *Environmental Violations Administrative Monetary Penalties Act*

Source: ECCC, "Acts administered by Environment and Climate Change Canada," accessed April 20, 2019, <https://www.canada.ca/en/environment-climate-change/corporate/transparency/acts-regulations/acts-administered.html>.

laws of general application laws that apply to everyone and to all activities

sectoral laws laws dealing with a resource sector such as water or forests, or an industrial sector such as fisheries or waste management

Sectoral laws (such as those governing mining, fisheries, oil and gas extraction, and nuclear power) may cover a wide range of considerations but include important provisions addressing environmental concerns—for example, concerns about air or water contamination, wildlife habitat damage, human health threats, and maintenance of resources for future generations. For an overview of a variety of sectoral laws, see Chapter 6.

Laws governing activities in particular industrial sectors sometimes appear to overlap or conflict with environmental laws of general application. For example, major energy projects are subject to federal environmental assessment requirements and licensing under federal energy sector law. Typically, they also face requirements imposed by provincial, territorial, and/or Indigenous authorities. To deal with some of these situations, the laws may provide for harmonization through joint or substitute procedures. An example is the joint board procedure under Ontario's environmental, water, and municipal planning legislation that allows for a single hearing on matters involving two or more different laws.[14] If conflict emerges, disputes may be resolved by negotiation or, if necessary, by the courts, which apply general principles of statutory interpretation to decide which law prevails. In such cases, the courts carefully assess the language of each law and the objectives that can be understood by reading each law as a whole. Courts ask themselves whether the legislature intended that the general environmental law—that is, the "law of general application"—should apply, or whether the special sectoral law should apply as an exception to the general requirements.

Both environmental laws of general application and special sectoral laws set out enforceable requirements. These requirements can take various forms, of which the most important are the statutory provisions and regulations discussed in Chapter 6. They can also be supplemented by influential guidance documents issued by regulators, covering such matters as desirable and best practices, standard administrative procedures, testing protocols, and enforcement priorities.

Finally, many other powerful laws and law-related influences that do not qualify as environmental law can have significant effects on environmental concerns, including the following:

- liability rules, tax laws, spending powers, and other financial tools that provide the basis for imposing and adjusting incentives for better environmental practices and disincentives for undesirable behaviour;
- general laws ensuring public access to information and other opportunities for effective scrutiny of and participation in important decisions, including environmentally significant ones; and
- the broad law-making power itself, which gives governments the ability to use the plausible threat of new legal obligations to encourage "voluntary" efforts to improve environmental performance.

While we tend to think of particular environmental laws and even categories of environmental laws as individually important, the key consideration is how well the whole suite of laws and related instruments works as an overall regime.

V. Four Evolutionary Phases in Canadian Environmental Law

The development of Canadian environmental law fits into four evolutionary phases that address a rough succession of increasingly difficult subjects.[15] Although the phases are reasonably easy to discern in the overall history of federal and provincial environmental law, they did not evolve in a tidy sequential arrangement or at the same time everywhere.

Phase 1: Common Law Rights and Early Statutes

The 1960s were characterized not just by the Beatles, bell-bottoms, and rebellions against authority. They are also remembered as the decade when legislators began to give serious attention to the environment. Still, a contemporary environmental lawyer transported back to the 1960s

would quickly discover that almost her entire kit of environmental law tools was missing. She would find no regulatory statutes with contaminant discharge limits, no approvals based on these limits, and no civil and criminal penalties for failure to comply.

A bit of legal research (in an old-fashioned library) would show our environmental lawyer the tools available to her. The federal *Fisheries Act* would be there, as it has been since the 1860s, but it would be limited to blanket prohibitions against the discharge of "deleterious substances" in "waters frequented by fish."[16] She would also find public health statutes, a public nuisance offence in the *Criminal Code*, and a scattering of anti-pollution provisions in natural resource development statutes. Courts would not recognize the right of citizens to challenge government statutory decisions (or non-decisions) that resulted in environmental harm, unless the citizens could show direct harm to their persons or property.

The main tools available to an environmentally conscious lawyer in the 1960s were the **causes of action** under the tort and property law components of the common law (or the **civil law** in Quebec). The most promising of these would likely involve lawsuits in **nuisance** and **negligence**. While effective in some circumstances, nuisance and negligence lawsuits were designed to resolve disputes between private parties and compensate persons harmed. As legal tools, they fall well short of providing comprehensive and systematic environmental protection. Private civil actions against polluters that were also important employers and revenue producers, such as natural resource development operations or industrial plants, often ran squarely into unsympathetic judges. But as the 1960s progressed, citizen awareness of environmental problems increased and prompted demands for more effective ways of combatting them.

This is not to say that civil actions are less important today. In addition, in attempting to recover damages or to halt some action that is harmful or may harm the environment, many "test" cases exist where lawsuits are brought in hope of a decision that breaks new ground in terms of introducing or reinterpreting a principle or interpreting a statute. Sometimes, even if a particular legal action is unsuccessful, it may lay the foundation for a more protective legal regime in the future.

Phase 2: Waste Control and Cleanup Laws

In the late 1960s, citizens and governments awakened to the recognition that concerted and comprehensive environmental protection action was needed. Basic air, water, and land pollution statutes were enacted by the provinces in the late 1960s and 1970s. The federal government broadened its *Fisheries Act*. The objective of these changes was the control of harmful substances that were being deposited on land or discharged into air and water.[17]

Governments established regulatory systems to identify waste sources and require permits to control the quantity and quality of substances discharged. The terms and conditions of permits were often the result of closed negotiations between the industrial applicants and the regulators. Failure to comply with these requirements was an offence punishable on summary conviction (a minor offence) and resulted in modest fines for those found guilty.

The discharge of waste that was likely to harm the environment or human life or health was often established as a general offence. In this context, the *environment* was generally defined as

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causes of action legal grounds for a civil lawsuit

civil law in Quebec, a system based on the Custom of Paris and later codified using French civil law and Code Napoléon, which applies to private disputes between citizens; the term can also be used to refer to the law between citizens, even in a common law jurisdiction (as opposed to public law, or the law between state and citizens)

nuisance tort in which the defendant interferes with the use and enjoyment of the plaintiff's property

negligence failure to act reasonably, with the result being harm to someone else

air, water, and land upon which human life depends. Governments only gradually issued regulations specifying requirements for control of particular contaminants.

The new statutes were **cleanup laws**, designed to regulate the discharge of human and industrial waste into the environment. Among them were comprehensive statutes dealing with air, water, and land pollution. Examples of these statutes include the Ontario *Environmental Protection Act*, the Quebec *Environment Quality Act*, and the BC *Pollution Control Act*.[18] There were also single-element statutes, such as Alberta's *Clean Water Act*, *Clean Air Act*, and *Land Surface Conservation and Reclamation Act* (these acts were consolidated in the 1990s into the *Environmental Protection and Enhancement Act*).

The underlying assumption was that the natural environment could be used to dispose of, dilute, and cleanse the waste produced by human activity, as long as sufficiently careful management prevented too much contamination at any one time and place.[19] Legislation was a matter of fairly allocating nature's **assimilative capacity.** Although these laws have changed significantly, this waste control function still remains at their core.

Waste control laws were administered by environmental departments that were largely technical agencies, staffed by scientific and engineering experts who administered the permit or approval schemes. Typically, these departments developed guidelines, rather than enforceable regulations, for "safe" waste discharge. Initially, much effort was required simply to bring all waste sources under permit. Some jurisdictions issued licences or control orders with enforceable conditions, but non-compliance rarely led to prosecution.

Phase 3: Toxics Control Laws

Toxic chemicals and other substances pose particularly difficult pollution and health threats that demand special attention in environmental law.

Emerging evidence in the 1970s and 1980s indicated that waste control laws aimed at allocating **assimilative capacity** did not address the accumulation in the environment of persistent toxic substances. This realization led to new legislative action. As revealed in the case study at the beginning of this chapter, both federal and provincial governments have authority to regulate toxic substances.

The most comprehensive **toxics control laws** in Canada are the 1975 federal *Environmental Contaminants Act* and its successor, the *Canadian Environmental Protection Act* (CEPA).[20] CEPA is the primary vehicle for regulating both existing and new substances in Canada. It provides a number of processes for assessing substances with respect to their risks to environmental or human health, and imposes information requirements on manufacturers and importers introducing new chemicals to Canada. Prior to the enactment of CEPA, over 23,000 substances that were made, imported, or used in Canada on a commercial basis had not undergone a full risk assessment.

The re-enactment of CEPA in 1999 sought to expedite the assessment process by requiring Health Canada and Environment Canada to categorize or identify certain substances that pose a significant risk[21] because they

- are inherently toxic (cause toxic effects) and persistent (take a long time to break down);
- are bioaccumulative (collect in living organisms and move up the food chain); or
- have the greatest potential for exposure to individuals.

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cleanup laws laws designed to minimize discharge of human and industrial waste into the environment

assimilative capacity the ability of air, water, or soil to receive contaminants and cleanse itself without deleterious effects

waste control laws laws designed to control discharge of waste using permits and approvals

toxics control laws laws designed to control the manufacture, use, sale, transport, storage, and disposal of toxic substances

CEPA established substance inventories or lists to distinguish new from existing substances, assign reporting requirements for new substances, and "priority substances" (that must undergo a rigorous assessment of their risks to the environment and human health) and "toxic substances" (such as dioxins and mercury, that are subject to regulatory controls).[22]

A number of other federal statutes and their provincial equivalents deal with potentially harmful substances. The federal statutes include the *Pest Control Products Act* (PCPA), the *Transportation of Dangerous Goods Act*, and the *Hazardous Products Act*. The PCPA regulates products used to control injurious or noxious plants or animals, including insects (see Chapter 6), and the *Transportation of Dangerous Goods Act* imposes restrictions and safeguards on the transportation of materials and goods that could be dangerous to the public in the event of an accident. The *Hazardous Products Act* regulates products that may contain toxic or dangerous substances.

The *Canada Consumer Product Safety Act*, passed in 2010, replaced and updated substantial portions of the *Hazardous Products Act,* especially to respond to growing fears of toxic contamination of consumer products, such as children's toys. This legislation gives the government testing powers plus the authority to issue mandatory recall orders for unsafe consumer products and to require manufacturers, sellers, and importers to take corrective measures.

Provincial statutes and regulations govern the disposal of toxic wastes and have been tightened with the addition of requirements for reporting and cleaning up toxic substance spills. Liability for spills and contaminated sites now rests with landowners and former landowners, and even manufacturers, sellers, and users of toxic substances.[23]

Toxics control laws recognize that environmental protection is a long-term process that must address potential intergenerational effects of environmental damage. Because scientific knowledge about the toxicity of particular substances is continually developing, these laws include protocols and processes for identification and effective control of contaminants. The approach is preventive and anticipatory, not merely reactive.

These statutes also recognize that toxic substances respect neither ecosystem nor political boundaries. Consequently, the laws are outward looking in their development, implementation, and administration. The federal statutes took into account toxics research and international standards. Both federal and provincial laws began to reflect interprovincial and federal–provincial undertakings and commitments more clearly than before. They were also made more consistent with international conditions and Canada's international obligations. For example, in the 1980s, Ontario made it clear that it wanted its water quality program to reflect the zero-discharge objectives for control of persistent toxics under the 1978 Great Lakes Water Quality Agreement between Canada and the United States.[24]

Phase 4: Comprehensive Approaches to Environmental Assessment and Planning and Management Regimes

During the early period when new waste control and cleanup laws were being introduced, many governments in Canada and elsewhere began to consider more anticipatory and preventive approaches to pollution and other environmental problems. Chief among the anticipatory and preventive tools were **environmental assessment** requirements and **planning and management**

environmental assessment the identification and evaluation of actual or potential effects (positive and adverse) of an undertaking (projects, plans, programs and policies) on the environment (potentially including social, economic, and cultural as well as biophysical aspects and their interactions), often also involving critical review of purposes, comparative evaluation of alternatives, and follow-up examination of effects

planning and management regimes legislative schemes that govern a sector, such as forests, fisheries, farmlands, and watersheds, with the purpose of maximizing the long-term benefits obtainable from the resource while minimizing the detrimental effects of its exploitation

regimes. Environmental assessment requirements forced proponents of environmentally significant new projects, such as hydropower stations, airports, mines, roads, and landfills, to predict and evaluate the potential effects of these proposed undertakings. Sometimes comparison with reasonable alternatives was required before approvals were granted.

Environmental assessment requirements were imposed hesitantly in most jurisdictions. The federal government relied on a more or less discretionary policy-based assessment process for two decades before it finally passed legislated requirements.[25] Ontario, which applied a strong assessment law to public sector undertakings beginning in 1975, left the private sector largely free of obligations. But eventually, the federal government, every province and territory, many land claim agreement areas, and a substantial number of municipalities had law-based environmental assessment processes.

Although some Canadian assessment processes remain limited in application and ambition, most now go beyond mere evaluation of direct project effects to consider at least some of the following matters:

- cumulative effects (of the project plus other existing and expected activities);
- combinations of ecological, socio-economic, and cultural effects;
- implications of uncertainties; and
- effects of strategic undertakings (plans, programs, and policies).

Legislated planning and management regimes have a longer history than environmental assessment. Some law-based processes for decision-making concerning the management of fisheries, forestry operations, protected areas, and other Crown land uses, for example, go back 100 years or more. But most have been strengthened considerably in recent years in response to a variety of concerns, including the following:

- rising pressures on limited resources, such as old-growth forests;
- conflicts among competing uses, such as those that arise between sprawling suburbs and maintenance of crucial ecological services; and
- evidence of serious management failures, such as that revealed by the destruction of the Northwest Atlantic cod fishery.

Today many and various legislated planning and management regimes exist. They deal with many types of resources—including forests, fisheries, endangered species, farmlands, and watersheds—and many sectors—including electric power, solid waste, urban growth, and transportation. Not surprisingly, even within the same resource or sector, different provinces have adopted different requirements and procedures. This is evident in the field of forest management, for example.

Despite jurisdictional variations, the general trend is toward more comprehensive approaches that recognize numerous influences and complex implications, consider more response options, give greater respect to uncertainty, and include a wider range of interests. Resource management law often now extends beyond particular resources or environments to recognize many objectives and activities. Similarly, regional growth management laws affecting the rapidly urbanizing areas of southern British Columbia and southern Ontario address long-term options covering many determinants of future well-being.[26]

VI. Four Associated Trends in Environmental Law

Several trends have affected the design and application of the environmental statutes, regulations, and administrative practices introduced since the 1960s. While these trends have had different effects in different jurisdictions, each has been or promises to be significant everywhere in Canada.

Regional, Continental, and Global Effects

In the early days, environmental protection efforts focused on the local effects of particular sources and contaminants. The popular view was that "dilution is the solution to pollution." Accordingly, when industrial air emissions were causing undeniable damage in the neighbourhood in which a plant was situated, the accepted response was to require construction of a taller emission stack.

This technique was most famously used in Sudbury, Ontario, where acidifying emissions and other contaminants from the nickel smelters had killed much of the local vegetation and left a moonscape suitable for astronaut training. Construction of a 380-metre (1,250-foot) superstack at the Inco smelter in the early 1970s helped reduce local pollution loads and allowed vegetation recovery.[27] But it also spread the acidifying contaminants much farther. By the early 1980s, the long-range atmospheric transport of acidifying pollutants from Sudbury and a host of other major and minor sources was clearly having serious effects on the overall acidity of precipitation across huge areas of North America and Europe.[28]

The **dilution solution** had led to environmental damage on a regional and continental scale. Eventually, environmental authorities in Ontario and other jurisdictions in North America and Europe were moved to rewrite their environmental laws and facility-specific requirements to deal with effects well beyond the local scale.

Today the most perilous environmental concern is global climate change, which has also resulted from emissions from a multitude of local sources. While responses to this problem are still far from adequate, the planetary scale of the challenge and the need for similarly inclusive action is well recognized in most quarters.[29]

While not a home to major sources of greenhouse gases, the Arctic is already experiencing significant effects from climate change. As temperatures rise, summer sea ice is melting sooner, trapping polar bears on land and preventing them from hunting an important food source: seals.

Source: Tom Walker/Alamy Stock Photo.

dilution solution the idea that air or water pollutants do not pose a problem if they are spread out widely enough, such as by the wind or ocean currents

Transparency and Citizen Participation

In Canada, as in many countries, the initial inclination of government authorities was to deny or minimize environmental problems, and to resist imposing the full costs of environmental protection on corporate or individual taxpayers. In the late 1960s and early 1970s, a wave of public-interest environmental groups emerged to challenge government authorities. Through effective collaboration with the news media, environmental groups raised public awareness of environmental problems and pushed governments to introduce environmental protection laws.

Unfortunately, the reluctance of governments to take the lead on environmental problems contributed to public distrust. This distrust was deepened by the frequent weakness of government efforts to enforce the new laws and by their common practice of developing pollution abatement requirements through secret negotiations with polluting industries.

As a reaction to these frustrations, environmental groups began to push for greater transparency in the decision-making process, including the following:

- timely and convenient access to information,
- opportunities for direct involvement in deliberations leading to new policies,
- public access to regulatory requirements and case-specific decisions, and
- rights to demand action and to participate in or pursue public interest litigation.

While not all of these efforts have been successful, most Canadian jurisdictions now make decisions related to environmental law in a much more transparent and participatory way than they did 50 years ago. The Supreme Court of Canada improved access to justice by introducing relatively flexible criteria for discretionary public interest standing, which determines whether members of the public can challenge the legality of a legislative provision or a government decision. Standing is usually allowed to individuals who may be directly affected by that decision, for example, because their property or health may be harmed. The courts have stated that the public can at times bring such lawsuits if certain other criteria are met and, most importantly, if the person bringing the action has a genuine interest in the matter and there is no other way to bring the issues before the court.[30] Many of the more recent environmental laws, such as CEPA 1999[31] and Ontario's *Environmental Bill of Rights, 1993*[32], encourage public consultation and participation. Citizens may even become decision-makers under provisions for mediated negotiation among stakeholders.[33] It is no longer a two-party government–industry negotiation process.

International Influences

Modern environmental law in Canada and other nations is increasingly influenced by international law principles and agreements. Below are examples of international agreements explicitly implemented by Canadian environmental laws:

- The *Convention on Biological Diversity*[34] was implemented by the *Species at Risk Act* to protect endangered species.
- The *London Convention and Protocol on Marine Dumping*[35] were implemented by CEPA 1999 to reduce marine pollution.
- The *Montreal Protocol on Substances That Deplete the Ozone Layer*[36] was implemented by CEPA 1999[37] to protect against ozone-depleting substances.

The rising influence of international law results in part from the need for responses to international-scale environmental problems. These problems include climate change, stratospheric ozone depletion, acidic precipitation, biodiversity loss, and trade in toxic substances. Perhaps because of the evident perils involved, international environmental law has also been a forum for significant innovation.

One particularly important innovation is the adoption of precautionary approaches in many areas of environmental law. The precautionary principle, for example, directs decision-makers to favour protective action on health and environmental concerns even where there is scientific uncertainty about the risks involved (the precautionary principle in the international law context will be discussed in Chapter 4).

Essentially, the precautionary principle and other applications of precaution recognize that the world of environmental interrelations is extremely complex and that our ability to describe it, much less predict the effects of new interventions, is extremely limited. Uncertainty is therefore always present and often important.

In international law, including multilateral environmental agreements, the precautionary principle is now widely accepted and increasingly applied as customary law. Application in Europe is also extensive. In Canada, precaution is frequently advocated in policy statements, sometimes incorporated in statutory objectives and purposes,[38] and common in some areas of implementation. Attention to uncertainties, anticipation of worst-case possibilities, favouring low risk options, and planning for adaptation are now often expected in major environmental assessments.

Effective and Efficient Application of the Law

Especially since the 1990s, the introduction, design, and application of environmental law in Canada have been affected by increased scrutiny of government initiatives by the public and non-governmental organizations. The main factors driving this trend are the following:

- ideological predispositions and corporate interests,
- concerns about the costs of government programs, and
- doubts about effectiveness.

Environmental laws have not been alone in coming under public scrutiny. But they have received particular attention because industrial interests have associated environmental laws with increased costs. Industry has also suffered long-term frustration as a result of the great diversity of general approaches and specific environmental requirements imposed by different jurisdictions. In response to concerns about costs and regulatory burdens, some governments have repealed or weakened environmental laws and put more emphasis on **voluntary compliance** initiatives.

At the same time, public interest advocates have consistently underlined the continuing failure of current environmental laws and their application to resolve many serious environmental problems. Some jurisdictions have responded with efforts to strengthen environmental law to deal with established and new areas of concern such as biodiversity losses[39] and climate change.[40]

The result, especially over the past 25 years, has been a back and forth between stronger and weaker environmental laws at the federal and provincial levels. The weaker laws and heavier reliance on voluntary actions have generally failed to deliver adequate protections or credible decision making, but the stronger laws have faced limitations of government capacities. Achieving efficiencies without sacrificing environmental and sustainability objectives has proven to be difficult.

The most positive initiatives include environmental statutes with sophisticated enforcement provisions, including some that establish corporate officer and director liability and allow for large fines and potential imprisonment for serious offences. These provisions give corporations

voluntary compliance an approach that relies on industry and individuals to do the right thing, motivated by conscience, public relations, or a desire to avoid regulation

a strong incentive to review and audit their compliance with environmental requirements, take necessary action, and prepare and implement environmental management policies and plans.[41]

Environmental laws are also now being drafted as broader packages that include a range of legal, economic, educational, and other flexible means to encourage and enforce environmental improvements.[42] Regulators can now choose among tickets for minor offences, criminal indictments for endangering life or health, mandatory administrative orders, administrative penalties, law-based economic tools such as carbon pricing and emissions trading, and lawsuits.

Even broader packages use regulation and the threat of additional regulation along with more general liability provisions, incentives, multi-stakeholder negotiations, and law-backed sector-specific "voluntary" programs to push for compliance and performance beyond legal requirements.

Not all of these flexible approaches are well integrated or consistently applied. As with environmental law generally, great variation remains from one jurisdiction to the next. When something goes wrong, the various environmental agencies may point the finger of responsibility elsewhere. For example, provincial agencies may blame federal agencies, and vice versa. However, most agencies also guard their mandate, authority, and independence tenaciously.

The resulting differences in environmental requirements across jurisdictions have frustrated both corporate interests and environmental advocates. Especially through the Canadian Council of Ministers of the Environment, the federal, provincial, and territorial governments have taken some modest steps toward harmonizing environmental law requirements. This too remains a work in progress.

VII. Three Big Challenges for Environmental Law

As we have seen, environmental law in Canada has become more ambitious and more difficult over the last 50 years. It has been called upon to meet rising public expectations and to deal with increasingly demanding problems but also to stay within the constraints of limited government capacities and respect opposition from interests with conflicting priorities. In the years ahead, we can expect more of the same but with broader implications and bigger consequences. The rapid and substantial shifts needed to avoid more disastrous climate change represent only one of the tough issues that now confront environmental law, extend deeply into many other fields of public interest and concern, and bring considerable potential for conflict as well as for broadly positive gains.

The big new challenges for environmental law are interconnected and overlapping, but involve three main concerns:

- how best to promote steps toward sustainability,
- how best to respect complexity and uncertainty in the design and application of the law, and
- how best to push broad changes in a way that both protects valued qualities and fosters fair and manageable **transformation** in areas where current practices are not viable in the long run.

Sustainability

Sustainability is not a new challenge. Probably since the dawn of time, most communities have had good reason to worry about their prospects for lasting well-being. Only in the last few decades, however, has sustainability become an issue at the planetary as well as community scale.

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transformation in complex systems, a shift from one set of identifying system characteristics to another, including more or less significant changes in structure, functions, and/or processes

The planetary problem is that despite major gains in wealth and capacities, what humans are doing on the planet cannot be supported in the long term. By some calculations, we were already using one-and-a-half planet's worth of capacity to meet our demands on biophysical systems and related resources in 2010.[43] Those unsupportable demands are still rising. At the same time, many people lack basic material sufficiency. Over 800 million people are undernourished[44] and over 2 billion do not have secure access to the clean water and basic sanitation needed to maintain health.[45] While the increasing wealth generated by continuing economic growth has helped us address some environmental and poverty problems, most benefits from the increases in human demands and takings go to those who are already most advantaged.[46]

Canada, as a nation of relatively heavy consumers,[47] contributes to the global pressures but also bears domestic costs. Despite our relative wealth and capabilities, we suffer from continuing losses from unsustainable practices, including from impaired ecosystems and associated services,[48] and from the early effects of climate change, including more extreme weather.[49]

For environmental law, sustainability demands a broader and longer agenda than has been commonly adopted. Nationally and locally as well as globally, unsustainability is not only, or even particularly, an environmental problem. As the Brundtland Commission insisted back in the mid-1980s when it popularized the notion of sustainable development,[50] any potentially successful strategy to reverse ecological decline must also ensure material sufficiency for all. And vice versa. Sustainability is about finding ways to repair and enhance all the interwoven foundations for well-being (see Box 1.3). Also, sustainability requires the long view. It is about lasting well-being and respect for the interests of future generations as well as today's.

BOX 1.3 Core Generic Requirements for Progress Toward Sustainability

The eight points that follow summarize what is needed for progress toward sustainability everywhere. These core generic requirements reflect the most commonly recognized considerations in the sustainability literature and incorporate overlapping insights about respecting uncertainty and embracing complexity. The individual requirements are typically less important than the links and interdependencies among them.

For each practical application, these core requirements would need to be integrated with recognition of the specific factors defining the case and place.

- *Socio-ecological system integrity.* Restore and strengthen the resilience of desirable systems and build the transformative capacities of systems needing significant change.
- *Livelihood sufficiency and opportunity.* Ensure for everyone sustainable livelihoods, including opportunities to enhance well-being that do not compromise options for future generations.
- *Intragenerational equity.* Close dangerous gaps in sufficiency and opportunity (e.g., in health, security, social recognition, and political influence) between the rich and the poor.
- *Intergenerational equity.* Preserve or enhance the opportunities and capabilities of future generations to live sustainably.
- *Resource maintenance and efficiency.* Reduce extractive damage, avoid waste, and cut overall material and energy use.
- *Socio-ecological commitment and democratic governance.* Build public as well as institutional understanding of and commitment to respectful socio-ecological relations, and enhance capacities of all to participate effectively in governance for sustainability.
- *Precaution and adaptation.* Respect uncertainty and avoid risks of damage to the foundations for sustainability; plan to learn, design for surprise, and manage for adaptation.
- *Immediate and long-term integration.* Address all sustainability requirements at once, seeking mutually supportive benefits and multiple gains.

Source: Adapted from Robert B. Gibson et al, *Sustainability Assessment: Criteria and Processes* (London: Earthscan, 2005) ch 5.

Sustainability in the Law

Over the years since sustainable development was first popularized and formally embraced by governments, corporations, and other organizations around the world, commitments have often been stronger in words than action. Nevertheless, the accumulation of gains from practical initiatives has deepened experience and raised expectations. Gradually, sustainability has worked its way into law.

Some important initial progress has been in the "soft law" of international conventions and voluntary agreements. The United Nations has moved from broad objectives to detailed Sustainable Development Goals.[51] Many corporations that began with sustainability in public relations have progressed to defined targets and reports on accomplishments.[52] Non-government organizations have established widely adopted certification and labelling processes for many products with a legitimate claim to meeting sustainability criteria. Governments at many levels have gone beyond policy statements to legislated principles and mandatory obligations.

In Canada, sustainability purposes are now written into a host of environmental and other federal, provincial, and territorial statutes as well as modern land claim agreements and regional and municipal plans and by-laws. Federal law requires departments and agencies to have sustainable development strategies that are regularly reviewed and updated.[53] Several provinces (e.g., Nova Scotia, Quebec, and British Columbia) have sustainability-centred statutes, plans, objectives, and reporting requirements.

In environmental law, the *Alberta Land Stewardship Act*, which authorizes province-wide basic-scope land and resource use planning, incorporates sustainable development objectives.[54] Several review panels established under the original *Canadian Environmental Assessment Act* used the law's sustainability purposes as justification for requiring project proponents to show that their proposed undertakings would make a positive contribution to sustainability rather than merely avoid causing significant negative effects.[55] The federal *Impact Assessment Act* passed in 2019 will require decision-makers to base decisions on proposed major projects in part on "the extent to which the designated project contributes to sustainability."[56]

While Canada's achievements in sustainability-based law reform remain modest, adoptions and applications have expanded steadily. This is in part because broadly integrative sustainability-based approaches are well suited to problem-solving in a highly complex world.

Complexity and Uncertainty

Moving toward sustainability is difficult in part because of the daunting gap between what we are now doing and what might legitimately qualify as sustainable. Bridging that gap demands major changes in entrenched institutions, legal and economic arrangements, and habits of thought and behaviour. Most of these changes require integrated attention to countless interacting considerations at multiple scales and across many jurisdictions. In sum, sustainability challenges are unavoidably complex. Moreover, we have been finding that most everything in the world is more complex than we had imagined.

Briefly in the 19th century, the rise of modern science provided expectations of certainty. The core idea was that essentially simple laws of nature acted on individual components of the universe from atoms to galaxies and viruses to human beings. Therefore, by identifying these laws and applying properly rigorous methods, we could figure out everything, dominate nature, organize ourselves rationally, and progress steadily upwards. Then came the 20th century, with its subatomic physics, systems ecology, and brutal wars among the most advanced nations.

Today, while we remain devoted to progress, people in most fields are wrestling with how best to deal with the uncertainties of a complex world. Environmental law is no exception.

The environmental regulatory regimes initially established in the 1970s relied on the old assumption that the world is essentially a very simple place. They addressed particular contaminants

one by one as if they did not interact and as if controlled laboratory studies of individual substances would tell us all we needed to know about the effects of the chemical soups we breathe and ingest. The initial regimes considered effects in the traditional silos of air, land, and water without accounting for the many interrelated pathways for pollution. Often, they also seemed to assume that contaminants and other environmental abuses do not cross political and administrative boundaries and do not require interjurisdictional responses.

Much the same is true of our initial approaches to planning and management. Forest management regimes, for example, focused on supplying lumber and pulp fibre and largely ignored forests' other roles and purposes such as traditional harvesting, ecological services, recreational opportunities, wildlife habitat, and carbon sink provision.

Complexity, Uncertainty, and the Law

While the old thinking still underpins a significant portion of environmental law and practice today, we now know better. The best of the new environmental laws recognize that connections are at least as important as components. The most important threats to nature and our health and well-being come from combinations of contaminants, development projects, and planning decisions. They act across the lines of municipal, provincial, and national jurisdictions, and through a host of mechanisms—from local watershed-based plans to global environmental agreements. They also recognize that even with the best scientists and unlimited resources, we will never know all we need to know to make fully competent decisions. The world is too complex for that.

What we have been learning in environmental law parallels, and is informed by, developments in other fields where the study of component parts and the search for firm rules of behaviour have given way to a greater appreciation of complex interactions and interdependencies, system dynamics, uncertainty, and surprise. Ecosystem studies may be the most visible field of **complex systems** application. But similar ideas inform advanced work in biophysical and human systems, from microbiology to the global climate, cybernetics, chemistry, anthropology, psychology, meteorology, history, behavioural economics, and governance, including law.[57] In all of them, the interactions among things are infinitely complex and the results are at best, imperfectly predictable.

The dynamic interactions within and among system components happen at all scales from subatomic particles to cosmic radiation. Human individuals are good examples. Each of us can be seen as a complex system with billions of resident bacteria, neural connections, and repair mechanisms plus flows of incoming and outgoing nutrients, air, ideas, and emotions, as well as cycles of maturation, reproduction, and expiration. Moreover, each of us participates in larger systems. We affect and are affected by systems centred on water and energy, food and shelter, communication and comprehension, production and consumption, economy and polity, custom and law—all of which are changing, overlapping, and mutually influential at many scales.

The implications for law involve three interconnected themes: respecting uncertainty, acting with precaution, and embracing complex system behaviour as a practical basis for understanding and action.

Respecting Uncertainty, Adopting Precaution

One of the most significant and tragic applications of Canadian environmental law was the moratorium order that closed the Northwest Atlantic cod fishery. The order, issued under the federal *Fisheries Act* in 1992, marked the end of what had been an enormously rich resource, plus 30,000 jobs, community economies, and traditions that had thrived for hundreds of years.

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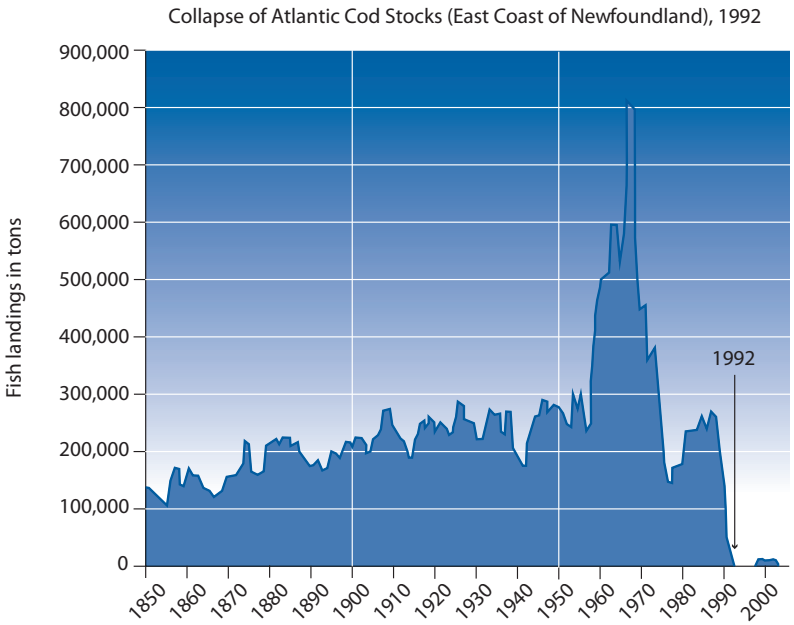
complex system systems composed of many interdependent components with properties that arise from dynamic internal interactions and engagement with other overlapping and larger systems

It also represented a big lesson for environmental law dealing with complex systems. The cod populations had collapsed suddenly after decades of increasing harvests by Canadian and foreign fleets (see Figure 1.1). In a simple linear system, gradual increases of harvesting would have led to parallel declines in fish numbers. With the cod, overfishing rose until it crossed an invisible threshold and the entire cod-centred ecological and economic system collapsed.

More than a quarter century later, the moratorium is still in place. The cod have not recovered enough to support a commercial fishery. Once the threshold was crossed, the marine ecosystem changed so much that return to the old one was not possible.

FIGURE 1.1 The Collapse of a Species



After 500 years of commercial fishing, Northwest Atlantic cod stocks collapsed in the early 1990s, mostly due to overfishing. Despite a fishing moratorium since 1992, the stocks have not recovered.

Source: Adapted from Millennium Ecosystems Assessment, Food and Agriculture Organization (FAO).

The loss of the cod fishery revealed the importance of complex system thresholds and the potentially disastrous effects of crossing them. Unfortunately, thresholds between system viability and collapse are rarely easy to identify, except in retrospect. They represent uncertainties for law and management for fisheries and all other fields immersed in complex systems.

The implications for law are that we must make informed guesses about where the thresholds to disaster may be, and then leave a sizeable margin of safety between our maximum demands on the system and the estimated threshold location.

Such approaches are taken in environmental law concerning the health and ecological effects of toxic chemicals and other pollutants. Where we cannot be confident about the location of a threshold between safe exposure and adverse effects, environmental law needs to err on the side of protection, leaving a safety margin between what is allowed and what is known to be damaging.[58]

Thresholds represent only one source of complex system uncertainties. Complex systems are typically dynamic. They often have countless moving parts and interactions, internal processes

of change, and external influences. A fully accurate prediction of the trajectories of such systems, and the potential consequences of system changes is not possible.

In environmental law, these uncertainties affect predicting adverse (and positive) effects, specifying risks (and potential gains), and assessing potential responses to identified problems and opportunities. Addressing these uncertainties properly also entails attention to the interests of those most vulnerable to damage and disadvantage because their voices are not commonly heard or, in the case of future generations, not yet present.

Among the best-known environmental law responses to uncertainty is the "precautionary principle." As discussed earlier in the section on international influences, the precautionary principle supports action to address apparent threats to health or the environment in the absence of full scientific certainty. In effect, the precautionary principle is for application where demanding "proof beyond a reasonable doubt" is unrealistic.

A related precautionary approach is applied in the evaluation of proposals for actions that may pose health and environmental risks (e.g., introducing new food additives, genetically modified crops, or pesticides). In such cases, legislated measures can require the proponent of the action to establish that there will be no appreciable risk of harm, rather than require opponents to establish that the risk of harm is too great.[59]

Law-based financial tools may also be effective. For example, environmental law provisions can strengthen proponent motivations to avoid behaviour that risks lasting damage and public cost by imposing financial responsibility for any needed cleanup, restitution, and rehabilitation. Such responsibilities are commonly addressed in Canadian law, for example, concerning mining, hydrocarbon extraction, and marine shipping. However, the cost liabilities may be capped (e.g., for marine pollutant spills) and required cleanup bonds (e.g., for reclamation of mine and hydrocarbon extraction sites) are seldom adequate to cover actual costs.[60] Other law-based economic measures, such as ecological tax reform,[61] have been scarcely used in Canada (unlike the European Union, for example), despite their potential for realigning motivations for environmental responsibility.

Also, rather than trying to define a line between acceptable and unacceptable risk and determine whether a proposed product, project, or activity crosses that line, precautionary decision processes may require comparative evaluation of alternatives and favour options that present the lowest risks.[62] In such processes, preference for risk avoidance is incorporated in evaluation criteria.

Criteria for comparing electrical energy system plan options, for instance, may include a preference for safe-fail options (e.g., energy demand reduction measures that can fail without significant risks to human health or the environment) over fail-safe options (such as nuclear generating facilities that require multiple shut-down and containment features because a serious release of radioactive contaminants would be catastrophic). Similar preference can be given to options that are reversible, easy to monitor, simple to repair, accompanied by fallback alternatives, and/or sufficiently small, diverse, and modular that the system can function well enough if some components raise unexpected problems and need to be taken out of service (e.g., a system with many small and different electricity generation sources is likely to be more adaptable in the face of minimally predictable accidents and demand changes than one that relies on a few very large hydro dams or nuclear plants).

The law may also anticipate surprises by requiring careful monitoring of new undertakings and existing areas of concern, and ensuring available capacities for timely responses to emerging difficulties.

Taken together, favouring low-risk options, ensuring adaptable design, and imposing monitoring requirements are means of building **adaptive capacity**, which is now commonly advocated in various fields of resource and environmental management.

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adaptive capacity the capacity of a social and/or ecological system to adjust or reconfigure to retain viability of key functions

Protection and Transformation

In the 1970s, when the main components of contemporary environmental law were put in place, it was a bold step to give serious legal attention to air and water pollution, wilderness preservation, occupational health hazards, and resource stewardship. These initial environmental laws, however, aimed merely to mitigate some of the undesirable side effects of economic advances, to set some special places aside, and to avoid costly mistakes by doing better planning and resource management. Its most innovative elements were provisions for more transparency and opportunities for public participation in environmentally related decision-making.

The role of environmental law in today's world of pervasive complexity and deepening unsustainability is more ambitious largely because the old strategies have been insufficient. Advances in environmental law did deliver better pollution abatement, energy and material efficiency, waste reduction, and protected area management. Nonetheless, overall human pressures on the biosphere have continued to rise and the distribution of associated risks and opportunities remains inequitable, especially for future generations. Consequently, the potential for grievance and conflict has increased.

Environmental law now must help protect, restore, and strengthen the **resilience** of crucial biophysical and social systems, while also guiding transformations to more lasting and equitably distributed well-being. This agenda is already evident in environmental law practice. Resilience is served by law and policy aimed at enhancing adaptive capacity in the rehabilitation and protection of desirable systems (e.g., through law-based incentives or penalties to encourage the preservation of remaining wetlands, or public participation provisions to help disadvantaged neighbourhoods oppose noxious land uses). Positive transformation goals underlie, for example, the new legal frameworks for forestry (shifting from narrowly focused timber management to more inclusive and sustainable forest management) and urban growth planning (shifting from sprawl and highways to density and transit).

Resilience and transformation work is demanding. It involves multiple sustainability objectives and the desirable and undesirable aspects of complex intertwined systems. It requires finding livelihood opportunities that also reduce material and energy demand, applying effective tools for precaution and equitable distribution of risks and gains, fostering collaboration, and facilitating learning. It also entails taking the long view, recognizing connections, avoiding trade-offs, and finding the best options to deliver multiple, mutually reinforcing improvements.

Resilience, Transformation, and Climate Change

The roles of resilience and transformation in environmental law are especially evident in the case of climate change. The transformation imperatives have been well established in climate science for decades. So far, however, national and global responses have been deeply inadequate, largely due to the persistence of entrenched systems of institutions, economic structures, technologies, and behaviours.

The United Nations Framework Convention on Climate Change, the first international agreement to prevent worsening climate change, was signed in 1994. Since then, only a few jurisdictions have cut greenhouse gas (GHG) emissions significantly. Long-lived atmospheric GHG concentrations continue to rise, and the window of opportunity for avoiding disastrous levels of climate disturbance is closing.

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) reported that global warming could be limited to 1.5°C only if global net anthropogenic GHG emissions were eliminated by 2050 and that would require "rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings) and industrial systems."[63]

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resilience in complex systems, the ability to resist and/or accommodate disturbance and change while retaining identifying characteristics (including structure, functions, and processes)

BOX 1.4 Recent Conclusions from Climate Change Science

Excerpts from IPCC Report, *Global Warming of 1.5°C (2018)*

- Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.
- Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts.
- Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C.
- Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems. These systems transitions are unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options.
- Estimates of the global emissions outcome of current nationally stated mitigation ambitions as submitted under the *Paris Agreement* would *not* limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030.
- Limiting the risks from global warming of 1.5°C in the context of sustainable development and poverty eradication implies system transitions that can be enabled by an increase of adaptation and mitigation investments, policy instruments, the acceleration of technological innovation and behaviour changes.
- Sustainable development supports, and often enables, the fundamental societal and systems transitions and transformations that help limit global warming to 1.5°C. Such changes facilitate the pursuit of climate-resilient development pathways that achieve ambitious mitigation and adaptation in conjunction with poverty eradication and efforts to reduce inequalities.

Source: Intergovernmental Panel on Climate Change (IPCC), *Global Warming of 1.5 °C: Summary for Policymakers* (6 October 2018) online (pdf): <https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf>.

As a relatively wealthy and capable country, Canada should be a leader in climate change mitigation. Instead, Canada has been a climate laggard. In a December 2018 climate action ranking, Canada placed 54th out of 60 nations.[64] Our per capita GHG emissions are among the highest in the world, and despite a small population, we are one of the ten top GHG-emitting countries.

Evidently, serious climate action has been a tough sell in Canada. The fossil energy sector and its dependents are economically and politically important. Most Canadians are currently reliant on fossil fuels used in many other sectors (transportation, housing, agriculture, power generation, etc.) and associated jobs, consumer products, and operating systems. Even government bodies and financial institutions are deeply tied to the fossil economy. Also, because climate change mitigation requires effective global steps to cut GHG emissions, those resisting climate action in Canada and elsewhere can argue for delay until an effective global effort is clearly underway.

That is not to say that Canadians are disinterested in the issue. Many municipalities, private sector innovators, non-government organizations, and individuals have been climate exemplars. But long-term climate transformation also requires consistent support and direction from senior governments with comprehensive legislative authority and associated economic instruments.

The federal government contributed importantly to the 2015 *Paris Agreement* on climate change,[65] worked to develop and maintain a pan-Canadian framework for climate action,[66] and introduced carbon pricing legislation.[67] These initiatives have stirred political opposition and have been compromised by other actions including promotion of major new hydrocarbon extraction and infrastructure projects. Nonetheless, they may indicate gradual steps toward recognition that transition to a decarbonized economy is inevitable, easier now than later, and as likely to

present opportunities as to impose burdens. For environmental law, the big questions for climate change and other major issues will continue to be not whether to act, but how best to ensure the needed changes are fair, adaptable, mutually reinforcing, and likely to inspire others.

SUMMARY OF KEY POINTS

- Environmental law is highly normative—encompassing the statutory and common law that can be used to protect the environment.
- Environmental law is aimed at protection of the natural as well as the dependent human environment, including the use of environmental resources, prevention of damage, compensation, and public governance and processes.
- First-stage waste control laws of the 1970s led to toxics control laws and eventually to environmental assessment, planning, and management as well as modern laws that incorporate ideas of sustainability and, to a degree, precaution against environmental threats even where the likelihood of harm is not fully known.
- Law is composed of the rules and prohibitions that society prescribes through legislatures and courts and lays down requirements that can be enforced through regulatory agencies or the courts. In contrast, much human activity, including building structures and extracting natural resources, happens under guidelines, codes of practice, and simple convention.
- The four evolutionary phases in the development of Canadian environmental law are (1) common law rights and early statutes, (2) waste control and cleanup laws, (3) toxics control laws, and (4) comprehensive approaches to environmental assessment and planning management regimes. These four phases are not sequential, nor have they taken place at the same time in all jurisdictions.
- Many continuing and emerging trends (such as increasingly regional and global issues and greater transparency and citizen participation) have affected the core concerns, design, application, and effects of environmental laws across Canada.
- Environmental laws play a key role not only in reducing threats to nature and human health but also in moving toward sustainability in a world of rich complexity and unavoidable uncertainty.

KEY TERMS

adaptive capacity, 24
assimilative capacity, 13
causes of action, 12
civil law, 12
cleanup laws, 13
common law, 3
complex system, 22
dilution solution, 16
environmental assessment, 14
environmental assessment law, 5
environmental law, 3
environmental regulatory law, 5
jurisdiction, 4
laws of general application, 10
negligence, 12
nuisance, 12
planning and management regimes, 14
precautionary approaches, 8
resilience, 25
sectoral laws, 10
standing, 9
sustainable development, 8
tort, 4
toxics control laws, 13
transformation, 19
voluntary compliance 18
waste control laws, 13

DISCUSSION QUESTIONS

1. The courts' role in the development of Canadian environmental law appears to be minor relative to that of other players. Is this correct? Explain.
2. What accounts for the exceptionally broad scope of Canadian environmental law?
3. What factors have pushed environmental law to be more ambitious, and what factors have limited its expansion and effectiveness?
4. From your reading of the chapter, would you conclude that Canadian environmental law has been successful in protecting and improving the environment?

SUGGESTED READINGS

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NOTES

1. *Canadian Environmental Protection Act,* RSC 1985 c 16 (4th Supp).
2. *R v Hydro-Québec*, [1997] 3 SCR 213 at para 85.
3. *Friends of the Oldman River Society v Canada (Minister of Transport)*, [1992] 1 SCR 3 at para 16-17.
4. In this text, "Aboriginal" will be used where it describes the established corpus of Canadian law and applications using that language, and "Indigenous" will be used in references to traditional Indigenous law and process, the rights of Indigenous peoples, and related deliberations on matters of law affecting Indigenous peoples. For further explanation, see Chapter 3.
5. See *Canadian Public Policy* 42:S1 (November 2016), special issue, "Big Ideas for Sustainable Prosperity: Policy Innovation for Greening Growth," online: <https://www.utpjournals.press/toc/cpp/42/S1>.
6. UN World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987), online (pdf): <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>.
7. See e.g. *Canadian Environmental Protection Act, 1999*, SC 1999, c 33, s 3(1), "environment," and s 64.
8. Aldo Leopold, *A Sand County Almanac* (New York: Ballantine Books, 1970) at 237-64.
9. Christopher Stone, "Should Trees Have Standing? Toward Legal Rights for Natural Objects" (1972) 45 Southern California Law Review 450-87.
10. Laurence Tribe, "Ways Not to Think About Plastic Trees: New Foundations for Environmental Law" (1974) 83 Yale Law Journal 1315.
11. Steven Kennett, "New Directions for Public Land Law" (1998) 8 Journal of Environmental Law and Practice 1.
12. *Ibid*.
13. *Impact Assessment Act* in *Bill C-69: An Act to enact the Impact Assessment Act and the Canadian Energy Regulator Act, to amend the Navigation Protection Act and to make consequential amendments to other Acts,* given Royal Assent 21 June 2019. *Statutes of Canada*, 2019, c 28, online (pdf): <https://www.parl.ca/Content/Bills/421/Government/C-69/C-69_4/C-69_4.PDF>.

14. See Ontario *Environmental Review Tribunal Act, 2000*, SO 2000, c 26, schedule F.
15. D Paul Emond, "The Greening of Environmental Law" (1991) 36 McGill Law Journal 742; Alastair Lucas, "The New Environmental Law," in R Watts & D Brown, eds., *Canada: The State of the Federation, 1989* (Kingston, ON: Institute of Intergovernmental Affairs, Queen's University, 1989) 167-92.
16. John McLaren, "The Tribulations of Antoine Ratte: A Case Study of the Environmental Regulation of the Canadian Lumbering Industry in the Nineteenth Century" (1984) 33 University of New Brunswick Law Journal 203.
17. *Fisheries Act*, RSC 1970, c 17 (1st Supp), ss 2-3, adding what are now ss 34-42 of RSC 1985, c F-14.
18. BC's *Pollution Control Act* was replaced by the *Waste Management Act*, RSBC 1996, c 118, and then the *Environmental Management Act*, SBC 2003, c 53.
19. Alastair Lucas, "Legal Techniques for Pollution Control: The Role of the Public" (1971) 6 UBC Law Review 167; Kernaghan Webb, *Pollution Control Canada: The Regulatory Approach of the 1980s* (Study Paper) (Ottawa: Law Reform Commission of Canada, 1988).
20. The *Environmental Contaminants Act*, SC 1974-75-76, c 72, later the *Environmental Contaminants Act*, RSC 1985, c E-12, was repealed and replaced by the *Canadian Environmental Protection Act*, RSC 1985, c 16 (4th Supp), and is now the *Canadian Environmental Protection Act, 1999*, SC 1999, c 33.
21. CEPA, s 64 specifies toxicity criteria.
22. More about the categorization process of existing and new substances can be found online: <https://pollution-waste.canada.ca/environmental-protection-registry/regulations>.
23. See e.g. Ontario *Environmental Protection Act*, RSO 1990, c E.19, Part X, "Spills," Part XV.1, "Records of Site Condition," and Part XV.2, "Special Provisions Applicable to Municipalities, Secured Creditors, Receivers, Trustees in Bankruptcy, Fiduciaries and Property Investigators"; Quebec *Environmental Quality Act*, CQLR c Q-2, s 31.52; Alberta *Environmental Protection and Enhancement Act*, RSA 2000, c E-12, Part 5, "Release of Substances," and Part 5, Division 2, "Contaminated Sites."
24. The agreement was signed on November 22, 1978 and amended by the protocol signed November 18, 1987. The agreement was amended again with a protocol in 2012, called the *Great Lakes Water Quality Protocol, 2012*. See <https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/2012-water-quality-agreement.html>.
25. See *Friends of the Oldman River Society v Canada (Minister of Transport)*, [1992] 1 SCR 3.
26. See e.g. Ontario's *Places to Grow Act, 2005*, SO 2005, c 13, and the *Greenbelt Act, 2005*, SO 2005, c 1, and British Columbia's *Local Government Act,* RSBC 2015, c 1, Part 13.
27. See *Smith v Inco Limited*, 2010 ONSC 3790, rev'd 2011 ONCA 628, leave to appeal refused, [2011] SCCA No 539.
28. Alastair Lucas, "Acid Rain: The Canadian Position" (1983) 32 University of Kansas Law Review 165.
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30. See *Canada (Minister of Justice) v Borowski*, [1981] 2 SCR 575; *Canadian Council of Churches v Canada (Minister of Employment and Immigration)*, [1992] 1 SCR 236; and *Finlay v Canada (Minister of Finance)*, [1986] 2 SCR 607.
31. See CEPA 1999, s 6, "National Advisory Committee"; "Part 2—Public Participation," including "Environmental Registry," "Application for Investigation by Minister," and "Environmental Protection Action."
32. SO 1993, c 28.
33. See BC *Environment and Land Use Act*, RSBC 1996, c 117.
34. The convention entered into force in December 1993.
35. International Maritime Organization, London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, and the London Protocol, 1996, online: <http://www.imo.org/en/OurWork/Environment/LCLP/Pages/default.aspx>.

    The convention was signed in 1972 and entered into force in August 1975.
36. The protocol was signed in 1987 and entered into force in January 1989.
37. See Part 7, Division 6, "International Air Pollution." Also see *Ozone-Depleting Substances Regulations, 1998*, SOR/99-7.
38. See e.g. CEPA, 1999, s 76; *Species at Risk Act*, SC 2002, c 29; and Ontario *Endangered Species Act*, RSO 1990, c E.15.
39. For example, Nova Scotia, *Bill 116: Biodiversity Act*, 2nd Session, 63rd General Assembly, 2019.
40. For example, Canada, *Greenhouse Gas Pollution Pricing Act*, SC 2018, c 12, s 186.
41. For example, Canada's *Environmental Enforcement Act*, SC 2009, c 14, online: <https://www.parl.ca/DocumentViewer/en/40-2/bill/C-16/royal-assent> and

Environmental Violations Administrative Monetary Penalties Act, SC 2009, c 14, s 126, online: <https://laws-lois.justice.gc.ca/eng/acts/E-12.5/page-1.html>.

42. See, for example, British Columbia's suite of climate action laws: <https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/legislation>.
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44. Food and Agriculture Organization of the United Nations, *The State of Food Security and Nutrition in the World, 2018,* online: <http://www.fao.org/state-of-food-security-nutrition/en/>
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