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### Environmental Principles in U.S. and Canadian Law

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## VI.29 Environmental principles in US and Canadian law

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### **Abstract**

This chapter examines the role of commonly espoused environmental principles in US and Canadian law. A number of substantive principles are evident in the environmental laws of both countries, including: cost-benefit analysis, transboundary responsibility, sustainable use, sustainable development, pollution prevention, precaution, integration, polluter pays, strict liability, and extended producer responsibility. However, they often play a secondary role to political and economic considerations in shaping environmental policy. Thus, the positive functions that substantive principles are sometimes thought to perform – increasing coherence, legitimacy, transboundary consistency, and potentially the progressive realization of environmental protection – appear relatively muted in the US and Canadian legal systems. More ‘procedural’ principles, such as federalism, public participation, public information, availability of remedies, judicial review, and private enforcement, however, are well rooted and broadly important in both systems. Substantive principles may play a more significant role in local government and non-state environmental governance institutions.

### **Keywords**

Cost-benefit analysis, emissions trading, environmental law, environmental principles, extended producer responsibility, federalism, market mechanisms, non-state governance, polluter pays, pollution prevention, precautionary principle, sustainability, sustainable development, transboundary pollution

### **Contents**

- VI.29.1 Introduction
- VI.29.2 Politics and money in environmental law
- VI.29.3 Governance principles
  - VI.29.3.1 Federalism
  - VI.29.3.2 Public participation
  - VI.29.3.3 Public information
  - VI.29.3.4 Private enforcement
  - VI.29.3.5 Judicial review

- VI.29.3.6 Non-state governance
- VI.29.3.7 Market mechanisms
- VI.29.4 Substantive principles
  - VI.29.4.1 Cost-benefit analysis
  - VI.29.4.2 Responsibility not to cause transboundary environmental harm
  - VI.29.4.3 Sustainable development
  - VI.29.4.4 Sustainable use of natural resources
  - VI.29.4.5 Sustainable production and consumption (life-cycle analysis)
  - VI.29.4.6 Pollution prevention
  - VI.29.4.7 Precaution
  - VI.29.4.8 Integration: environmental impact assessment
  - VI.29.4.9 Polluter pays
  - VI.29.4.10 Strict liability
  - VI.29.4.11 Extended producer responsibility
- VI.29.5 Conclusion

### **VI.29.1 Introduction**

This chapter comes at a portentous time in US and Canadian environmental law. While the two countries share legal traditions and many environmental problems, recent national elections seem to have sent them in opposite directions regarding environmental law. These contrasting directions underscore our conclusion that, while environmental principles are evident and sometimes important in both countries' environmental laws, political pragmatism is often a more powerful force, particularly in the United States. Canada has formally enshrined sustainable development as its ultimate goal and has adopted the precautionary principle as the overriding standard governing its environmental protection and regulatory activities. But again, the record is replete with the consequences of political pragmatism over principle. Therefore, the positive contributions that environmental principles are sometimes thought to facilitate, such as increasing the intelligibility, predictability, legitimacy, transboundary consistency, and the long-term progress of environmental law,<sup>1</sup> are relatively constrained in the US and Canadian legal systems.

### **VI.29.2 Politics and money in environmental law**

In describing the early American Republic, de Tocqueville wrote: 'As one digs deeper into the national character of the Americans, one sees that they have sought the value of everything in this world only in the answer to this single question: how much money will it bring in?'<sup>2</sup> This observation still applies well to US environmental law. Money and political power have often been the driving force, with governing principles running a distant second. The first US federal law on liability for marine pollution, the 1851 Limitation of Liability Act,<sup>3</sup> was enacted not to protect the waterways, but to protect

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<sup>1</sup> For contrasting perspectives, see de Sadeleer (2002) and Scotford (2017).

<sup>2</sup> De Tocqueville (1831).

<sup>3</sup> Act of March 3, 1851, ch. 43, § 3, 9 Stat. 635 (current version at 46 U.S.C. § 30501 et seq. (formerly 46 U.S.C. § 183)).

the nascent US shipping industry by limiting the liability of vessel owners for clean-up costs of marine accidents to the post-casualty value of the vessel. Over a hundred years later, the true consequences of the limitation emerged when the liability of the owners of Torrey Canyon oil tanker, which spilled over 100,000 tons of crude oil into the English Channel, fouling 100 miles of British and French coasts, was limited to the \$50 value of the one salvaged lifeboat.<sup>4</sup> As a result of the Torrey Canyon disaster and the 1969 Santa Barbara oil-well blowout, federal laws were adopted<sup>5</sup> aimed at holding accountable those responsible for oil spill pollution, demonstrating the modern American tendency of legislation following public outcry over major environmental misadventures. Many other US environmental statutes are also the direct results of the public outcry over major pollution events. Examples include: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),<sup>6</sup> enacted after the forced evacuation of a community neighboring a hazardous waste site;<sup>7</sup> the Toxic Substances Control Act (TSCA),<sup>8</sup> enacted after a series of high-profile cases of public contamination;<sup>9</sup> the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), enacted in reaction to the Bhopal tragedy;<sup>10</sup> and the Oil Pollution Act of 1990, enacted in response to the Exxon Valdez oil spill.<sup>11</sup>

Even when the US Congress promotes environmental goals, it can act to favor powerful business interests. A major bipartisan bill promoting energy efficiency and research, the Energy Policy Act of 2005,<sup>12</sup> famously exempted hydraulic fracturing from the Safe Drinking Water Act (SDWA), reportedly at the behest of the Vice President acting on behalf of his former employer.<sup>13</sup> As discussed further below, there is a constant tendency in both US and Canadian environmental politics to treat environmental regulation as a threat to economic prosperity and growth.<sup>14</sup> While the idea that environmental quality is necessary to prosperity is also present, it remains remarkably weak, indicating that sustainability analysis has yet to take deep root in the political culture of either country. As this chapter goes to press the problem is worsening in the US, with the Trump administration pursuing a great many initiatives to weaken or eliminate existing environmental protections.

<sup>4</sup> Morgan (2011).

<sup>5</sup> *Ibid.* Two international treaties were also promulgated (International Convention on Civil Liability for Oil Pollution Damage, November 29, 1969, 973 U.N.T.S. 3, reprinted in 9 I.L.M. 45 (1970); International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, December 18, 1971, 11 I.L.M. 284 (1972), but in another example of American's quixotic relationship with environmental regulation, neither was ratified by the US.

<sup>6</sup> P.L. 96-510, 42 U.S.C. and (33) § 9601(14) and (33), December 11, 1980.

<sup>7</sup> Nowak (1990).

<sup>8</sup> P.L. 94-469, Stat. 90 Stat. 2003.

<sup>9</sup> On the legislative history of TSCA, see Markell (2010). On these events generally, see Nader, Brownstein and Richard (1981).

<sup>10</sup> P.L. 99-499, 100 Stat. 1728.

<sup>11</sup> P.L. 101-380, 104 Stat. 484.

<sup>12</sup> P.L. 109-58, 119 Stat. 594.

<sup>13</sup> Energy Policy Act of 2005, § 322. See *NY Times* Editorial, 'The Halliburton Loophole', November 2, 2009 at A28.

<sup>14</sup> For a review of the Canadian history, see Wood, Tanner and Richardson (2010).

Despite persistent political constraints, both nations have made progress in environmental regulation over the past five decades, while also realizing significant economic growth. Although they have typically relied on the problem-centered approach that results from regulating in response to crises, they have also established several fairly comprehensive regulatory programs. The US Clean Air Act has a forty-year record of significantly curbing air pollution;<sup>15</sup> Canada has achieved similar success.<sup>16</sup> The US Resource Conservation and Recovery Act (RCRA)<sup>17</sup> created a comprehensive framework for the proper management of hazardous and non-hazardous waste, as have federal and provincial laws in Canada. But despite the emphasis on alternatives to land-filling, both the US and Canada have increased the amount of municipal waste produced per capita in the last two decades, with Canada ranked last out of the 17 Organisation for Economic Co-operation and Development states.<sup>18</sup> America's CERCLA has prompted the clean-up of hundreds of hazardous waste sites, although declining funding in recent years has delayed some remedial action programs. As of 2013, approximately 39 million Americans still lived within three miles of a non-federally owned contaminated site serious enough to be placed on the Environmental Protection Agency's (EPA) National Priorities List.<sup>19</sup> Reporting requirements have significantly increased in both countries for all types of land, water, and air emissions, as well as for toxic substances, pesticides, and other chemicals.<sup>20</sup> Water quality also appears to be improving overall,<sup>21</sup> although significant contamination events have occurred recently, most notably in Flint, Michigan.<sup>22</sup>

### VI.29.3 Governance principles

Institutional arrangements for environmental governance in the US and Canada bear many similarities. Both countries have a strikingly wide range of actors who can directly or indirectly control environmental protection efforts. Unlike many nations, power is vested not just in a national regulator, nor even solely in the government itself. As described further below, both countries have dual sovereignty systems in which

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<sup>15</sup> EPA, *Our Nation's Air: Status and Trends Through 2015* (2016), posted September 15, 2016 at <https://gispub.epa.gov/air/trendsreport/2016/> (accessed December 2, 2016).

<sup>16</sup> Environment and Climate Change Canada, *Air Pollutant Emission Inventory, 1990–2014* (2016).

<sup>17</sup> P.L. 94-580, 90 Stat. 2795.

<sup>18</sup> Conference Board of Canada *Municipal Waste Generation 2013* <http://www.conferenceboard.ca/hcp/details/environment/municipal-waste-generation.aspx> (accessed December 19, 2016).

<sup>19</sup> US GAO, *Superfund: Trends in Federal Funding and Cleanup of EPA's Nonfederal National Priorities List Sites* (2015), at <http://www.gao.gov/assets/680/672734.pdf> (accessed December 19, 2016).

<sup>20</sup> See e.g., TSCA § 8(b) (directing the EPA to establish a list of each chemical substance manufactured or processed, including imports, in the United States); U.S. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) 7 U.S.C. §136 et seq. (requiring all pesticides distributed or sold in the United States to be registered with the EPA); Canadian Environmental Protection Act, 1999 (CEPA 1999), §§ 70–72 (Information Gathering).

<sup>21</sup> EPA 2013 National Public Water Systems Compliance Report (2014).

<sup>22</sup> For a synopsis of the Flint crisis see 'A Timeline of the Water Crisis in Flint, Michigan', ABC News, posted December 20, 2016, at <http://abcnews.go.com/US/wireStory/timeline-water-crisis-flint-michigan-44300483> (accessed December 21, 2016).

the state or province may be more important than the federal government. In addition, both countries have internal first peoples (organized indigenous communities pre-dating European settlement) with their own claims to sovereignty and environmental authority. While a tendency not to respect these powers was most recently visible in the US Dakota Access pipeline controversy, indigenous authorities are fairly well established in each country's laws. In parallel with expanded governmental regulation, environmental law in both countries allocates major roles to non-governmental organizations (NGOs) and citizens in leading (or forcing) environmental protections, both through political pressure and citizen enforcement powers.

### *VI.29.3.1 Federalism*

Both countries have dual systems of sovereignty, where each federal government and each American State (through the US Constitution) and Canadian Province (through the Crown and Constitution Act 1867) are sovereign entities. As a result of the dual systems, it is not always clear where the federal power begins and state/provincial power ends.

In the US, where the federal government has authority to act, federal law is dominant.<sup>23</sup> Constitutional authority for the nation's relatively expansive body of environmental legislation and regulation has been found mainly in Congress's power to regulate commerce.<sup>24</sup> Federal authority is not total, however; it must arise from one of the enumerated powers granted to the federal government; residuary powers are reserved to the States or the people by the 10th Amendment to the Constitution.<sup>25</sup>

Consistent with their historical authority for environmental regulation under the police power, the States have a large, often primary, role in carrying out federal environmental legislation. For example, under the Safe Drinking Water Act (SDWA), the EPA must grant each State primary enforcement power once the State meets statutory requirements,<sup>26</sup> most importantly that the state adopts 'drinking water regulations that are no less stringent than the national primary drinking water regulations'.<sup>27</sup> But the EPA may rescind the State's primary enforcement authority if the requirements are no longer met.<sup>28</sup> While States cannot overrule federal minimum requirements, they are usually free to adopt stricter ones.<sup>29</sup>

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<sup>23</sup> U.S. Const. Art. VI, § 2 (the 'Supremacy Clause').

<sup>24</sup> U.S. Const. Art. I, § 8, Cl. 3.

<sup>25</sup> *New York v U.S.*, 505 U.S. 144 (1992) (because the statute requiring States to take title to low-level nuclear waste 'offers the States a "choice" between the two unconstitutionally coercive alternatives – either accepting ownership of waste or regulating according to Congress's instructions – the provision lies outside Congress's enumerated powers and is inconsistent with the Tenth Amendment').

<sup>26</sup> 42 U.S.C. § 300g-2.

<sup>27</sup> 42 U.S.C. § 300g-2(a)(1).

<sup>28</sup> 42 U.S.C. § 300g-2(b). The Supreme Court has specifically upheld this one-sided version of a State/federal partnership. See *New York v U.S.*, supra, 505 at 167 ('where Congress has the authority to regulate private activity under the Commerce Clause, we have recognized Congress' power to offer States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation').

<sup>29</sup> E.g., 42 U.S.C. § 7416 (providing that, except for preemption of certain State regulation of

The Canadian federal/province system provides a different balance between the two types of jurisdictions. Under the Canadian Constitution, the powers of the Provinces are specifically defined and limited to the list provided in the Constitution; residuary powers are largely granted to the federal government.<sup>30</sup> In Canadian constitutional law, the doctrine of paramountcy establishes that where (and only where) there is a conflict between valid exercises of provincial and federal laws, the federal law will prevail and the provincial law will be inoperative to the extent that it conflicts with the federal law.<sup>31</sup>

While the environment is not a specifically delineated matter for provincial legislation, provincial power is primary in environmental policy because of extensive provincial control over natural resources and energy generation. Only 11 percent of Canada's land is privately owned. The remainder is termed 'crown land', and 54 percent of that is controlled by the Provinces.<sup>32</sup> Much federal crown land lies in the territories and in special use areas within the Provinces.<sup>33</sup> Provinces have direct control over exploration, 'development, conservation and management of non-renewable natural resources and forestry resources', and 'development, conservation and management of sites and facilities in the province for the generation and production of electrical energy'.<sup>34</sup> Further, the Provinces control 'all Lands, Mines, Minerals, and Royalties belonging to the several Provinces of Canada'.<sup>35</sup>

Here then is one of the chief contrasts between the two nations that is basic to their approach to environmental regulation. Where the Canadian Provinces have primary control over natural resources, in the United States, the federal government controls 28 percent of the total land (47% in the West)<sup>36</sup> under the Constitution's public lands clause.<sup>37</sup> However, the States still have important environmental regulatory roles because they have traditionally regulated land use under police power.

US federal land remains the focus of an intense debate over whether public lands should be dedicated to 'preservation', traditionally understood to exclude economic exploitation, or 'conservation', traditionally understood to allow exploitation so long

moving sources, 'nothing in this chapter shall preclude or deny the right of any State or any political subdivision thereof to adopt or enforce (1) any standard or limitation respecting emissions of air pollutants or (2) any requirement respecting control or abatement of air pollution').

<sup>30</sup> Constitution Act, 1867 30 and 31 Victoria, c. 3 (U.K.) § 91.

<sup>31</sup> See *Smith v The Queen* [1960] S.C.R. 776.

<sup>32</sup> 'Crown Land', *Historica Canada*, <http://www.thecanadianencyclopedia.ca/en/article/crown-land/>.

<sup>33</sup> *Ibid.*

<sup>34</sup> Constitution Act, 1867 30 and 31 Victoria, c. 3 (U.K.) § 92A, added by the Constitution Act, 1982, § 50.

<sup>35</sup> Constitution Act, 1867 30 and 31 Victoria, c. 3 (U.K.) § 107. Manitoba, Alberta and Saskatchewan were placed in the same position as the original provinces by the Constitution Act, 1930, 20–21 Geo. V, c. 26 (U.K.), British Columbia by the British Columbia Terms of Union and also in part by the Constitution Act, 1930, and Newfoundland by the Newfoundland Act, 12–13 Geo. VI, c. 22 (U.K.).

<sup>36</sup> Carol Hardy Vincent, 'Federal Land Ownership: Overview and Data', *Congressional Research Service* (2014) <https://fas.org/sgp/crs/misc/R42346.pdf> (accessed December 29, 2016); Quoc Trung Bui and Margot Sanger-Katz, 'Why the Government Owns So Much Land in the West', *NY Times*, January 6, 2016, at A14.

<sup>37</sup> Art. IV, § 3, Cl. 2.

as the fundamental productivity of the land is maintained.<sup>38</sup> This debate is closely connected to the principles of sustainability and sustainable development discussed below.

### *VI.29.3.2 Public participation*

Both Canadian and US law make many provisions for public participation in governmental decision-making. Public participation is a common mandatory element in both nations' statutes, with required notification, consultation with stakeholders, and extended public comment opportunities a standard part of rule-making and permit-consideration processes.<sup>39</sup>

### *VI.29.3.3 Public information*

Both the US and Canada have long had statutes requiring government agencies to make information on their activities publicly available.<sup>40</sup> Following the Bhopal disaster, as noted above, both governments also enacted community right to know laws requiring industries to provide publicly available information on their use, storage, and disposal of hazardous chemicals.<sup>41</sup>

### *VI.29.3.4 Private enforcement*

A number of each country's environmental statutes also allow private actors, not just government officials, to bring actions against perceived violators of public environmental laws. Both nations employ a two-step process, in which there is first a notice to the regulator and alleged perpetrator of the details of the offense, and then a right to commence an action if the official response is deemed unsatisfactory. The US permits such private actions in numerous environmental statutes,<sup>42</sup> while Canada grants a broad right to commence actions against any party that has 'caused significant harm to the environment'.<sup>43</sup> In addition to injunctive and other relief, a key incentive for the private suit is the award of attorneys' fees and costs to successful litigants.<sup>44</sup>

### *VI.29.3.5 Judicial review*

Both countries and their States and Provinces generally provide for judicial review of decisions by environmental agencies. Actions for review can be brought by a broad range of potential claimants, usually including potential targets as well as beneficiaries of regulation. Courts can evaluate administrative actions on procedural, legal, and substantive grounds, often including reasonability.<sup>45</sup> While the environmental implications of widespread judicial review are contested, it seems likely to press generally for greater

<sup>38</sup> Robinson (2005) 371 (internal citation omitted).

<sup>39</sup> See e.g. CEPA 1999, Part 2 (Public Participation).

<sup>40</sup> Holsen (2007).

<sup>41</sup> See e.g. EPCRA, TSCA, CEPA 1999.

<sup>42</sup> Among these are the Clean Water Act, 33 U.S.C. § 1365(a), EPCRA, 42 U.S.C. § 11046(a), and § 42 U.S.C. § 9659(a).

<sup>43</sup> CEPA 1999, § 22(2)(b).

<sup>44</sup> Boyer and Meidinger (1985).

<sup>45</sup> Mullan (2001); Straus (2016).



attention to both legal standards and empirical data as well as a connection between legal goals and agency policies.

#### *VI.29.3.6 Non-state governance*

Beyond playing a variety of roles in government environmental regulation, NGOs have also created alternative environmental standards and adjudication (often 'certification') processes. These have played a significant role in preventing environmental degradation, promoting environmental justice, and achieving sustainable development goals in both countries. The model program is the Forest Stewardship Council (FSC), which instituted standards coupled with forest certification and wood product labeling systems for sustainable forestry in 1993. The FSC had great influence on forestry governance and also stimulated the creation of many other environmental certification programs.<sup>46</sup> An important example is the US Green Building Council's Leadership in Energy & Environmental Design (LEED) certification program, which has become the *de facto* standard for sustainable commercial and residential construction. Developed by consensus and collaborative effort, the benchmarks within this program have been adopted by many local and state governments as minimum standards for their own buildings. Across many sectors, the environmental governance landscape is now heavily populated with a great variety of programs setting standards, monitoring performance, and adjudicating compliance.<sup>47</sup> These non-governmental programs interact with each other as well as state regulatory programs, creating a new landscape of environmental law that legal academics are only beginning to grasp.<sup>48</sup>

#### *VI.29.3.7 Market mechanisms*

The monetizing trend described above is mirrored by an ideological taste for market-based regulation. The US transformed its air pollution regulatory system from one based on uniform rules for specific types of emissions sources into one allowing emissions trading among contiguous polluters in the late 1970s and early 1980s.<sup>49</sup> Thereafter it instituted a nationwide cap-and-trade program for sulfur dioxide and nitrogen oxide emissions from power plants.<sup>50</sup> Similar trends, including occasional use of charges and environmental taxes, are present in both countries.<sup>51</sup> Both States and Provinces are employing market mechanisms such as cap-and-trade<sup>52</sup> and utility deregulation<sup>53</sup> to drive renewable energy efforts and reduce greenhouse gas emissions.

<sup>46</sup> Meidinger (2006).

<sup>47</sup> Abbott and Snidal (2009).

<sup>48</sup> Wood, Abbott, Black, Eberlein and Meidinger (2015).

<sup>49</sup> Meidinger (1985).

<sup>50</sup> See Dallas Burtraw and Sarah Jo Szambelan, 'U.S. Emissions Trading Markets for SO<sub>2</sub> and NO<sub>x</sub>, 2009 Resources for the Future', at <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-09-40.pdf> (accessed December 26, 2016).

<sup>51</sup> Stavins (2003).

<sup>52</sup> In fact, two of the provinces have been working with individual States to link their cap-and-trade programs, see California Environmental Protection Agency Air Resources California website at <https://www.arb.ca.gov/cc/capandtrade/linkage/linkage.htm> (accessed August 30, 2017).

<sup>53</sup> See e.g. New York's Reforming the Energy Vision, Public Service Commission Case No. 14-M-0101 Order Implementing Proceeding, April 25, 2014.

## VI.29.4 Substantive principles

### VI.29.4.1 Cost-benefit analysis

Although neither the federal Administrative Procedure Act<sup>54</sup> nor most enabling statutes specifically require cost-benefit analysis in rule-making, the recent judicial trend, headlined by the Supreme Court's rejection of an EPA rule governing mercury pollution from power plants instituted without consideration of costs,<sup>55</sup> has been to require such analysis, and the US can be seen as becoming a cost-benefit State.<sup>56</sup> The implications and effects of widespread use of cost-benefit analysis are controversial<sup>57</sup> and far exceed the scope of this chapter. However, it is clear that requiring a cost-benefit justification for environmental regulation, particularly if it must be quantified as is usually the goal, is a fundamental substantive value that heavily shapes the content of environmental law.

### VI.29.4.2 Responsibility not to cause transboundary environmental harm

Both nations have long acknowledged their mutual interests flowing from the transnational nature of environmental conditions and have been leaders in addressing transnational environmental problems. In 1909, the US and Canada entered into the Boundary Waters Treaty (BWT), an agreement well ahead of its time in specifically addressing pollution and other non-navigational issues:<sup>58</sup> 'waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other'.<sup>59</sup> The countries also formed the bi-national International Joint Commission (IJC), which is responsible for implementing not only the BWT but also the more recent the Great Lakes Water Quality Agreements 'to restore and maintain the chemical, physical, and biological integrity of the Waters of the Great Lakes'.<sup>60</sup>

The two countries also defined their respective rights and duties through the *Trail Smelter* Arbitration, which arose as a result of pollution from a smelter in British Columbia causing harm to farmers in Washington State.<sup>61</sup> The arbitration found Canada liable under a standard that has subsequently been described as a fundamental

<sup>54</sup> Pub. L. 79-404, 60 Stat. 237.

<sup>55</sup> *Michigan v EPA*, 135 S. Ct. 2699 (2015). See e.g. *Nat'l Ass'n of Home Builders v EPA*, 682 F.3d 1032, 1040 (D.C. Cir. 2012) (EPA rule upheld in part because cost analysis was performed); *Corrosion Proof Fittings v EPA*, 947 F.2d 1201(5th Cir. 1991) (EPA ban on asbestos products voided, inter alia, because EPA failed to assess costs and benefits of the least to most burdensome alternatives, and Agency's calculations of benefits and costs were inaccurate and failed to factor the costs and risks of substitute products); *Center for Biological Diversity v NHTSA*, 538 F.3d 1172 (D.C. Cir. 2008) (NHTSA's failure to include in its analysis the benefit of carbon emissions reduction in either quantitative or qualitative form was arbitrary and capricious).

<sup>56</sup> See Sunstein (2016); Revesz (2016).

<sup>57</sup> See e.g. Ackerman and Heinzerling (2002).

<sup>58</sup> Treaty Between the United States and Great Britain Relating to Boundary Waters, and Questions Arising Between the United States and Canada (BWT), January 11, 1909, U.S.-U.K., 36 Stat. 2448, T.I.A.S. No. 548. See Graffy (1998) (stating that the Boundary Waters Treaty is one of the earliest 'non-navigational international watercourse treaties').

<sup>59</sup> BWT, 36 Stat. at 2450.

<sup>60</sup> The text of the 1972 Agreement and each subsequent amendment is available at [http://www.ijc.org/en/Great\\_Lakes\\_Quality](http://www.ijc.org/en/Great_Lakes_Quality) (accessed December 27, 2016).

<sup>61</sup> Bratspies and Miller (2006) 3.

principle of customary international law: 'no State has the right to use or permit the use of its territory in such a manner as to cause injury . . . in or to the territory of another or of the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence'.<sup>62</sup> But although the Washington farmers received some measure of payment, and the smelter did agree to reduce emissions, the reality was that the case resolution allowed companies on both sides of the border virtually unfettered latitude for continued cross-border pollution with minimal consequences.<sup>63</sup> Decades later, when the same smelter was brought to task for admittedly dumping hazardous materials into the Columbia River for almost a hundred years, Canada strongly objected to American enforcement efforts in applying CERCLA extraterritorially – a problem the courts finessed by finding that since the slag had moved downstream into the US, CERCLA was not being applied to activities on foreign soil.<sup>64</sup> Thus, although transboundary responsibility is incorporated in both countries' law, political and economic forces tend to limit its effects.

#### *VI.29.4.3 Sustainable development*

Both the US and Canada are signatories to the 1992 Rio Declaration on Environment and Development,<sup>65</sup> which affirmed the central importance of sustainable development.<sup>66</sup> While the meaning of sustainable development is subject to much debate, the core idea is that economic development, environmental protection, and social progress must be pursued simultaneously and in a mutually supporting fashion, instead of, for example, pursuing economic development at the expense of environmental sustainability or social justice.<sup>67</sup> At the level of the national governments, only Canada has officially embraced sustainable development as a mandate. In the United States action has largely come through Executive Orders in the Clinton and Obama Administrations.<sup>68</sup>

The greatest American supporters of sustainable development have been States and localities. Numerous States have adopted Renewable Portfolio Standards requiring ever greater shares of electric generation to be provided by renewable sources. States have adopted energy-efficient building codes based on the International Energy Conservation Code,<sup>69</sup> and numerous communities and States have adopted LEED standards for their

<sup>62</sup> *Trail Smelter (U.S. v Can.)*, 3 R.I.A.A. 1938, 1965 (March 11, 1941).

<sup>63</sup> See Wirth (2000).

<sup>64</sup> *Pakootas v Teck Cominco Metals, Ltd.*, 452 F.3d 1066 (9th Cir. 2006).

<sup>65</sup> United Nations Environment Programme, Rio Declaration on Environment and Development, at <http://www.unep.org/documents.multilingual/default.asp?documentid=78&articleid=1163> (accessed December 4, 2016).

<sup>66</sup> Statement of President George Bush at the Rio Conference, June 13, 1992, at <http://www.presidency.ucsb.edu/ws/?pid=21079#axzz2gn1nNngp> (accessed December 4, 2016).

<sup>67</sup> E.g. Giddings, Hopwood and O'Brien (2002).

<sup>68</sup> See US EO 12852 (establishing a President's Council on Sustainable Development to advise the President on the topic) and EO 13693 (directing executive offices and agencies to take a host of actions to pursue sustainability, particularly with regard to reducing greenhouse gas emissions) 80 F.R. 15871. Executive orders are official directives issued by the President to executive agencies specifying how they are to exercise their discretionary powers.

<sup>69</sup> International Code Council, <http://codes.iccsafe.org/app/book/toc/2015/I-Codes/2015%20IECC%20HTML/index.html> (accessed December 18, 2016).

own buildings, along with efforts to incorporate sustainable development goals into their infrastructure planning processes.<sup>70</sup>

The Canadian Federal Sustainable Development Act (FSDS)<sup>71</sup> adopts the standard definition of sustainable development from the Brundtland report,<sup>72</sup> defining sustainable development as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.<sup>73</sup> The FSDS is more aspirational than specific, setting out a path for the adoption of policies by the Minister of the Environment and each ministry. Most importantly, the FSDS chooses a specific policy, demanding that the Federal Sustainable Development Strategy shall be ‘based on the precautionary principle’.<sup>74</sup> Since its passage, the Strategy has gone through several iterations, the strongest of which was recently tabled in Parliament in October 2016, and supports the aforementioned provincial-federal carbon pricing deal and phase out of coal-powered generation.<sup>75</sup>

#### *VI.29.4.4 Sustainable use of natural resources*

The concept of sustainable use of resources is well established in both countries’ laws, and particularly manifests itself in the mandate for long-term resource management plans. For example, the US Federal Land Policy and Management Act<sup>76</sup> and the National Forest Management Act<sup>77</sup> require the Bureau of Land Management and the United States Forest Service respectively to identify, inventory, and sustainably manage resources on federal public lands and national forests. The US Magnuson-Stevens Fishery Conservation and Management Act,<sup>78</sup> establishes Regional Fishery Management Councils charged with developing and recommending fishery management plans, both to restore depleted stocks and manage healthy stocks.<sup>79</sup> There is much debate, however, whether sustainable use is being achieved in any of these areas. The agencies charged with doing so are regularly buffeted by powerful political forces, forcing changes in particular sustainability plans.<sup>80</sup>

<sup>70</sup> See e.g. New York State Smart Growth Public Infrastructure Policy Act, *Envtl. Conserv. L* §§6-0101 through 6-011.

<sup>71</sup> See generally TSCA (chemical registration) and RCRA (cradle to grave hazardous waste reporting).

<sup>72</sup> World Commission on Environment and Development, *Our Common Future* (The Brundtland Report) (1980 OUP).

<sup>73</sup> Federal Sustainable Development Act, § 2.

<sup>74</sup> *Ibid* at § 9(1).

<sup>75</sup> Environment and Climate Change Canada, Federal Sustainable Development Strategy, <https://www.ec.gc.ca/dd-sd/default.asp?Lang=En&n=CD30F295-1> (accessed December 9, 2016).

<sup>76</sup> P.L. 94-579, 90 Stat. 2743.

<sup>77</sup> P.L. 94-588, 90 Stat. 2949.

<sup>78</sup> P.L. 94-265, 90 Stat. 331.

<sup>79</sup> NOAA Fisheries, Magnuson-Stevens Fisheries Conservation & Management Act, at [http://www.westcoast.fisheries.noaa.gov/whatwedo/msa/magnuson\\_stevens\\_act.html](http://www.westcoast.fisheries.noaa.gov/whatwedo/msa/magnuson_stevens_act.html) (accessed November 16, 2016).

<sup>80</sup> Culhane (2011).

*VI.29.4.5 Sustainable production and consumption (life-cycle analysis)*

Corollaries to sustainable development, sustainable procurement and similar policies have found support through the Canadian Policy on Green Procurement, which includes environmental performance considerations, including life-cycle costing in its procurement decisions.<sup>81</sup> This is part of a significant effort led by the Office of Greening Government Operations (OGGO) within the Public Works and Government Services Canada, aimed at shrinking the Government's environmental footprint through various efforts, including reducing the environmental impacts of assets through their life cycle.<sup>82</sup>

Although Congress has been less supportive of sustainable development efforts, life-cycle costing has long been a staple of federal procurement efforts. For building-design energy-conservation measures, the process is part of the federal procurement regulations.<sup>83</sup> Federal agencies routinely incorporate life-cycle analysis.<sup>84</sup>

Many cities have aggressively pursued sustainable procurement combining social, environmental, and fiscal objectives in green procurement efforts. In North Carolina, the city of Raleigh's Sustainable Procurement Policy includes not only environmental life-cycle cost considerations such as greenhouse gas emissions and energy efficiency and consumption, but also 'social equity factors' such as human health impacts, environmental justice, and fair labor practices.<sup>85</sup>

*VI.29.4.6 Pollution prevention*

Prevention of future pollution is probably the most common theme in environmental law. In one of the rare US laws laying out broad environmental goals, the Pollution Prevention Act of 1990

declares it to be the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.<sup>86</sup>

Similarly, the Canadian Environmental Protection Act, 1999 (CEPA 1999)<sup>87</sup> tasks the federal government with taking 'preventive and remedial measures to protect, enhance and restore the environment'.<sup>88</sup>

This principle is central throughout US and Canadian law through permitting

<sup>81</sup> Policy on Green Procurement at <http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html> (accessed December 26, 2016).

<sup>82</sup> OGGO website at <http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/index-eng.html> (accessed December 24, 2016).

<sup>83</sup> 10 C.F.R. Part 436, Subpart A.

<sup>84</sup> E.g. Department of Defense AcqNotes website, at <http://www.acqnotes.com/acqnote/tasks/life-cycle-cost-estimatecost-estimate> (accessed December 24, 2016).

<sup>85</sup> City of Raleigh Sustainable Procurement Policy, at <https://www.raleighnc.gov/content/AdminServSustain/Documents/CoRSustainableProcurement.pdf> (accessed December 6, 2016).

<sup>86</sup> Pollution Prevention Act of 1990, P.L. 101-508, 104 Stat. 1388-321.

<sup>87</sup> S.C. 1999, c. 33.

<sup>88</sup> CEPA, 1999, §2(1)(a.1).

programs and comprehensive hazardous waste management and disposal regulations.<sup>89</sup> For example, the US Clean Air Act has as its major goals to (1) prevent significant deterioration of air quality in attainment areas (areas meeting air quality standards)<sup>90</sup> and (2) prohibit further deterioration in non-attainment areas without gaining offsetting emissions reductions, providing a 'positive new air quality benefit' in the same area as the proposed facility and for the same pollutant.<sup>91</sup> Nonetheless, as noted above, the prevention principle often gives way to exceptions driven by power politics.

#### VI.29.4.7 Precaution

The precautionary principle seeks to respond to our often quite limited knowledge of the effects of human activity by erring on the side of caution. But what this should mean in practice is greatly contested.<sup>92</sup> Some degree of precaution is present in virtually all US and Canadian environmental legislation. The US Clean Air Act, for example, directs the EPA Administrator to 'prescribe standards applicable to the emission of any air pollutant from any class . . . of new motor vehicles . . . which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare'.<sup>93</sup> Thus, conclusive evidence of endangerment is not required. However, what meets the standard of 'reasonable endangerment' remains vigorously contested nearly a half century after enactment. No clear guidance can be offered about how much precaution is enough or how much is too much. At best, precaution can be understood as a matter involving considerable administrative discretion – one that can be answered by different administrations differently and is generally reviewed by courts under a reasonability standard.<sup>94</sup> One approach to giving the principle structure is by analyzing it under the traditional 'Learned Hand' framework:

The precautionary principle calls for risk assessment decisions that weigh and balance the probability and severity of the harm to be regulated. The . . . decision maker may act on a higher probability of a lesser harm or a lower probability of a greater harm . . . The important effect of so weighing probability and severity is to reduce the level of probability of harm to less than the traditional evidentiary standard in civil cases . . . that the facts relied upon be more likely than not to be true. Coupled with the 'arbitrary and capricious' standard for review of informal rulemaking, the precautionary principle reinforces the conclusion that the decision maker need not establish by a preponderance of the evidence that harm is occurring or would occur in the future to take action – only that the possible harm is serious or probability of harm is 'significant'.<sup>95</sup>

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<sup>89</sup> For example, when TSCA was adopted regulating toxic substances, the head of the EPA called it "one of the most important pieces of 'preventive medicine' legislation" ever passed by Congress'. Press Release, U.S. EPA, Train Sees New Toxic Substances Law as 'Preventive Medicine' (October 21, 1976), cited in Markel (2010) at 336–337.

<sup>90</sup> 42 U.S.C. § 7475.

<sup>91</sup> 42 U.S.C. § 7503.

<sup>92</sup> E.g., Raffensperger and Tickner (1999); Sunstein (2005); Vogel (2012); Wiener et al. (2011); Morag-Levine (2014).

<sup>93</sup> U.S.C. 7521(a)(1).

<sup>94</sup> E.g., *Ethyl Corp v EPA* [1976] 541 F2d 1.

<sup>95</sup> Carothers (2014) 685–686.

Still, this formulation gives no concrete guidance on the definitions of serious harm or significant probability. These are worked out differently in different arenas and eras of environmental regulation. Moreover, the principle of cost-benefit analysis discussed above often works its way into the precautionary calculus. For example, in deciding whether one State's air emissions 'contribute significantly' to another State's non-attainment of health-based ambient air quality standards the EPA is allowed to consider the potential costs of controlling such emissions.<sup>96</sup> While this is consistent with the 'cost-effective' language in the Rio Declaration, it palpably limits the reach of precaution, since control costs are often easier to estimate than long-term health risks.

The precautionary principle is sometimes applied to shift the burden of proof to activities creating potential risks. California's proposition 65, for example, requires a warning for listed chemicals known to cause cancer or birth defects, with exemptions 'allowed only if the business responsible for exposure . . . can demonstrate that the amount of chemical in question poses "no significant risk"'.<sup>97</sup> Similarly, when commencement of high-volume, hydraulic fracturing ('fracking') was proposed in New York, the State Department of Health conducted a scientific review and concluded that 'information gaps still exist', 'existing science . . . is very sparse', and the 'studies that have been published have significant scientific limitations'.<sup>98</sup> This declared shortage of information was used to justify the State's decision to ban the practice.

In Canada, as noted above, the precautionary principle is incorporated into the FSDS, as well as the CEPA, Canada's primary federal environmental statute, 'govern[ing] activities within the federal jurisdiction such as cross-border air pollution, the dumping of substances into oceans and navigable waterways and the regulation of toxic substances'.<sup>99</sup> CEPA takes a more direct approach than its US counterparts by 'requir[ing] the government to apply the precautionary principle such that ". . . where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation"'.<sup>100</sup> The Supreme Court of Canada, recognizing its international acceptance, has adopted use of the precautionary principle when interpreting Canadian environmental law.<sup>101</sup>

#### *VI.29.4.8: Integration: environmental impact assessment*

The integration principle – the idea that the environmental consequences of actions should always be considered in deciding whether to take them – has long been established in US and Canadian law. In the US, beginning with the National Environmental

<sup>96</sup> *Michigan v EPA* [2000] 213 F3d 663.

<sup>97</sup> Pease (1992).

<sup>98</sup> A Public Health Review of High Volume Hydraulic Fracturing for Shale Gas Development (December 2014), p. 85, available at [https://www.health.ny.gov/press/reports/docs/high\\_volume\\_hydraulic\\_fracturing.pdf](https://www.health.ny.gov/press/reports/docs/high_volume_hydraulic_fracturing.pdf) (accessed December 14, 2016).

<sup>99</sup> Cotton and Zimmer (1992).

<sup>100</sup> The ENGO Agenda for the Review of the Canadian Environmental Protection Act (1999), available at [http://www.cela.ca/sites/cela.ca/files/uploads/504\\_CEPA\\_Review.pdf](http://www.cela.ca/sites/cela.ca/files/uploads/504_CEPA_Review.pdf) (accessed December 16, 2016).

<sup>101</sup> Benevides and McClenaghan (2002) (citing 114957 *Canada Ltée (Spraytech, Société d'arrosage) and Services des espaces verts Ltée/Chemlawn v Town of Hudson*, 2001 SCC 40 at paras 31 and 32).

Policy Act of 1970 (NEPA),<sup>102</sup> federal agencies are required to evaluate and consider the environmental consequences of their actions before making decisions and committing agency resources and funds for a particular purpose. NEPA's primary role is to provide a series of procedures to facilitate the review of environmental impacts and to inject environmental considerations into the consciousness of agency decision-makers. In general, where an agency proposes to fund, undertake, or approve an action, the agency must conduct an environmental assessment to determine whether the action could have significant environmental impacts. If so, an environmental impact statement (EIS) is required. An EIS is a detailed statement on the environmental impacts of the proposed action, any adverse environmental effects which cannot be avoided, alternatives to the action, the relationship between short-term uses and long-term productivity, and irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.<sup>103</sup> NEPA has been significant in that, prior to its adoption, federal agencies had little incentive to consider the environmental impacts of their actions, primarily because their activities were 'mission-oriented'.<sup>104</sup> Despite NEPA's success in bringing environmental considerations into the agency decision-making process, one of its significant limitations is lack of a substantive mandate to minimize environmental damage.<sup>105</sup>

Following NEPA's enactment, various State governments in the US adopted similar statutes applying to state and local agency action.<sup>106</sup> In some cases, these 'little NEPAs' have gone further by injecting substantive requirements into agency decision-making. For example, the California Environmental Quality Act (CEQA) requires agencies to 'develop standards and procedures necessary to protect environmental quality' and 'to implement feasible alternatives to projects that would significantly impact the environment, or feasible mitigation measures to lessen the impact of projects'.<sup>107</sup> Similarly, New York's State Environmental Quality Review Act (SEQRA) requires agencies to 'make an explicit finding that the requirements [of SEQRA] have been met and that consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed . . . will be minimized or avoided'.<sup>108</sup>

Canada has a similar framework of federal and provincial statutes requiring the review of environmental impacts prior to agency decision-making. Following the US's adoption of NEPA, 'the Canadian federal cabinet made a commitment to environmental assessment of federal decisions . . . [which] was formalized in 1984 as the Environmental Assessment and Review Process Guidelines Order'.<sup>109</sup> Environmental assessment was

<sup>102</sup> 42 U.S.C. § 4321 et seq.

<sup>103</sup> *Dep't of Transp. v Pub. Citizen*, 541 U.S. 752, 756–757 (2004); 42 U.S.C. § 4332(2)(C).

<sup>104</sup> NEPA Law and Litig. § 1:2 (2016).

<sup>105</sup> *Strycker's Bay Neighborhood Council, Inc. v Karlen*, 444 U.S. 223, 227 (1980) ('Once an agency has made a decision subject to NEPA's procedural requirements, the only role for a court is to insure that the agency has considered the environmental consequences; it cannot interject itself within the area of discretion of the executive as to the choice of the action to be taken' (internal quotations and citations omitted)).

<sup>106</sup> NEPA Law and Litig. § 12:1 (2016).

<sup>107</sup> O'Brien (2009) (internal quotations and citations omitted).

<sup>108</sup> N.Y. Envtl. Conserv. Law § 8-0109(8).

<sup>109</sup> Powell (2014) 9.



determined to apply 'whenever the federal government had an affirmative regulatory duty related to a proposed initiative, undertaking or activity'.<sup>110</sup> Thereafter, the Canadian Environmental Assessment Act (CEAA) was adopted, and, as modified in 2012, 'shift[ed] most environmental assessment responsibility to the provinces', '[l]imiting the scope of federal assessments to matters of exclusive federal jurisdiction . . .'.<sup>111</sup> Thus, the provincial role of environmental impact review has become more prominent and, '[w]hile all Canadian provinces and territories have environmental assessment processes and requirements, these vary greatly creating a patchwork of environmental assessment regimes throughout Canada'.<sup>112</sup>

#### *VI.29.4.9 Polluter pays*

The polluter pays principle (PPP) holds that polluters should be responsible for the costs their pollution imposes on others.<sup>113</sup> This can be achieved through regulatory burdens designed to minimize or prevent harmful pollution, a liability scheme requiring compensation for pollution, or targeted taxation imposed on polluters. In the US, the PPP is manifest only in limited ways, and even then its impact is questionable. For example, tort claims (e.g., nuisance, trespass, negligence) generally impose liability upon those responsible for pollution, but are only effective when the costs of gaining redress do not exceed the benefits and when causation of actual harm can be shown.<sup>114</sup> The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA),<sup>115</sup> adopted to address the problem of contaminated sites, affixes liability to 'responsible' parties and creates a legal framework for which clean-up costs may be recovered. However, responsible parties often cannot be found and PPP is only 'one of many factors that may or may not bear on a given equitable allocation determination' of pollution costs.<sup>116</sup> Canada's provincial regulation of hazardous waste sites follows a similar approach, with the PPP part of the equation, but not the dominating consideration.<sup>117</sup> Finally, as noted in the 'precaution' section, pollution control typically is required only when and to the degree it appears economically feasible. Consequently, in a great many circumstances polluters do not bear the full costs of their pollution.

#### *VI.29.4.10 Strict liability*

Both the US and Canada allow the imposition of strict liability (liability without a showing of negligence or fault) in tort. However, such liability is generally limited to abnormally dangerous or hazardous activities,<sup>118</sup> which are usually not held to encompass common polluting activities. The doctrine also appears in CERCLA, which imposes

<sup>110</sup> Ibid.

<sup>111</sup> Robert B Gibson, 'In Full Retreat: The Canadian Government's New Environmental Assessment Law Undoes Decades of Progress' (2012) *Impact Assessment and Project Appraisal* 179, 184–185.

<sup>112</sup> Powell (2015) 6.

<sup>113</sup> Mamlyuk (2009).

<sup>114</sup> See Gergen (1994).

<sup>115</sup> 42 U.S.C. § 9601 et seq.

<sup>116</sup> *Beazer East, Inc. v Mead Corp.*, 412 F.3d 429 (3d Cir. 2005).

<sup>117</sup> Sommers (2008).

<sup>118</sup> Restatement (Third) of Torts: Phys. and Emot. Harm § 20 (2010).

strict liability for remediation costs,<sup>119</sup> and in the Oil Pollution Act, which makes each responsible party for oil pollution liable for removal costs and damages.<sup>120</sup>

An important cognate of strict liability also operates in the civil penalty clauses of many environmental statutes, which provide that penalties for violations of pollution standards or permit requirements can be imposed without any showing of fault on the part of the polluter.<sup>121</sup> While this is not liability for the damage per se, it can be seen as a form of strict liability because the prosecutor need not show fault, thus significantly enhancing the likelihood of a penalty.

#### *VI.29.4.11 Extended producer responsibility*

Extended producer responsibility requires producers of hazardous products or waste to provide for their eventual disposal or remediation. In the US this principle is most clearly embodied by the RCRA, which takes a ‘cradle-to-grave’ approach by regulating the generation, transportation, treatment, storage, and eventual disposal of hazardous waste.<sup>122</sup> Generators remain liable throughout the process for any improper handling that results in site contamination. Another example has been trending at the State level, with laws regulating certain types of products and placing the burden of disposal on the products’ manufacturers. In New York, for example, the State legislature adopted the Rechargeable Battery Law<sup>123</sup> designed to reduce the toxic material in solid waste streams by removing rechargeable batteries. The Battery Law requires manufacturers of rechargeable batteries to take back and recycle used batteries that are sold and disposed of in New York. It also imposes obligations on both manufacturers and retailers of such batteries, requiring used battery collection from the end consumers.

In 2009, the Canadian Council of Ministers of the Environment issued a ‘Canada-wide Action Plan for Extended Producer Responsibility’, which ‘would seek the adoption by producers of full life-cycle cost accounting from their products . . . [and] see the costs of the end-of-life management of products treated similarly to other factors of production and incorporated into wholesale and retail product prices’.<sup>124</sup> The goal of this effort is to shift the cost burden from the taxpayers to the producers and consumers of certain products.

### **VI.29.5 Conclusion**

Environmental principles are present in many areas of US law and help organize understanding of those areas. However, none has become pervasively foundational, nor played a determinative role in guiding the development of that body of law. Instead, US environmental law continues to develop relatively piecemeal and to be shaped primarily by

<sup>119</sup> Klass (2004).

<sup>120</sup> Murchison (2011).

<sup>121</sup> E.g., Boyer and Meidinger (1985).

<sup>122</sup> *Meghrig v KFC Western, Inc.*, 516 U.S. 479, 483 (1996).

<sup>123</sup> Article 27, Title 18 of the New York Environmental Conservation Law.

<sup>124</sup> Canada-wide Action Plan for Extended Producer Responsibility, Canadian Council of Ministers of the Environment (2009), p. ii, available at: [http://www.ccme.ca/files/current\\_priorities/waste/pn\\_1499\\_epr\\_cap\\_e.pdf](http://www.ccme.ca/files/current_priorities/waste/pn_1499_epr_cap_e.pdf) (accessed December 18, 2016).

political pragmatism and economic power, pushed along by occasional environmental crises. Canada has enshrined sustainable development and the precautionary principle in its primary environmental statutes, but evidence of political pragmatism coexisting with environmental principles is present there as well. Overall, then, environmental principles make a limited contribution to the laudable goals of increasing the intelligibility, predictability, legitimacy, transboundary consistency, and long-term progress of environmental law in the US and Canada.

Conversely, environmental principles may play a larger role in the development and elaboration of non-state governance arrangements, as described in the section on 'non-state governance'. Moreover, it may be that environmental principles are playing a growing role at the local government level, as suggested by the section on 'sustainable development'. Accordingly, it is possible that, while principles continue to play a limited role in federal and state/provincial environmental law, they are taking hold at the local and non-governmental levels. If so, as US and Canadian environmental governance become increasingly multi-centric and transnational, environmental principles may over time play a larger role in shaping those arenas. Accordingly, an important question for future research will be the role played by environmental principles through local governmental and non-governmental participation in environmental governance interactions.<sup>125</sup>

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<sup>125</sup> Wood et al. (2015).

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