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## The Case for Effective Environmental Politics: Federalist or Unitary State? Comparing the Cases of Canada, the United States of America, and the People's Republic of China

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**THE CASE FOR EFFECTIVE ENVIRONMENTAL POLITICS:  
FEDERALIST OR UNITARY STATE? COMPARING THE CASES  
OF CANADA, THE UNITED STATES OF AMERICA, AND THE  
PEOPLE’S REPUBLIC OF CHINA**

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Justin Fisch\*

ABSTRACT

*Federalism, by its nature, is a segmented system of governance. The Canadian and American constitutional orders are divided along very clear lines of jurisdictional authority between levels of government. Environmental issues, by their nature, are holistic in scope—they transcend borders, governments, jurisdictions, and authorities. For this reason, one might assume that a unitary state would be better positioned to tackle them. Is this justified? This Article examines the Chinese unitary state, in comparison to the federalist systems in Canada and the United States of America, to discern whether a unitary government can better manage issues plaguing the environment.*

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## INTRODUCTION

In December 2015, world leaders descended upon Paris to convene the twentieth Conference of the Parties (COP). COPs are the United Nations' annual meeting designed to implement the Framework Convention on Climate Change, signed twenty-seven years ago in Rio de Janeiro, Brazil.<sup>1</sup> Since 1992, yearly meetings have come and gone, with little action to note, save the accords made at Kyoto (1995) and the failings of Copenhagen (2009). But Paris promised new life to international efforts aimed at protecting the environment, and nearly all states entered the meetings emboldened and committed to finding a solution to replace the lackluster Kyoto Protocol of twenty years prior.<sup>2</sup>

After two tense weeks of meetings, the 168 negotiating states emerged with the agreement within the Conference's ultimate timeline, signing it in the waning hours of Sunday night. The People's Republic of China (China), Canada, and the United States of America were chief negotiators, and ultimately signatories, to the Paris Agreement, aiming to ratify the convention through their domestic political procedures in the near future.<sup>3</sup> Yet as delegates boarded their planes home, many wondered: Would the agreement "save the planet"? Or were they in for another Kyoto-like disappointment?

Of chief concern to the world is the implementation of the Paris Agreement, which, like any environmental action, requires fervent and determined regulation, enforcement, and coordination within national political systems. Drawing from the domestic experiences of Canada, China, and the United States, this Article compares environmental politics in the three states with the ultimate goal of delineating relative strengths and weakness of two prevailing world governmental systems, federalist (Canada and the Unit-

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1. Chen Gang, *Politics of China's Environmental Protection: Problems and Progress*, in 17 SERIES ON CONTEMPORARY CHINA (2009). See also U.N., FRAMEWORK CONVENTION ON CLIMATE CHANGE, THE PARIS AGREEMENT, <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> (last visited May 9, 2018).

2. Though it can be said that the Kyoto Protocol led to some victories in addressing environmental issues, scholars generally agree that the Protocol did not accomplish its primary purpose: to reduce global greenhouse gas emissions.

3. China ratified the Paris Convention on September 3, 2016, whereas Canada ratified it on October 5, 2016. On June 1, 2017 U.S. President Donald Trump announced that the United States would fully withdraw from the Paris Agreement. Shawn McCarthy, *Liberal Government Formally Ratifies Paris Climate Accord*, GLOBE AND MAIL (Oct. 5, 2016), <https://www.the-globeandmail.com/news/politics/ottawa-formally-ratifies-paris-climate-accord/article32267242/>; Tom Philips, *China Ratifies Paris Climate Change Agreement Ahead of G20*, GUARDIAN (Sept. 3, 2016), <https://www.theguardian.com/world/2016/sep/03/china-ratifies-paris-climate-change-agreement>.

ed States) and unitary (China) states, in tackling environmental issues. In so doing, this Article analyzes two prevailing lines of scholarly research—on federalist systems and unitary bureaucracies—to identify best practices on a global scale. While not addressing the Paris Agreement directly, this Article compares the strengths and weaknesses of different forms of governance in addressing environmental issues. Ultimately, this Article hopes to shed light on the ways in which states can better implement environmental policies within their existing political systems.

### I. ENVIRONMENTAL POLICYMAKING AND POLITICAL STRUCTURE

In order to study the effectiveness of political structures, there is a wide variety of issues that could serve as a case study, which begs the question: Why environmental politics? First, environmental issues are everywhere. They transcend levels of government. They cross jurisdictional lines. Efforts to constitutionalize environmental responsibility are overly vague. The magnitude of environmental issues makes them pervasive at various scales, over vastly different time periods.

Second, environmental concerns are of great importance in the states studied in this Article. China is home to the world's largest population, nearly four times the U.S. population. China suffers from pollution in over ninety percent of its aquifers. Nearly 700 million people drink water contaminated with human and animal waste.<sup>4</sup> Its air quality is abysmal, with indexes plunging the air quality in China below that of nineteenth century cities in the heart of the Industrial Revolution.<sup>5</sup> Only one percent of China's 560 million urbanites breathe air that would be considered safe on the European continent.<sup>6</sup> These issues are only a cursory overview of the litany of environmental problems in the Middle Kingdom.<sup>7</sup> This Article will discuss others.

Canada is no stranger to environmental challenges, either. Nearly as soon as European settlers arrived on the new continent, serious wildlife management issues arose, with animal extinctions

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4. Chen, *supra* note 1, at 4–5.

5. Gregory C. Chow, *China's Energy and Environmental Problems and Policies*, 15 *ASIA-PACIFIC J. ACCT. & ECON.* 57 (2008). See also Tim Hatton, *Air Pollution in Victorian-Era Britain — its Effects on Health now Revealed*, *CONVERSATION* (Nov. 14, 2017), <https://theconversation.com/air-pollution-in-victorian-era-britain-its-effects-on-health-now-revealed-87208>.

6. Chen, *supra* note 1, at 8.

7. For more reading on environmental issues in China, see generally SAM GEALL, *CHINA AND THE ENVIRONMENT* (2013).

not far behind.<sup>8</sup> By the twentieth century, Canadians had enjoyed great economic growth at the expense of the bounty of the country's natural resources. They had also depleted one of their primary industries, the east coast fishery.<sup>9</sup> Canada's environmental challenges were not limited to its early days. Currently, the country's economy is highly dependent on exporting petroleum produced from the oil sands, considered by many to be the world's dirtiest fuel because the environmental consequences of its extraction process are so harmful.<sup>10</sup>

The United States held the unglamorous title of the world's greatest emitter of fossil fuels until China surpassed it in 2007.<sup>11</sup> As of 2017, the United States relied on polluting fossil fuels for over seventy-seven percent of its energy needs.<sup>12</sup> Like Canada, the arrival of Europeans on the North American continent, followed by vast population expansion and colonization, led the United States to experience serious issues in wildlife management.<sup>13</sup> Notably, Americans experienced the extinction of the passenger pigeon in 1914, once the most common bird on the continent.<sup>14</sup> In the 1950s, the country's emblematic bald eagle was barely saved from extirpation in the lower forty-eight states, with an estimated 400 breeding pairs remaining, down from a population of nearly half a million in the early 1800s.<sup>15</sup>

Environmental issues are wide, not only in breadth, but also in substance. In addition to the climate issues introduced above, the pollution challenges faced in China, and Americans' and Canadi-

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8. DAVID HOWARD DAVIS, COMPARING ENVIRONMENTAL POLICIES IN 16 COUNTRIES 126 (2014) (discussing the extinction of the Great Auk due to hunting).

9. *Id.* See also Kjellrun Hiis Hauge et al, *Fisheries Depletion and Collapse*, INTERNATIONAL RISK GOVERNANCE COUNCIL (2009), [http://irgc.org/wp-content/uploads/2012/04/Fisheries\\_Depletion\\_full\\_case\\_study\\_web.pdf](http://irgc.org/wp-content/uploads/2012/04/Fisheries_Depletion_full_case_study_web.pdf).

10. Davis *supra* note 8, at 136–38.

11. John Vidal & David Adam, *China Overtakes US as World's Biggest CO2 Emitter*, GUARDIAN (June 19, 2007), <https://www.theguardian.com/environment/2007/jun/19/china.usnews>.

12. *U.S. Energy Facts Explained*, U.S. ENERGY INFORMATION ADMINISTRATION, [https://www.eia.gov/energyexplained/?page=us\\_energy\\_home](https://www.eia.gov/energyexplained/?page=us_energy_home) (last visited July 24, 2018).

13. Peter Moyle & Mary A. Orland, *A History of Wildlife in North America: Era of Overexploitation (1850-1899)*, MARINEBIO (July 2004), <http://marinebio.org/oceans/conservation/moyle/ch2-2/>.

14. Carl Zimmer, *Century After Extinction, Passenger Pigeons Remain Iconic—And Scientists Hope to Bring Them Back*, NAT'L GEOGRAPHIC (Aug. 30, 2014), <https://news.nationalgeographic.com/news/2014/08/140831-passenger-pigeon-martha-deextinction-dna-animals-species/>.

15. See Bayard Webster, *The Bald Eagle: Flight from Extinction*, N.Y. TIMES (June 8, 1982), <https://www.nytimes.com/1982/06/08/science/the-bald-eagle-flight-from-extinction.html>; Natasha Geiling, *Now's the Time to See Hundreds of Bald Eagles*, SMITHSONIAN, (Feb. 13, 2015), <https://www.smithsonianmag.com/travel/weekend-visit-place-boasts-most-bald-eagles-lower-48-180954229/>.

ans' trials with conservation, matters of environmental politics are in constant battle with economic development. Environmental politics face threats from agricultural interests, energy production, land preservation, and much more across diverse governmental departments, agencies, and bureaus. Not only are environmental politics vertically diverse, but they are equally horizontally dissimilar within domestic political systems and across domestic jurisdictional lines. Environmental protection is further worsened by the disparities between advanced and developing states.

This Article could have chosen any number of substantive topics through which to compare federalist and unitary governments. However, the politics surrounding environmental issues, due to their scale, importance, and substance, comprise a strong and worthwhile case study for properly comparing the effectiveness of each political structure.

## II. WHY CHINA, THE UNITED STATES, AND CANADA?

At last count, there were twenty-five federations in the world and approximately 165 unitary governments.<sup>16</sup> China, Canada, and the United States are strategic choices for this Article. They all display particular characteristics that are uniquely suited to a comprehensive comparative study.

To begin, China, Canada, and the United States are the fourth, second, and third largest countries in the world by landmass, encompassing a wide breadth of environmental issues across their territories.<sup>17</sup> For this reason, a study of political structures is warranted in that environmental policy that is implemented in one region of the country may not work well in another. Political adaptability is key.

Further, China, Canada, and the United States possess different electoral systems. Whereas Canada and the United States may be viewed as competitive democracies, China is seen on the world stage as a one-party state with the modus operandi of democratic centralism.<sup>18</sup> The different electoral systems of the three countries

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16. *Countries*, FORUM OF FEDERATIONS, <http://www.forumfed.org/countries/> (last visited May 13, 2018). See also *What Is a Unitary State?*, WORLDATLAS, <https://www.worldatlas.com/articles/what-is-a-unitary-state.html> (last visited May 15, 2018).

17. Miklos Mattyasovszky, *The Largest Countries in the World*, WORLD ATLAS (Mar. 28, 2018), <https://www.worldatlas.com/articles/the-largest-countries-in-the-world-the-biggest-nations-as-determined-by-total-land-area.html>.

18. *China's One-Party System Has a Surprising Number of Parties*, ECONOMIST (Mar. 9, 2017), <https://www.economist.com/china/2017/03/09/chinas-one-party-system-has-a-surprising-number-of-parties>; Wang Chuanzhi, *Democratic Centralism: The Core Mechanism in China's Politi-*

influence their responsiveness to citizen concerns, their ability to centrally plan, and the diversity of their responses to environmental issues, among other elements.

Finally, China, Canada, and the United States possess significantly different economies, impacting the political structures under—or on top of—which they operate.<sup>19</sup> China is a fast developing country. Thirty years ago, China was extremely poor, but it is now home to 115 of the world's Fortune 500 companies.<sup>20</sup> China's gross domestic product maintains an annual growth rate of seven percent, modest in comparison to the gains of a decade ago.<sup>21</sup> China's modern fortunes have been made mostly in the manufacturing and production sector, with severe environmental consequences.<sup>22</sup>

Canada and the United States, on the other hand, are two of the world's most advanced economies with impressive Human Development Indexes to prove it—tied for tenth on the world stage.<sup>23</sup> Long an exporter of its natural resources, Canada's economy has diversified to include a very large service sector and advanced manufacturing industry, including a specialty in aerospace engineering.<sup>24</sup> Its tourism sector is booming, while its status as an “energy superpower” continues to evolve. As the world's fourth largest exporter of petroleum and natural gas, Canada is vulnerable to global shifts in natural resource demand.<sup>25</sup>

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*cal System* Qjushi (Oct. 1, 2013) [http://english.qstheory.cn/politics/201311/t20131113\\_290377.htm](http://english.qstheory.cn/politics/201311/t20131113_290377.htm).

19. According to Chen Jian, China is a state in which politics controls the economy, whereas in Western advanced democracies, the economy is in control of the state. Interview with Professor Chen Jian, Shantou University School of Law (Jan. 15, 2016).

20. *115 Chinese Firms on Fortune Global 500 List 2017*, CHINA DAILY (July 21, 2017), [http://www.chinadaily.com.cn/business/2017-07/21/content\\_30202343.htm](http://www.chinadaily.com.cn/business/2017-07/21/content_30202343.htm).

21. Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1141 (1995). See also *GDP Growth (Annual %)*, WORLD BANK DATABANK (last visited May 9, 2018), <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2016&locations=CN&start=1961&view=chart>.

22. See, e.g., Suzanne Goldenberg, *CO2 Emissions are Being 'Outsourced' by Rich Countries to Rising Economies*, GUARDIAN (Jan. 19, 2014), <https://www.theguardian.com/environment/2014/jan/19/co2-emissions-outsourced-rich-nations-rising-economies>.

23. Selim Jahan, *Human Development Report 2016: Human Development for Everyone*, UNITED NATIONS DEVELOPMENT PROGRAM (2016), [http://hdr.undp.org/sites/default/files/2016\\_human\\_development\\_report.pdf](http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf).

24. See, e.g., *Canadarm*, CANADIAN SPACE AGENCY (last visited May 9, 2018), <http://www.asc-csa.gc.ca/eng/canadarm/default.asp>; *Bombardier Inc.*, HISTORICA CANADA (last visited May 9, 2018), <http://www.thecanadianencyclopedia.ca/en/article/bombardier-inc/>.

25. Robson Fletcher, *Canada's Energy Superpower Status Threatened as World Shifts Off Fossil Fuel*, *Federal Think-Tank Warns*, CBC NEWS, May 30, 2016, <http://www.cbc.ca/news/canada/calgary/canada-super-power-oil-decline-renewables-policy-horizons-1.3601400>. See also *The Perils of Being a Petrostate*, REAL CLEAR ENERGY (Sept. 2, 2015), [https://www.realclearenergy.org/charticles/2015/09/03/the\\_perils\\_of\\_being\\_a\\_petrostate\\_108728.html](https://www.realclearenergy.org/charticles/2015/09/03/the_perils_of_being_a_petrostate_108728.html).

The United States is the world's largest economy.<sup>26</sup> It leads the world in financial services, while the country benefits equally from its abundant natural resources and intellectual capital. Struggles in the U.S. economy are felt around the world, and global dependence on the United States is unrivaled. National economic concerns include domestic job growth, the balance of trade, and resource security, among others.<sup>27</sup>

Though any number of countries could have been studied for this Article, the political, social, economic, and environmental characteristics of China, Canada, and the United States offer a ripe opportunity to compare interesting governmental structures and their ability to implement effective environmental policy.

### III. FEDERALISM VERSUS UNITARY GOVERNMENT

Without going into an in-depth study of world political systems, it is necessary to mention the basic differences between federalist and unitary states. A unitary state exists where a country is governed by one central authority, which delegates responsibility and gives direction to subnational units for local administration.<sup>28</sup> In a unitary government, the locus of power is with the national government and delegation varies from state to state. The majority of governments are unitary: Out of 193 United Nations member states, 165 are managed as unitary states. China is the largest unitary state by area, gross domestic product, and population. Other notable examples include France, Saudi Arabia, and Chile.<sup>29</sup>

Federal systems exist where subnational units share power with central authorities, often through constitutional separation of powers.<sup>30</sup> The national government is not necessarily more power-

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26. Rob Smith, *The World's Biggest Economies in 2018*, WORLD ECONOMIC FORUM (Apr. 18, 2018), <https://www.weforum.org/agenda/2018/04/the-worlds-biggest-economies-in-2018/>.

27. James McBride, *The U.S. Trade Deficit: How Much Does It Matter?*, COUNCIL ON FOREIGN RELATIONS (Oct. 17, 2017), <https://www.cfr.org/background/US-trade-deficit-how-much-does-it-matter>; Juan Carlos Castilla-Rubio & Giulio Boccaletti, *Environmental and Natural Resource Security for the 21st Century*, FINANCIAL TIMES (Jan. 16, 2017), <https://www.ft.com/content/bae26222-5233-3d42-90c7-1426cf83723a>.

28. See, e.g., *Unitary and Federal Systems*, ENCYCLOPEDIA BRITANNICA (last visited May 9, 2018), <https://www.britannica.com/topic/constitutional-law/Unitary-and-federal-systems>. See also Daniel L. Millimet, *Environmental Federalism: A Survey of the Empirical Literature*, 64 CASE W. RES. L. REV. 1669 (2014).

29. See also *What Is a Unitary State?*, WORLDATLAS, <https://www.worldatlas.com/articles/what-is-a-unitary-state.html> (last visited May 15, 2018).

30. Cf. *Federation*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/federation> (last visited July 17, 2018); *Federal System*, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/topic/political-system/Federal-systems#ref416916> (last visited



ful than those of its constituent states, and it generally cannot unilaterally assign itself new powers without undertaking a constitutional amendment process.<sup>31</sup> Subnational states come together into federation through agreement or covenant. Canada has a “confederated government,” which means that the government came together for a specific purpose.<sup>32</sup> The United States came into federation on two distinct occasions: in 1777, under the Articles of Confederation and Perpetual Union, and under the United States Constitution in 1788.<sup>33</sup>

States in a federal system vary significantly in the strength of their central government. Canada, for example, is seen as having a particularly “weak” federal structure—the provinces possess a significant amount of governmental power. Although few in number, federations include some of the world’s leading states and are overrepresented in terms of geographical area. In addition to Canada and the United States, other examples include Australia, Brazil, India, and Russia among others.<sup>34</sup>

#### IV. ENVIRONMENTAL FEDERALISM AND UNITARY BUREAUCRACY

This Article studies environmental policymaking while contrasting federalist and unitary states. This Part addresses the peculiarities inherent in managing environmental issues within each of these systems. These peculiarities vary significantly and have a good deal of impact on both the domestic effectiveness of environmental policy implementation, as well as a state’s ability to balance international expectations with a national constitutional structure.

The term “environmental federalism” refers to the debate about the “optimal” level of government at which to assign environmental policymaking.<sup>35</sup> In this debate, the advantages and disadvantages of setting environmental policy at a local or state level

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July 24, 2018).

31. Although it may attempt to do so and see if its constitutional courts come out in agreement.

32. A confederation is a union for a common goal or pursuit. Canada confederated in interest of national defense against an impending American threat of invasion. *See, e.g., American Civil War and Canada*, HISTORICA CANADA (last visited May 9, 2018), <http://www.thecanadianencyclopedia.ca/en/article/american-civil-war/>.

33. *See Articles of Confederation, 1777–1781*, U.S. DEP’T OF STATE, OFFICE OF THE HISTORIAN, <https://history.state.gov/milestones/1776-1783/articles> (last visited July 17, 2018); *Constitution*, HISTORY, <https://www.history.com/topics/constitution> (last visited July 17, 2018).

34. *Countries*, FORUM OF FEDERATIONS, <http://www.forumfed.org/countries/> (last visited May 13, 2018); *Federal System*, *supra* note 30.

35. Millimet, *supra* note 28, at 1670.

are contrasted with the advantages and disadvantages of allowing the central government to formulate policy.<sup>36</sup> An important principle guiding environmental federalism is location impact, the idea that political power ought to be wielded at the level at which pollution or environmental degradation occurs.<sup>37</sup> For instance, if pollution affects local environmental quality, the subnational government should be responsible for the setting of standards to control it. As such, regulatory measures should be tailored to meet the needs of each jurisdiction.<sup>38</sup> On the flip side, environmental issues that reach beyond state or subnational borders should be nationally regulated to gain optimal effect from regulation and promote economies of scale in dealing with the issue at hand.<sup>39</sup> Optimally, when an issue is neither clearly local nor national in scope, levels of government work together to solve environmental issues in concert.

Bureaucracies in unitary states, however, deal with environmental issues in a vastly different manner. Rulemaking is done at a national level, while implementation of environmental policy is conducted by subnational authorities through bureaucratic enforcement structures.<sup>40</sup> As with environmental federalism, this has both advantages and disadvantages in dealing with the breadth of environmental issues. On one hand, strong central policy provides a uniform approach across a vast territory and creates room for improvements in dealing with spatially-diverse environmental problems.<sup>41</sup> On the other hand, a lack of local impact consideration overlooks local solutions that may be more effective in combating certain environmental problems. Further, unitary bureaucracies may have central decision-making structures, yet exhibit strongly decentralized governing structures, as is the case with China.<sup>42</sup> In these situations, local officials can effectively pick and choose between competing central policies, depending on incentives, local objectives, and the divergence of interests—often to the detriment of the environment.<sup>43</sup>

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36. See Wallace E. Oates, *A Reconsideration of Environmental Federalism*, in *RECENT ADVANCES IN ENVIRONMENTAL ECONOMICS 1* (John List & Aart de Zeeuw eds., 2002).

37. See *id.*

38. *Id.* at 22.

39. *Id.* at 21.

40. See Genia Kostka & Arthur P.J. Mol, *Implementation and Participation in China's Local Environmental Politics: Challenges and Innovations*, 15 *J. ENVTL. POL'Y & PLANNING* 3, 3 (2013).

41. Percival, *supra* note 21, at 1171–72.

42. See generally Elizabeth C. Economy, *THE RIVER RUNS BLACK: THE ENVIRONMENTAL CHALLENGE TO CHINA'S FUTURE* (2d ed. 2010).

43. Arthur P.J. Mol & Neil T. Carter, *China's Environmental Governance in Transition*, 15 *ENVTL. POL.* 149, 155–56 (2006).

Environmental issues, by their very nature, are holistic in scope. For this reason, one might assume that a unitary state would be better positioned to tackle them. Federalism, by its very nature, is a segmented system of governance. As discussed in this Part, the Canadian and United States constitutional orders are divided along clear lines of jurisdictional authority between levels of government. Can federal systems adequately address pervasive and cross-jurisdictional issues of environmental governance?

## V. EFFECTIVE ENVIRONMENTAL POLITICS: AN ANALYSIS

The following Part portrays this Article's central question: whether a federal or unitary state structure is the most effective means to legislate, administer, and enforce environmental policies on a national scale. Each sub-Part that follows addresses one issue, with case comparisons made between the situations in China, Canada, and the United States. Although not exhaustive, these cases compare the contemporary situations in some of the most pressing environmental issues in North America and Asia in 2018.

### A. *Constitutional Mandate*

The Canadian Constitution was drafted in 1867 and amended in 1982 upon its repatriation from the British monarchy.<sup>44</sup> The 1867 version contains most of the provisions relevant for an analysis of today's environmental issues, including a clear delineation of powers between the federal government and the provinces in sections 91 and 92.<sup>45</sup> Unfortunately, jurisdiction over environmental issues was never clearly defined in Canada's constitutional papers. As such, the constitutional power of each governmental entity—federal or provincial—to legislate on the environment is relegated to interpretation of the provisions on the books and precedential jurisprudence. In *Friends of the Oldman River v. Canada*, the Supreme Court of Canada decided that each level of government could legislate on environmental matters, so long as it was acting on the basis of one of its constitutional powers.<sup>46</sup>

For the provinces, jurisdiction over environmental issues comes primarily from ownership of natural resources, administration of

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44. Constitution Act, 1982, *being* Schedule B to the Canada Act, 1982, c 11 (U.K.).

45. *Id.* §§ 91–92.

46. *Friends of the Oldman River Society v. Canada*, [1992] 1 S.C.R. 3 (Can.).

Crown land,<sup>47</sup> prerogative over property and civil rights, and control over “matters of a local or private nature.”<sup>48</sup> For much of the history of Canadian confederation, environmental political power was primarily wielded by the provinces, with only recent intervention by the national government.<sup>49</sup>

Canadian federal jurisdiction over environmental issues, on the other hand, comes from its constitutional power over cross-border matters and is best and most simply characterized as power to regulate pollution.<sup>50</sup> Further, the federal government wields political power over fisheries and navigation, both requiring environmental consideration.<sup>51</sup> A broader interpretation of the law could also give the federal government environmental jurisdiction over the rail system, given that interprovincial railways fall under the federal constitutional mandate.<sup>52</sup> But the Canadian federal government’s power to legislate in the area of the environment comes primarily from case law.<sup>53</sup>

The United States’ constitutional order is even vaguer than that of its neighbor to the north. The Constitution of the United States contains no detailed assignment of responsibilities to its federated levels of government.<sup>54</sup> The Tenth Amendment of the U.S. Constitution consists of a single sentence delineating responsibility: “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”<sup>55</sup>

The Commerce Clause has therefore proven to be the permissive factor in allowing for federal lawmaking in the realm of environment, even when the interstate impact may be quite indirect.<sup>56</sup> Under the Commerce Clause, Congress has the power “to regulate commerce with foreign Nations, and among the several States, and

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47. “Crown land” is a holdover term for “public land” from British demagogy. *See Crown Land*, HISTORICA CANADA, <https://www.thecanadianencyclopedia.ca/en/article/crown-land/> (last visited July 17, 2018).

48. Alexis Bélanger, *Canadian Federalism in the Context of Combating Climate Change*, 20 CONST. F. CONSTITUTIONNEL 21, 22 (2011).

49. HOOMAN PEIMANI, ENERGY SECURITY AND GEOPOLITICS IN THE ARCTIC: CHALLENGES AND OPPORTUNITIES IN THE 21ST CENTURY 23–24 (2013).

50. *See generally* Millimet, *supra* note 28.

51. Constitution Act, 1982, *being* Schedule B to the Canada Act, 1982, c 11, § 91 (U.K.).

52. *Id.* c 11, § 92(10)(a).

53. *See, e.g.*, *R. v. Crown Zellerbach*, [1988] 1 S.C.R. 401 (Can.) (allowing a federal provision that prohibited the dumping of waste into the ocean); *R. v. Hydro-Québec*, [1997] 3 S.C.R. 213 (Can.) (holding provisions of the Canadian Environmental Protection Act (CEPA) valid).

54. Susan Rose-Ackerman, *Environmental Policy and Federal Structure: A Comparison of the United States and Germany*, 47 VAND. L. REV. 1587, 1599 (1994).

55. U.S. CONST. amend X.

56. Rose-Ackerman, *supra* note 54, at 1599.

with the Indian Tribes.”<sup>57</sup> Every major post-1970 environmental law has relied on the Commerce Clause for its constitutionality, and the Supreme Court of the United States’ expansive interpretation of Congress’s lawmaking powers, over the years, has created broad federal competence in environmental policymaking.<sup>58</sup> As such, there is no constraint on the assignment of environmental responsibilities in U.S. federalism, as long as there is no violation of the Commerce Clause.<sup>59</sup> Unlike in Canada, the United States has strong federal statutes in most areas of environmental protection.<sup>60</sup> Examples of such laws include the well-known Clean Air Act, Clean Water Act, National Environmental Policy Act, and the Endangered Species Act.

Chinese jurisdiction over environmental issues is vested in the central government, per Article 26 of the Chinese Constitution, putting a positive obligation on the government: “[T]he state protects and improves the environment in which people live and the ecological environment. It prevents and controls pollution and other public hazards.”<sup>61</sup> The state also has a duty to conserve natural resources and wildlife.<sup>62</sup> Though the constitutional authority vests political power with the central government, and policy is formulated at this level, implementation is highly decentralized.<sup>63</sup>

From this brief look at the mandates of each country, it is clear that China’s Constitution better accounts for the need for environmental protection, imposing on the government an explicit, positive obligation to preserve and protect. However, this relative strength cannot be attributed to the political structure of China as a unitary state rather than a federation—it is simply a product of history and could have been incorporated into the Canadian or American constitutional orders, had the issue been *du jour* at the time of the constitutional drafting.

Thus, the constitutional mandates among the three states have no bearing on the relative effectiveness of environmental politics in each nation-state. The comparisons offer a historical perspective

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57. U.S. CONST. art. I, § 8, cl. 3.

58. See, e.g., Robinson Meyer, *How the U.S. Protects the Environment, from Nixon to Trump: A Curious Person’s Guide to the Laws that Keep the Air Clean and the Water Pure*, ATLANTIC (Mar. 29, 2017), <https://www.theatlantic.com/science/archive/2017/03/how-the-epa-and-us-environmental-law-works-a-civics-guide-pruitt-trump/521001/>; Cliona J.M. Kimber, *A Comparison of Environmental Federalism in the United States and the European Union*, 54 MD. L. REV. 1658, 1673 (1995).

59. Rose-Ackerman, *supra* note 54, at 1621.

60. *Id.* at 1599–1600.

61. XIANFA art. 26, § 1 (1982) (China).

62. Chow, *supra* note 5, at 61.

63. *Id.* at 13–14.

as to how environmental policymaking was enshrined in each constitution over history, with the oldest of the three, the U.S. Constitution, not providing any express competence to legislate for the protection of the environment.<sup>64</sup> The second oldest of the three, the Canadian Constitution, provides for some delineation of environmental powers between federal entities. The Chinese Constitution is the youngest of the three and imposes a positive obligation on the state to “prevent and control pollution,” among other environmental obligations.

The political structure of each state—federation versus unitary state—is of less consequence to the efficacy of environmental policymaking, however, than the simple fact that each constitution was drafted in a different century.<sup>65</sup> This factor of history is a more realistic distinction of the constitutional mandate in the environmental realm than the political structure of the state.

### B. *Innovation and Laboratory Federalism*

Although this Article focuses on the most effective political structure for combating environmental issues, it must not be forgotten that innovation—both technological and policy-based—is vital to humans’ ability to rectify the wrongs done to our planet.<sup>66</sup> This section will explore the most effective structure to foster innovative policymaking.

Laboratory federalism refers to the advantages decentralized government structure creates for innovative policymaking. In a federal structure, provincial/state and local governments can introduce new regulatory measures that may not be welcome at the national level. Since provinces and states are more homogenous than the entire country, they can adopt policies that are too radical to be accepted by the federal government.<sup>67</sup> If the program fails, the entire country does not suffer. If it is a success, it can be copied by other provinces/states or the federal government, if constitutionally permissible.<sup>68</sup>

Journalist David Mitchell of *The Globe and Mail* penned

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64. Kimber, *supra* note 58, at 1673.

65. The United States Constitution was drafted in 1788, the Canadian Constitution was drafted in 1867 (and 1982), and the Chinese Constitution was drafted in 1982.

66. See Thomas L. Friedman, *The Power of Green*, N.Y. TIMES MAG., Apr. 15, 2007, at 40 (arguing for a redefined and broader green ideology which has the power to mobilize society).

67. Bélanger, *supra* note 48, at 22 (quoting PETER HOGG, CONSTITUTIONAL LAW OF CANADA 5–14 (Carswell, 2007)).

68. *Id.*

“[w]here all think alike, no one thinks very much . . . . Canada is a federation—the most creative public policy is found at the provincial level of the government, not the federal.”<sup>69</sup> Many of Canada’s landmark social programs originated in one province and were later adopted by all or some others. Universal health insurance and subsidized childcare are two key examples.<sup>70</sup> In the environmental realm, innovation in carbon taxation, as well as cap-and-trade programs, has come from the provinces of British Columbia and Québec, respectively.<sup>71</sup> These have joint programs have been subsequently joined by other jurisdictions.<sup>72</sup>

The United States’ experience in innovation and laboratory federalism was memorialized in Louis Brandeis’s dissent in the 1932 Supreme Court case, *New State Ice Co. v. Liebman*: “It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”<sup>73</sup> Akin to the Canadian experiment, these “laboratories of democracy” have their clear advantages in small-scale innovation and risk-taking, as well as policy emulation.<sup>74</sup> That said, states may also be romanticized for their potential innovative capacities, whereas, in fact, few state politicians possess incentives to support risky innovations.<sup>75</sup> Further, those that do have such an incentive will be driven by political, not scientific, motivations. Stephen Gey argued that Brandeis’s statement is but a common myth idealizing small-scale democracy in the United States.<sup>76</sup>

Though individual American states may not explicitly serve as Brandeis’s “laboratories of democracy,” they have implicitly done so out of need or political desire and were later emulated by their counterparts. The paradigmatic example in this realm is California, which passed some of the country’s most stringent air and water quality laws over two decades before federal standards came in-

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69. Bélanger, *supra* note 48, at 27 (quoting David Mitchell, *Vive la différence! Our Spending Mosaic Makes Us Stronger*, GLOBE AND MAIL (Apr. 27, 2009), <https://www.theglobeandmail.com/opinion/vive-la-difference-our-spending-mosaic-makes-us-stronger/article785377/>).

70. *Id.* at 26.

71. Bélanger, *supra* note 48, at 25.

72. Ontario entered into the Western Climate Initiative in September 2017. A political shift in the province in June 2018, however, may see the province formally withdraw from the Initiative less than a year into its participation. See WESTERN CLIMATE INITIATIVE, INC., <http://www.wci-inc.org> (last visited Mar. 8, 2018).

73. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J. dissenting).

74. See, e.g., Millimet, *supra* note 28, at 1752–53.

75. Susan Rose-Ackerman, *Risk Taking and Reelection: Does Federalism Promote Innovation?*, 9 J. LEGAL STUD. 593, 614 (1980).

76. Steven G. Gey, *The Political Economy of the Dormant Commerce Clause*, 17 NYU REV. L. & SOC. CHANGE 1, 72 (1989).

to effect.<sup>77</sup> These regulations were not an effort to perform any type of “experiment,” but rather to combat the state’s abysmal air and water quality in the 1960s. In doing so, California became a de facto laboratory for policy experimentation. In considering federal air quality legislation, Congress incorporated California’s ability to enforce air pollution standards that were more stringent than federal requirements into the Clean Air Act. It allowed California to become the only state authorized by statute to set its own auto emissions standards.<sup>78</sup> Other states, in turn, are invited to set their air quality baselines equal to those of the federal Environmental Protection Agency (EPA) or the state of California.<sup>79</sup> Though not an intentional laboratory, California, in this instance, has served as an example of policy innovation in federalism.<sup>80</sup> In considering innovative capacity, a decentralized federal system, such as that of the United States, clearly allows for environmental regulation to be tested on a state-to-state scale. If successful, a policy may be adopted by other states or the federal government. If unsuccessful, a policy may be abandoned, having affected fewer individuals than it generally would in a national unitary system.

Yet, innovation by diversity is not limited to federal states. China’s central bureaucracy also toys with incentives to innovate; although, these incentives are not permanently built into the political system. As previously discussed, when national policy goals are handed down to local officials for implementation, the officials have some discretion as to how these targets are to be met.<sup>81</sup> China’s increasing integration into the world economy helps to drive this policy implementation by encouraging localities to set higher standards than nationally required to court the good graces of the

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77. The Air Pollution Control Act of 1947, CAL. HEALTH & SAFETY §§ 39000–39002 (West 2018). The Air Pollution Control Act of 1947 authorized the creation of Air Pollution Control Districts (APCD) in every county of the State.

78. Such allowance works through a system of waivers granted by the EPA. See U.S. ENVIRONMENTAL PROTECTION AGENCY, *Vehicle Emissions California Waivers and Authorizations*, <https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations> (last visited Feb. 2, 2018). See also Stanley Laskowski et al., *Environmental Decentralization in the United States: Seeking the Proper Balance between National and State Authority*, RESOURCES FOR THE FUTURE, Oct. 2005, at 4.

79. Michael G. Faure & Jason S. Johnston, *The Law and Economics of Environmental Federalism: Europe and the United States Compared* 27 VA. ENVTL. L.J. 205, 214 n.27 (2008).

80. Fifteen states have followed suit, and any car dealership in a state bordering a waiver state can sell California-compliant cars, making it that the vast majority of Americans live at least partly under the Golden State rules. Robinson Meyer, *The Coming Clean-Air War Between Trump and California: The Outcome will Shape the Planet’s Climate for Generations* ATLANTIC (Mar. 6, 2017), <https://www.theatlantic.com/science/archive/2017/03/trump-california-clean-air-act-waiver-climate-change/518649/>.

81. Chen, *supra* note 1, at 38.



international community. In 2011, for instance, seven pilot emissions trading systems (ETS) for carbon dioxide were launched in China.<sup>82</sup> The pilots have been called “innovative” for their allowance allocation and distribution methodologies, which are tailored to the structural and economic conditions of each jurisdiction.<sup>83</sup> Bennett and Zheng each also argue that environmental innovation in China has also come about because of de facto laboratory federalism.<sup>84</sup>

Aside from going above and beyond national environmental targets (or violating the Constitution), local officials in China appear to have little incentive to offer innovative or laboratory solutions to environmental issues—these are planned and executed from Beijing.<sup>85</sup> As an example, even the innovative approaches presented above, such as China’s ETS pilot program, are planned and executed by the central bureaucracy. When local bureaucrats see the impact of environmental issues on a local level in China, they simply increase enforcement for purposes of cadre advancement and not for the purpose of dealing with environmental issues of substantive importance.<sup>86</sup> The void that exists between implementation and enforcement leaves much to be desired.

At the same time, the federal structures in Canada and the United States appear to provide for more opportunities to experiment with innovative approaches to crafting environmental public policy on a subnational scale.<sup>87</sup> Though critiques of laboratory federalism are welcome and warranted, the complexities in environmental policymaking necessitate bold lawmaking and precaution in dealing with environmental issues. As such, the potential innovative capacity of federalism would appear to offer it an advantage, however marginal, over its unitary counterpart, especially when contrasted with a nation the size of China, in which 1.3 billion in-

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82. EASWARAN NARASSIMHAN ET AL., TUFTS UNIVERSITY, FLETCHER SCHOOL CLIMATE POLICY LAB, CARBON PRICING IN PRACTICE: A REVIEW OF THE EVIDENCE 9 (2017), <https://sites.tufts.edu/cierp/files/2017/11/Carbon-Pricing-In-Practice-A-Review-of-the-Evidence.pdf>.

83. Ling Xiong, et al., *The Allowance Mechanism of China’s Carbon Trading Pilots: A Comparative Analysis with Schemes in EU and California*, 185 APPLIED ENERGY 1849, 1851 (2017).

84. YONGNIAN ZHENG, DE FACTO FEDERALISM IN CHINA: REFORMS AND DYNAMICS OF CENTRAL-LOCAL RELATIONS 333; M.T. BENNETT, MARKETS FOR ECOSYSTEM SERVICES IN CHINA: AN EXPLORATION OF CHINA’S “ECO-COMPENSATION” AND OTHER MARKET-BASED ENVIRONMENTAL POLICIES 7 (2009).

85. Kostka & Mol, *supra* note 40, at 13. See also Ye Qi & Tong Wu, *The Politics of Climate Change in China*, 4 WILEY INTERDISC. REVS.: CLIMATE CHANGE 301 (2013).

86. See generally Lei Liu, et al., *The Drivers of Local Environmental Policy in China: An Analysis of Shenzhen’s Environmental Performance Management System, 2007-2015*, 165 J. CLEANER PRODUCTION 656 (2017) (discussing the role of the cadre system in environmental management).

87. See Oates, *supra* note 36, at 3–4.

dividuals experience the effects, however positive or negative, of trials in policymaking.

### C. *Proximity and Adaptability*

This Article discussed at length the difficulty in managing environmental issues due to the inability to set jurisdictional lines around the effects of environmental damage—crossing borders is inevitable. Yet, from the opposite angle, environmental issues are not only transnational and transjurisdictional in scope, but their effects can remain particularly local. Policy development and implementation in the realm of the environment is highly dependent on local conditions, and environmental standards must be adapted to local contexts in order to have effect.<sup>88</sup> An air quality index for Guangdong may be useless in Xinjiang, just as an energy efficiency model tailored to Vancouver Island will fail in Nunavut. For this reason, the involvement of local people and the social sector within communities is vital to the creation of effective environmental policies. This Part discusses the proximity and adaptability inherent in Canadian and American federalism as contrasted with China's unitary bureaucracy.

Bottom-up federalism refers to subnational governments taking the lead on issues relevant to their jurisdiction.<sup>89</sup> It calls on local leaders to balance the social factors and economic conditions required to maintain stability in the face of policy change, recognizing the unique needs of any given region. Further, it allows non-governmental organizations (NGOs) to be involved in policy formulation and standard-setting, given the smaller fora available at the provincial and state level.<sup>90</sup>

Canadian provinces have embraced the concept of bottom-up federalism, responding to environmental issues with homegrown solutions. Some of the world's most notable environmental NGOs, including Greenpeace, were born in Canada, where proximity to policymakers made this a reality.<sup>91</sup> This proximity to both environmental concerns and environmental policymaking allows a bottom-up federal structure to thrive, where local ideas, policy, and solutions are both adapted for local contexts and spread upwards when successful. The recognition that Canada's vast territory cannot be

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88. Bélanger, *supra* note 48, at 26.

89. *See generally* Millimet *supra* note 28.

90. Millimet, *supra* note 28, at 39.

91. *Cf. Greenpeace*, ENCYCLOPÆDIA BRITANNICA (last visited May 9, 2018), <https://www.britannica.com/topic/Greenpeace>.

managed by a single environmental policy allows for a diversity of environmental responses in its federal structure. The proximity of local and provincial government to environmental issues translates directly into an increased ability to adapt to environmental challenges when they arise.<sup>92</sup>

The debate around proximity and adaptability plays out most vividly in the United States. The lack of clear jurisdictional lines around environmental policymaking keeps alive the discussion about whether regionalized or uniform national policy best serves the interests of the populace. Proponents of regionalism<sup>93</sup> point to over-centralization in U.S. environmental decision-making, wherein stringent uniform regulation of pollution sources may not be appropriate for individual air basins and watersheds.<sup>94</sup> When uniform rules are drafted to allow for local exceptions in order to account for local conditions, these exceptions may not be enough to alleviate the serious local cost differential that one particular locality or state may feel in comparison to another.<sup>95</sup> That is, one state suffers far more than another due to stringent, legally binding regulations that affect that state more than another state.<sup>96</sup> In such situations, regional decision-making on environmental issues would be warranted.

The U.S. political system, however, remains incredibly adaptable to adopting best practices in environmental federalism due to the lack of entrenched responsibilities allocated to the various levels of government in environmental policy. As such, a logical allocation of responsibilities can theoretically be considered for any given issue. Local government officials generally have a better understanding of a local environmental situation, the stakeholders at play, and the cultural or economic considerations involved.<sup>97</sup> As such, the manner by which federal law is written in the United States—granting or withholding states' enforcement, regulatory, or implementation power—will largely determine the degree to which U.S. environmental policy can be both adaptable to local

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92. Bélanger, *supra* note 48, at 26–27.

93. Regionalism is defined as “consciousness of and loyalty to a distinct region with a homogeneous population . . . [or the] development of a political or social system based on one or more such areas.” *Regionalism*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/regionalism> (last visited July 24, 2018).

94. James Lester documents interstate differences in dependence on federal funds and commitment to environmental protection as a policy goal. See James P. Lester, *New Federalism and Environmental Policy*, 16 PUBLIUS 1 (1986).

95. Rose-Ackerman, *supra* note 54, at 1611.

96. *Id.*

97. WORLD RESOURCES INST., *The Bottom Line On . . . State and Federal Policy Roles* 1 (2008), [https://www.wri.org/sites/default/files/pdf/bottom\\_line\\_state\\_fed.pdf](https://www.wri.org/sites/default/files/pdf/bottom_line_state_fed.pdf).

conditions and proximate to the issues at stake. U.S. federal law-making can therefore be either a limitation or an advantage for proximity and adaptability in environmental policymaking.

In contrast, the Chinese populace is relatively distant from its policymaking body in Beijing. Although the Chinese People's Political Consultative Conferences (CPPCC) at the county, prefecture, and provincial level provide a venue for issues to be heard and debated in both the state and party structure, these voices and concerns may get lost in the transition to the national level.<sup>98</sup> Further, Chinese NGOs and social organizations have historically had little input into the formulation of environmental policy.<sup>99</sup> As such, the CPPCC has been and remains the primary body by which local concerns reach decision makers in Beijing. This practice is slowly changing.

On the positive side, however, China has been consistent in its maintenance of a system of complaints—"letters and visits"—implemented to assist government priority-setting and monitoring in the realm of environmental pollution.<sup>100</sup> Further, while local interested parties have been invited to help demark areas in need of environmental protection, this has not necessarily allowed them to participate in policy formulation.<sup>101</sup> The input of environmentalists in environmental policymaking seems to be highly location-dependent, with less input outside of major economic centers.<sup>102</sup> On the other hand, China has taken important steps to further integrate NGOs into the structure of environmental adaptability, allowing for public interest lawsuits under the new Environmental Protection Law (EPL), which came into effect in 2015.<sup>103</sup> Article 58 of the EPL allows NGOs to file claims in the People's Court in the interest of citizens to stop environmental degradation by polluters. Albeit limited in scope,<sup>104</sup> this is a major step in the rapprochement

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98. Kostka & Mol, *supra* note 40, at 9–10.

99. Simona Alba Grano, *Green Activism in Red China: The Role of Shanghai's NGOs in Influencing Environmental Politics*, 8 J. CIV. SOC. 39, 57 (2012).

100. Kostka & Mol, *supra* note 40, at 10. Writing letters or paying visits to government officials to report injustice, official misconduct, or worse dates back to imperial times. According to some scholars, it is based on the Confucian ideal of commoners appealing to the better nature of officials or even the emperor. See, e.g., Xujun Gao & Jie Long, *On the Petition System in China*, 12 U. ST. THOMAS L.J. 34 (2015).

101. Bennett, *supra* note 84, at 72–73.

102. Kostka & Mol, *supra* note 40, at 12.

103. Environmental Protection Law of the People's Republic of China (promulgated by Order No. 22 of the President of the People's Republic of China, Dec. 26, 1989, effective Dec. 26, 1989, amended Jan. 1, 2015). This involvement is limited to legal recourse and does not include policymaking.

104. The impact of the new law may be limited in that "(1) the groups must be registered with a government civil affairs department at or above the level of a city with districts; and (2) the groups must have been engaged specifically in public service activities in envi-

of the Chinese government with its citizenry and has the potential to generate positive results for environmental protection in China. Further, the Chinese Ministry of Ecology and Environment recently announced its intention to develop more nuanced policies to deal with pollution, in order to better deal with local conditions.<sup>105</sup>

In elements of proximity and adaptability, it appears that federal states have distinct advantages in formulating coherent, appropriate, and adaptable policy to deal with environmental issues in multiple jurisdictions. On a visit to Xi'an in 2009, former United Nations Secretary General Ban Ki Moon said it best: "National governments can have their national policies, but after all it is provincial governments who have to implement these policies[,] and even from this kind of bottom-up support, policies will be much more effective than top-down policies."<sup>106</sup>

#### D. *Race to the Bottom and Competitive Advantage*

A key concern for global environmental politics is the idea of a regulatory "race to the bottom," where nation states will deliberately maintain weak environmental policies in order to attract industry and investment to their countries. This risk remains in environmental federalism.<sup>107</sup>

In practice, however, a race to the bottom has not manifested in the environmental politics of federal states. In Canada, the number of provincial laws to combat climate change has steadily increased since 2007, often exceeding counterpart provincial and federal standards.<sup>108</sup> Provincial governments wish to be seen as leaders in a particular field, including environmental quality. When a government responds positively to challenges of environ-

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ronmental protection for five consecutive years without any record of violation of laws." *China: Environmental Protection Law Revised*, LIBRARY OF CONGRESS GLOBAL LEGAL MONITOR (June 6, 2014), <http://www.loc.gov/law/foreign-news/article/china-environmental-protection-law-revised/>.

105. *China Says to End "One Size Fits All" Environmental Policies*, REUTERS, <https://www.reuters.com/article/us-china-pollution/china-says-to-end-one-size-fits-all-environmental-policies-idUSKCN1IT094> (May 28, 2018).

106. Bélanger, *supra* note 48, at 40.

107. For more on the concept of a "race to the bottom," see Nathaniel T. Aden & Jonathan E. Sinton, *Environmental Implications of Energy Policy in China*, 15 ENVTL. POL. 248 (2006).

108. See, e.g., Dufferin Harper, et al., *An Overview of Various Provincial Climate Change Policies Across Canada and their Impact on Renewable Energy Generation*, ENERGY REG. Q., Nov. 2016, <http://www.energyregulationquarterly.ca/articles/an-overview-of-various-provincial-climate-change-policies-across-canada-and-their-impact-on-renewable-energy-generation#sthash.eESDljTc.IDb9mCWW.dpbs>.

mental protection, it is more likely to stay in office.<sup>109</sup> In legislating on environmental pollutants and other health risks, governments typically compete with one another to have the strongest protections possible.<sup>110</sup> On the United States side, Goklany points to legislative improvements in air quality regulation prior to the federal Clean Air Act of 1970 to make this point. Further, studies show that there is, in fact, little evidence to conclude that increasing environmental regulations reduce a jurisdiction's competitiveness, despite broad political and business claims.<sup>111</sup> As such, environmental federalism may have engendered just the opposite—a race to the top.<sup>112</sup>

Due to its relatively quick adoption of federal environmental policies, the United States is an interesting laboratory in which to study the impact of environmental regulations on business and economic activities. The pollution control measures enacted in the 1970s had short deadlines for businesses that were extremely costly to meet in some industries. Today, environmental and pollution control regulations now account for a relatively small amount of corporate expenses. Even in some of the industries that have the greatest impact on the environment, annual pollution abatement expenses cost less than two percent of annual revenue.<sup>113</sup>

Ultimately, the cost of compliance with changing environmental policies is not a significant factor in business decision-making. Even when pollution control costs are substantial for a business, these costs still tend to be dwarfed by resources allocated to labor, real estate, transportation, energy, and tax considerations, according to surveys of corporate executives.<sup>114</sup> As such, businesses are unlikely to make relocation decisions solely based on environmental policymaking in a federal system.<sup>115</sup>

Given that Chinese subnational jurisdictions are not able to create their own environmental policy and that China has some of the strongest environmental laws in the world,<sup>116</sup> it is evident that a

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109. See, e.g., Wallace E. Oates, *Environmental Federalism*, RESOURCES FOR THE FUTURE, <http://www.rff.org/blog/2009/environmental-federalism-wallace-e-oates> (Sept 21, 2009).

110. See generally INDUR M. GOKLANY, *CLEARING THE AIR: THE REAL STORY OF THE WAR ON AIR POLLUTION* (Cato Institute, 1999).

111. Adam B. Jaffe et al., *Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?*, 33 J. ECON. LITERATURE 132 (1995).

112. See Oates, *supra* note 36.

113. Mary Graham, *Environmental Protection & the States: 'Race to the Bottom' or 'Race to the Bottom Line'?* BROOKINGS (Dec. 1, 1998), <https://www.brookings.edu/articles/environmental-protection-the-states-race-to-the-bottom-or-race-to-the-bottom-line/>.

114. *Id.*

115. *Id.*

116. See Jonathan Kaiman, *China Strengthens Environmental Laws*, GUARDIAN (Apr. 25, 2014), <https://www.theguardian.com/environment/2014/apr/25/china-strengthens-environmental->

race to the bottom is not a policy issue in China's central bureaucracy. Rather, it may be an issue in practice, where local officials allow excessive pollution in order to improve economic output and gain recognition for promoting development in their region.<sup>117</sup> This is an issue of policy implementation that will be discussed in the following section.

Nevertheless, strong environmental policy is important to businesses' competitive advantage in China. The Chinese bureaucratic policy of naming "model" cities and companies, as well as awarding prizes to high performing entities has contributed to positive competition that benefits environmental protection.<sup>118</sup> Although a government official may not be directly accountable to his or her citizenry, they may be motivated by a desire for promotion and recognition. In turn, they may use their delegated authority to put forth strategies emphasizing greener growth in implicit competition with other cities throughout the country. The city of Kunming has developed water pollution standards higher than the national norm,<sup>119</sup> while the cities of Chengdu, Guangzhou, and Wuhan are becoming more environmentally friendly metropolises.<sup>120</sup> Dalian and Xiamen retain the titles of "State Environmental Protection Model Cities," giving them a competitive edge nationally and internationally for attracting investment, high wage workforces, and a population seeking a higher quality of life.<sup>121</sup> Chinese national-level authorities support this initiative by passing laws that delegate implementation of regulations to the local level, thereby balancing unification with diverse implementation.<sup>122</sup>

There seems to be no clear advantage as to the effectiveness of environmental politics emanating from federal or unitary structures. Canadian provinces reversed a "race to the bottom" issue into a competitive challenge for better environmental policies, American states prevent economic slowdown as a result of environmental policymaking by avoiding sudden changes in pollution rules, and Chinese cities use their delegated discretion in environmental matters to gain competitive advantage over their peers in a stringent business environment.

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laws-polluting-factories.

117. See, e.g., JINGZHU ZHAO, TOWARDS SUSTAINABLE CITIES IN CHINA: ANALYSIS AND ASSESSMENT OF SOME CHINESE CITIES IN 2008, 16 (2011) (ebook).

118. *Id.* at 9.

119. Kostka & Mol *supra* note 40, at 8–9.

120. *Id.* at 9.

121. *Id.*

122. Interview with Professor Chen Jian, Shantou University School of Law (Jan. 15, 2016).

### E. *Implementation and Enforcement*

A government can make practical changes in order to protect the environment, particularly in implementation and enforcement of mandated policies. Implementation is at times distinct from and at times quite similar to enforcement. They will be dealt with together here for this very reason, with every effort made to maintain clarity. This sub-Part analyzes implementation of (1) a subnational government's own policies, (2) a national government's mandate, and (3) international agreements.

When it comes to making international accords, Canada is not to be trusted. That statement may be too strongly worded but, in truth, the Canadian constitutional order injects a lot of uncertainty into Canada's ability to maintain its international commitments and is frequently Canada's motive for entering reservations to international conventions and treaties.<sup>123</sup> In reality, Canadian delegates may walk into a negotiation, sign an agreement on behalf of the federal government, and walk out having bound another jurisdictional entity—namely, the provinces—to a document to which they may or may not have wanted to be a party. In turn, this causes issues of agreement ratification and implementation at the domestic level. One of the oft-cited examples of this difficulty is Canada's failure to effectively implement the Kyoto Protocol.<sup>124</sup> At Kyoto, Canada committed to a six percent reduction in 1990 levels of greenhouse gases by 2012. Instead, the country's emissions increased nearly twenty-five percent.<sup>125</sup> This unfortunate rise in emissions, among other factors, shows that the Canadian federal structure is weak compared to unitary governments in its ability to formulate domestic policy that implements environmental policy agreed to on the global stage.

Domestically, Canada's implementation issues result primarily from mandates imposed on the provinces by the federal government.<sup>126</sup> In the 1970s, the federal Department of the Environment

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123. See generally Torsten H. Strom & Peter Finkle, *Treaty Implementation: The Canadian Game Needs Australian Rules*, 25 OTTAWA L. REV. 39 (1993).

124. For further reading on the issue, see Jack Stilborn, *Canadian Intergovernmental Relations and the Kyoto Protocol: What Happened, What Didn't?*, <https://www.cpsa-acsp.ca/paper-2003/stilborn.pdf> (May 30, 2003); Dion Curry, *Beyond Federalism: The Kyoto Protocol and Multi-Level Governance in Canada* (2005) (master's thesis, Simon Fraser University), [summit.sfu.ca/system/files/iritems1/4674/etd1553.pdf](https://summit.sfu.ca/system/files/iritems1/4674/etd1553.pdf).

125. Framework Convention on Climate Change, Rep. of the Individual Review of the Annual Submission of Canada Submitted in 2010, U.N. Doc. FCCC/ARR/2010/CAN (Apr. 21, 2011).

126. For more on cross and overlapping jurisdiction in environmental issues, see Part V.A on Constitutional Mandate *supra*.



required that the provinces apply and enforce federal environmental standards.<sup>127</sup> These centrally determined standards did not take into account provincial input<sup>128</sup> and often provided little to no fiscal resources for implementation.<sup>129</sup> What could have been effective environmental policies were poorly implemented by a lack of policy planning. Bélanger points to the federal adoption of the Canadian Environmental Protection Act in 1988 and the Canadian Environmental Assessment Act in 1992 as the continuance of this tension between the federal and provincial governments on policy formulation versus implementation and enforcement mandates.<sup>130</sup> Still, the late 1980s saw the first cooperative forum for policy formulation among the federation's governments: the Canadian Council of Ministers of the Environment. Such examples demonstrate that where cooperation in formulation, implementation, and enforcement can occur on certain issues, a lack of cooperation can simultaneously be plainly visible on other issues.<sup>131</sup>

The historical implementation of environmental policy and its subsequent enforcement developed in a similar manner in the United States, though a more cooperative approach to implementation and enforcement appears to be on the rise today. In the half-century of major environmental lawmaking in the United States, where the federal government has set policy and regulation, state and local governments have been responsible for nearly all enforcement.<sup>132</sup> However, this trend is changing. State and local entities now dominate decisions in areas such as land use and waste disposal, with little national policy involved in these realms.<sup>133</sup> Most of the major federal environmental laws today divide responsibilities for environmental enforcement between levels of government. A state can typically assume responsibility for carrying out a federal law if the state has the adequate authority and resources—such as scientific staff and agency means—for implementation and enforcement.<sup>134</sup>

The United States' situation vis-à-vis the Kyoto Protocol was similar to Canada's, but significantly more fractured. Ultimately,

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127. Bélanger, *supra* note 48, at 23–24.

128. *Id.*

129. *Id.*

130. *Id.*

131. About, CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT, <https://www.ccme.ca/en/about/index.html> (last visited Aug. 29, 2018).

132. Graham, *supra* note 113.

133. *Id.*

134. Hubert H. Humphrey III & LeRoy C. Paddock, *The Federal and State Roles in Environmental Enforcement: A Proposal for a More Effective and More Efficient Relationship*, 14 HARV. ENVTL. L. REV. 7, 13 (1990).

the federal government was unable to ratify the treaty, despite a United States signature.<sup>135</sup> As such, this implementation failure came less from failures in the vertical federal structure but, rather, from the federal division of powers in Washington.

In China, the implementation and enforcement of programs is singlehandedly the tallest hurdle to effective environmental policies in the country. To quote one of the world's most demanding environmental NGOs, Greenpeace, "[L]ook at China's air pollution or water pollution control laws, they're pretty good compared to global standards . . . . [T]he true test will always be the willingness of local authorities to enforce them."<sup>136</sup> Whereas national ministries set direction and goals, the decentralized nature of China's governing structure allows local officials to elect which policies to implement and which to ignore, often impairing environmental programs.<sup>137</sup> National aspirations are thus diluted as they filter through China's disjointed governance structure.

Given the decentralized political structure of China's bureaucracy, officials' motives can affect environmental policy implementation. It is important to remember that China's leaders are carefully and specially trained career bureaucrats, moving up the echelons of the Communist Party of China's Organization Bureau to attain their next position. Their career ascension depends on past performance, which is assessed on a variety of factors, including rigorous evaluations of their performance as bureaucrats.<sup>138</sup> As recently as a few years ago, local government officials received credit for increased levels of economic output from their region and often required pushing environmental protection initiatives aside.<sup>139</sup> Fulfilling binding governmental targets is an important criteria in cadre<sup>140</sup> promotion decisions, one that has recently come to include environmental targets.<sup>141</sup> It was formerly common practice

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135. See Byrd-Hagel Res., S. Res. 98, 105th Cong. (1997).

136. Jonathan Kaiman, *China Strengthens Environmental Laws*, *GUARDIAN* (Apr. 25, 2014, 11:58 AM), <https://www.theguardian.com/environment/2014/apr/25/china-strengthens-environmental-laws-polluting-factories>.

137. Economy, *supra* note 42, at 20.

138. See generally Da Zhu & Jiang Ru, *Strategic Environmental Assessment in China: Motivations, Politics, and Effectiveness*, 88 *J. ENVTL. MGMT.* 615 (2008), for more on assessment of Chinese bureaucrats.

139. Genia Kostka & William Hobbs, *Local Energy Efficiency Policy Implementation in China: Bridging the Gap between National Priorities and Local Interests*, 211 *CHINA Q.* 765, 774 (2012).

140. Cadre, a French word meaning "frame," was adopted by communists in China and the Soviet Union to describe the "best" or "model" bureaucrats. Cadres are understood to be dedicated, hard working, and selfless government workers within the Chinese merit-based technocratic society. See *China Footprint: What Matters to China's Cadre Selection System?*, *CGTN* (Sept. 16, 2017, 6:02 PM), [https://news.cgtn.com/news/7845544d35557a6333566d54/share\\_p.html](https://news.cgtn.com/news/7845544d35557a6333566d54/share_p.html).

141. See generally Hui Li & Lance L.P. Gore, *Merit-Based Patronage: Career Incentives of Local*

to ignore environmental targets, since these were not factors in cadre promotion, but today the consideration of environmental factors in promotion decisions may allow for increased focus on environmental issues by bureaucrats charged with local implementation. Scholars find that local officials are nevertheless more influenced by economic motives and that drastic measures would need to be taken to bring environmental protection to the forefront of their attention.<sup>142</sup> An example of such measures are the Chinese banking reforms of the 1990s, wherein provincial bankers were replaced if the amount of money loaned exceeded given quotas. It is possible to imagine such strict standards in environmental evaluation: Officials could lose their positions if pollution indexes rose above a certain level or if deforestation expanded to a certain acreage. Scholars suggest that work carried out in environmental protection should be integrated into the political performance assessment of cadres, at an equal measure alongside economic growth, to give bureaucrats “green” motivation to take action. The Chinese government took these critiques into account in its new EPL; article 26 of the law includes standards for appraisal of environmental performance.<sup>143</sup> It remains to be seen how effectively the law will be implemented.

Apart from promotional incentive for cadres, local implementation long suffered from fine limits legislated at the national level. Fines for polluting factories were so low that many enterprises preferred to pay them rather than make any substantial anti-pollution investments.<sup>144</sup> These practices often continued unabated by governmental actors, who relied on economic progress for their advancement within the Chinese political system.<sup>145</sup> Such low and capped fines were paid for years, to the detriment of the environment. Beijing took action on these legal shortcomings in the new EPL by introducing accumulating fines,<sup>146</sup> requiring public disclo-

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*Leading Cadres in China*, 27 J. CONTEMP. CHINA 85 (2017).

142. Chow, *supra* note 5, at 16 (“When Zhu Rongji was President of the People’s Bank in the 1990s, he succeeded in restricting the quantity of money supply by enforcing the policy that the President of a provincial People’s Bank would be replaced if the extension of credit in his province were to exceed the quota set by the Central Bank. The same method for the enforcement of environmental policy may be needed.”).

143. Environmental Protection Law of the People’s Republic of China (promulgated by Order No. 22 of the President of the People’s Republic of China, Dec. 26, 1989, effective on Dec. 26, 1989; amended Jan. 1, 2015), art. 26.

144. Kaiman, *supra* note 116.

145. *Cf.* Chow, *supra* note 5, at 66.

146. Environmental Protection Law of the People’s Republic of China (promulgated by Order No. 22 of the President of the People’s Republic of China, Dec. 26, 1989, effective Dec. 26, 1989, amended Jan. 1, 2015), art. 59.

sures,<sup>147</sup> demanding transparency,<sup>148</sup> and increasing penalties for environmental crimes.<sup>149</sup> Further, these new local implementation measures were complemented by strengthened enforcement capabilities in the form of protection for whistleblowers through mandated confidentiality.<sup>150</sup>

China has made real progress in legislating opportunities to improve the implementation and enforcement of its environmental policies in the past few years. This suggests a clear central government priority. Yet, it remains to be seen whether the policy implementation gap<sup>151</sup>—the divergence between the central government’s national environmental policies and the actual outcomes at local levels—can be effectively closed through political processes. As is to be expected, environmental protection in China will continue to be seen as one of a number of competing local priorities. While national environmental targets can partially reduce the environmental harm caused by continued growth, the risk remains that economic progress will be prioritized in China, to the detriment of environmental well-being.

#### F. *Standardization and Economies of Scale*

It is necessary to take a brief look at the effectiveness engendered by standard policy-setting and economies of scale.<sup>152</sup> Scholars point to the tremendous advantage held in this area by unitary governments. By standardizing practices throughout a country, unitary governments ensure significant cost savings as a result.<sup>153</sup> Further, reporting to only one regulatory agency reduces redundancies that plague the efficient running of industries and individual businesses.<sup>154</sup> Knowledge is passed along more easily among agencies at a horizontal level of governance than between vertical jurisdictional authorities, such as between subnational and nation-

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147. *Id.* arts. 53–56.

148. *Id.* arts. 53, 62–63.

149. *Id.* art. 68.

150. *Id.* art. 57.

151. Kostka & Mol, *supra* note 40, at 6 (“Divergence between the central government’s national environmental policies and the actual outcomes at the local levels makes up the environmental ‘policy implementation gap.’”).

152. Economies of scale result from proportionate savings engendered as a result of increased levels of production. By setting standardized policy over a broader jurisdiction or area, economies of scale allow for proportionate savings. See *Economies of Scale and Scope*, ECONOMIST (Oct. 20, 2008), <https://www.economist.com/news/2008/10/20/economies-of-scale-and-scope>.

153. Oates, *supra* note 36.

154. Kimber, *supra* note 58, at 1659.

al levels of government. As such, a unitary model of governance retains expertise and promotes best practices.

Apart from policy-setting and implementation, a unitary government makes economies of scale possible. Planning from one central authority maximizes purchasing and bargaining power and creates leverage in negotiations.<sup>155</sup> Although these economies of scale can also occur in a coordinated federal system, experience shows that the ideal remains far from reality.<sup>156</sup>

Federal systems, including Canada's and the United States', face barriers to harmonizing an approach to environmental issues that would result in the net benefits of standardization and economies of scale. Where there is standardization in areas of cross border pollution, for instance, provincial and state targets in excess of federal standards serve to hamper the benefits of standardization and lead to "death by regulation."<sup>157</sup> Differing enforcement and implementation mechanisms—such as state implementation of regulatory measures in the United States—may lead to regulated entities choosing to ignore or simply not settle a state enforcement action, in the fear that the settlement reached or enforcement pursued may not satisfy federal enforcement agencies.<sup>158</sup>

Federal governments should focus on refining efforts to homogenize regulations among subnational jurisdictions. They should also coordinate implementation and enforcement to bring about cost savings and allow for more efficient environmental policymaking.<sup>159</sup> Until then, unitary governmental systems will retain a key advantage in the area of standardization and economies of scale.

### G. Centralization

This final sub-Part addresses national authorities' roles in centralizing approaches to environmental political issues, for better or worse. In doing so, the political organization structures of each government must not be conflated with their political party systems. In other words, attributing a positive environmental outcome to China by virtue of its democratic centralist governance system, instead of unitary government, would be to confound analyses. The same warning should be given for attempts to attribute posi-

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155. *Id.*

156. Bélanger, *supra* note 48, at 29.

157. Used here for emphasis, not literally.

158. See Humphrey & Paddock, *supra* note 134, at 30–31.

159. See Oates, *supra* note 36, at 2–3.

tive environmental outcomes to democratic governance systems instead of federations in the United States and Canada.

Michel Bélanger defines the role of centralization in effective environmental policies:

Centralization appears, in the eyes of many, to be an obvious solution in the climate change dossier: provincial policies are viewed as a fragmented patchwork, a source of failure to act; the federal and provincial governments are caught in the trap of joint decision making; and the current system is packed with useless and costly structural duplications that undermine the efficiency and effectiveness of the policies.<sup>160</sup>

The strong resolve provided by a central government in a unitary state appears to have a positive effect on effective environmental politics, as in China. In the past ten years,<sup>161</sup> Beijing has made incredible strides to improve environmental quality, including making massive investments in solar energy,<sup>162</sup> conducting national wind energy surveys,<sup>163</sup> establishing pollution control systems,<sup>164</sup> and instituting environmental conservation plans.<sup>165</sup> These provide the standardization and scale advantages previously discussed, and lead to an image of strong resolve on the global scene as a country dedicated to environmental protection. Yet, one caveat remains: A unitary government must have the will to protect the environment.

Effective environmental protection in unitary systems can only work if the central government has the political resolve to make change happen. Since 2006, this has been China's mantra. The Chinese government has accomplished everything discussed above, despite previously acknowledged implementation issues within its

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160. Bélanger, *supra* note 48, at 21. It must be noted that this statement is out of context of Bélanger's thesis. He argues just the opposite; that centralization is not the answer to Canada's environmental political issues.

161. As outlined in the eleventh and twelfth five-year plans. An overview of the eleventh five-year plan can be found at *Special Report: The 11th Five-Year Plan*, GOV.CN (last visited May 9, 2018), [http://www.gov.cn/english/special/115y\\_index.htm](http://www.gov.cn/english/special/115y_index.htm). An overview of the twelfth five-year plan can be found at *China's Twelfth Five Year Plan (2011-2015) – the Full English Version*, CBI CHINA DIRECT (May 11, 2011), [http://cbi.typepad.com/china\\_direct/2011/05/chinas-twelfth-five-new-plan-the-full-english-version.html](http://cbi.typepad.com/china_direct/2011/05/chinas-twelfth-five-new-plan-the-full-english-version.html).

162. Christopher Henson, *China's Environmental Policies*, CHINA EYE MAGAZINE (Autumn 2010), <http://www.sacu.org/greenchina.html>.

163. See Jianbo Yang et al., *Overview of Wind Power in China: Status and Future*, SUSTAINABILITY, Aug. 2017, at 3.

164. See, e.g., *China Urges Green-Equipment Thrust to Check Pollution*, REUTERS (Oct. 25, 2017), <https://www.reuters.com/article/us-china-environment-equipment/china-urges-green-equipment-thrust-to-check-pollution-idUSKBNICU17X>.

165. Chen, *supra* note 1.

bureaucracy. Before that time, China's national government cared little about environmental protection and had ineffective laws on the books.<sup>166</sup> As such, the effectiveness of centralization in unitary systems is subject to varying levels of political commitment.

In federal systems, centralization may provide some of the advantages previously discussed in coordinating and scaling action, yet governments must always remain wary of overreach, which would impede the clearly beneficial advantages of innovation and laboratory federalism.<sup>167</sup> To model this practice, Canada and the United States may draw from the European Union's Principle of Subsidiarity, wherein centralized action is only permitted when policy objectives cannot be sufficiently met through decentralized action.<sup>168</sup> Under such a system, the states and provinces would monitor the national government's action in areas of non-exclusive national jurisdiction. An action by a national government would need to be necessary to solve an environmental issue and add value through centralization, or the subnational entities should develop a mechanism to reject federal action in that area. Further, Oates suggests that federal governments should have a permanent obligation to support research and provide information on environmental matters, regardless of jurisdictional prerogative.<sup>169</sup>

## CONCLUSION

In sum, this Article compared the environmental policy situations and government structures in three of the world's largest countries, Canada, China, and the United States. This Article's goal is to discern the advantages and disadvantages of these countries' political systems as they relate to effective environmental protection. This Article addressed seven distinct areas: constitutional mandate, innovation and laboratory federalism, proximity and adaptability, race to the bottom and competitive advantage, implementation and enforcement, standardization and economies of scale, and centralization.

Research shows that effective environmental politics is not affected by state structure—or has equal advantages and disad-

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166. Lan Xue et al., *Environmental Governance for China: Major Recommendations of a Task Force*, 16 *ENVTL. POL.* 669, 669–70 (2007).

167. See Bélanger, *supra* note 48, at 29 (concluding the federal government should “encourage the provinces to continue experimenting”).

168. See European Union, *Treaty on European Union (Consolidated Version)*, Treaty of Maastricht, Dec. 24, 2002, 2002 O.J. SPEC. ED. C 325/5, Art. 7.

169. Oates, *supra* note 36, at 22.

vantages—in four areas: constitution mandate, race to the bottom and competitive advantage, implementation and enforcement, and centralization. Federal governments, such as Canada and the United States, possess strengths in innovation and laboratory federalism, as well as proximity and adaptability. Unitary states have a clear advantage when it comes to developing economies of scale and standardizing.

It is important to note that this Article is neither critical of a specific political structure, nor aims to choose one system of government as superior over another. Rather, this Article serves as a critical analysis of environmental politics and resulting policies by contrasting two of the world's major political structures. By indulging in this analysis, states may recognize structural deficiencies in their political organization and make necessary changes to best manage the environment for the benefit of their people, the state, and the globe.