

# Fifty Shades of Green

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William James said that a person is defined by what he or she pays attention to.<sup>1</sup>

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## INTRODUCTION

Nature is infinitely varied. Millions of species exist, and they are constantly evolving. “Fifty Shades of Green”, the title of this Article, refers not only to that reality, but also to the facts that there are many aspects of nature (including animals, plants, microorganisms, water bodies, minerals, landscapes and outer space), many threats to those resources, many possible approaches to preventing

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1. WILLIAM JAMES, *THE PRINCIPLES OF PSYCHOLOGY* (Dover Publications 1950) (1890), <https://perma.cc/C28D-LVAR> (“Attention . . . is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Localization, concentration, of consciousness are of its essence.”); *id.* (“*My experience is what I agree to attend to. Only those items which I notice shape my mind — without selective interest, experience is an utter chaos.*” (emphasis in original)).

or remedying those threats, many successes in confronting environmental problems, and many actors involved both in threatening the environment and in seeking to protect it. This Article illuminates some of those shades.

Following this Introduction, Part I discusses the concept of Ecosystem Services, i.e., what nature provides humankind for free, explaining how Ecosystem Services' scope and importance lead to the conclusion that nature is the true infrastructure of society. Part II describes various threats currently facing that infrastructure and thus society, including problems relating to human health such as air and freshwater pollution, oceans, biodiversity, protection of environmental activists and migrants, and climate change. It also points out that there have been many successes in dealing with environmental threats. Part III discusses the relationship between the environment and human rights, including the relationship between climate change and human rights. Part IV briefly explores what might be done in the future. The Article then presents conclusions.

### I. ECOSYSTEM SERVICES: NATURE IS THE INFRASTRUCTURE OF SOCIETY

Ecosystem services are what nature provides humankind for free.<sup>2</sup> These include provisioning, regulating, and cultural services that directly affect people and the supporting services needed to maintain other services. Provisioning ecosystem services include the provision of food, fuel, fiber, fresh water, genetic resources, natural medicines, water and wind power, and solar energy.<sup>3</sup> Regulating services include: pollination of crops by insects; water purification and waste treatment by wetlands and forests; erosion, flood, and coast control by mangroves and other plants; disease and pest control; purification of the atmosphere; climate regulation; and protection against ultraviolet radiation by the ozone layer.<sup>4</sup> Cultural services are nonmaterial benefits people obtain from ecosystems through experiences such as spiritual enrichment, religious enlightenment, cognitive development, reflection, recreation, and aesthetic experiences.<sup>5</sup> Supporting services, the fourth category of ecosystem services, consist of those services that are necessary for the production of other ecosystem services.<sup>6</sup> In contrast to provisioning, regulating, and cultural services, the impacts on people of supporting services frequently are indirect or occur over a very long time, whereas changes in the other categories have relatively direct and short-term impacts on people. Examples of supporting services include soil formation, photosynthesis, water cycling, and nutrient cycling.<sup>7</sup> Many services

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2. *Ecosystem Services*, FERMI NATIONAL ACCELERATOR LABORATORY, <https://perma.cc/J5LB-FUJY> (last visited June 7, 2020).

3. *Living Beyond Our Means: Natural Assets and Human Well-being*, MILLENNIUM ECOSYSTEM ASSESSMENT 17 (2008), <https://perma.cc/33MZ-VWSP>.

4. *Id.*

5. *See id.*

6. *See id.*

7. *See id.*

are inter-related or can be categorized differently depending on the context; erosion control services, for example, can be categorized as both a supporting and a regulating service, depending on the time scale and immediacy of their impact on people.<sup>8</sup>

Importantly, when one considers the full range of ecosystem services, it becomes obvious that nature is the true infrastructure of society. Our economic activities, social lives, culture, and institutions depend on ecosystem services; without them, our society and civilization could not exist in anywhere near their current form.

## II. NATURE IS UNDER THREAT

At the global level, the infrastructure of society—i.e., nature—is in trouble. We are in a new geologic era, the Anthropocene, in which human activity is a major force affecting the biosphere on a global level.<sup>9</sup> It is also clear that the situation is dire. The years 2018 and 2019, for example, witnessed the release of a series of sobering reports by highly reputable sources that identify threats to many critical shades of greens. A few are mentioned below.

Oceans are under increasing threat. One of the key messages among the headline statements delivered by the 2019 Special Report on the Ocean and Cryosphere in a Changing Climate, by the Intergovernmental Panel on Climate Change (IPCC), is that oceans are warming, rising, acidifying and losing productivity faster than we thought.<sup>10</sup> Meanwhile, it is predicted that by 2050, there will be more plastic than fish in the oceans. According to the *Marine Plastic Debris & Microplastics* published by the United Nations Environment Programme (UNEP) the production of plastic will reach 2,000 million tons by 2050 in Asia, Europe, and North America with today's use trends.<sup>11</sup> This outnumbers the estimation of the fish stocks, which will be around 812 million tons according to a study of the World Economic Forum.<sup>12</sup> It is also questionable whether the oceans will be able to support wild ocean fisheries by then, since its nutrient capacity is being impaired at an increasing rate and rampant overfishing is occurring.<sup>13</sup>

Contamination and depletion of freshwater resources similarly pose growing risks to society. According to the Lancet Commission on Pollution and Health,

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8. *See id.*

9. Simon L. Lewis & Mark A. Maslin, *Defining the Anthropocene*, 519 NATURE 171, 171 (2015).

10. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT ON THE OCEAN AND CRYOSPHERE IN A CHANGING CLIMATE: SUMMARY FOR POLICYMAKERS (H.- O. Pörtner et al. eds., 2019).

11. UNITED NATIONS ENVIRONMENTAL PROGRAMME, MARINE PLASTIC DEBRIS AND MICROPLASTICS: GLOBAL LESSONS AND RESEARCH TO INSPIRE ACTION AND GUIDE POLICY CHANGE (2016).

12. LEN NEUFELD ET AL., WORLD ECONOMIC FORUM, THE NEW PLASTICS ECONOMY: RETHINKING THE FUTURE OF PLASTICS (2016), <https://perma.cc/STC9-WRKY>.

13. Boris Worm et al., *Impacts of Biodiversity Loss on Ocean Ecosystem Services*, 314 SCIENCE 787, 789 (2006).

the number of premature deaths caused by pollution-related diseases reached nine million in 2015. This figure is fifteen times more than the total casualties from all wars and other violent situations.<sup>14</sup> Approximately 1.8 million of those deaths are attributable to water pollution.<sup>15</sup> Moreover, freshwater resources are also under threat in other ways. Over 1 billion people lack access to clean water and 2.7 billion experience water scarcity at least one month a year.<sup>16</sup> Groundwater, which accounts for 70 percent of the world's accessible freshwater, is also in dire condition. The environmental flow limit, i.e., when people pump too much groundwater too quickly so that natural waterways begin to empty and thus compromise freshwater ecosystems, has already been reached in 15 to 21 percent of watersheds tapped by humans. If pumping continues at current rates, scientists estimate that by 2050, anywhere from 42 to 79 percent of pumped watersheds will have crossed this ecological tipping point.<sup>17</sup>

Biodiversity is also under threat around the world. According to *Living Planet*, done by the Zoological Society of London and the World Wildlife Fund (WWF), there has been a 60 percent decline in wildlife population worldwide from 1970 to 2014.<sup>18</sup> In a different study reporting similarly dismal results, scientists report in *Decline of North American Avifauna* that there are roughly 3 billion fewer birds in North America now than in 1970, i.e., a 29 percent decrease.<sup>19</sup> The United Nations' Global Assessment Report, prepared by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), reports a precipitous drop in pollinating insects, putting up to \$577 billion of crops at risk.<sup>20</sup> The number of species of wild bees, for example, has decreased by roughly 50 percent since the 1990s.<sup>21</sup> Overall, up to 1,000,000 species are at risk of extinction.<sup>22</sup> In sum, there is an urgent need to address threats to wildlife abundance and biodiversity and the associated loss of ecosystem integrity and services.<sup>23</sup>

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14. Philip J. Landrigan et al., *The Lancet Commission on Pollution and Health*, 391 LANCET 462, 462 (2018), at [http://dx.doi.org/10.1016/S0140-6736\(17\)32345-0](http://dx.doi.org/10.1016/S0140-6736(17)32345-0).

15. *Id.* at 471.

16. WORLD WILDLIFE FUND, *Water Scarcity*, <https://perma.cc/Y6NN-H3QY> (last visited June 7, 2020).

17. Jonathan Lambert, *Too Much Groundwater Pumping Is Draining Many of the World's Rivers*, SCIENCENEWS (Oct. 9, 2019), <https://perma.cc/AFV7-6D53>.

18. WORLD WILDLIFE FUND, *LIVING PLANET REPORT 2018: AIMING HIGHER* (Monique Grooten & Rosamunde Almond, eds., 2018).

19. Kenneth V. Rosenberg et al., *Decline of North American Avifauna*, 366 SCIENCE 120, 120 (2019), <https://perma.cc/NED5-367S>.

20. INTERGOVERNMENTAL SCIENCE-POLICY PLATFORM ON BIODIVERSITY AND ECOSYSTEM SERVICES, *GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES: SUMMARY FOR POLICYMAKERS* 11 (S. Díaz et al. eds. 2019), <https://perma.cc/ZV2U-SAPK> [hereinafter IPBES REPORT].

21. Yao-Hua Law, *Wild Bees Are in Decline Globally*, SCIENCENEWS 6 (Feb. 1, 2020).

22. IPBES REPORT, *supra* note 20, at 12.

23. *Id.* at 4.

Environmental activists—those who seek to address the growing threats to society’s infrastructure and to protect their families and communities from environmental hazards—are also in danger of extermination. According to Global Witness, an average of three environmental activists were murdered around the world every week in 2018<sup>24</sup>—many more, for example, than journalists. The figure was even worse in 2017: four per week.<sup>25</sup> We know the name of each of these people; the figures are not estimates (though they almost certainly understate the number of murders because they are based on incomplete data). Moreover, murder is only one form of harassment environmentalists experience: harassment at jobs, beatings, kidnappings of family members, and filing harassing lawsuits are also not uncommon. In addition, there are almost no prosecutions of those who murder environmental activists (often referred to as “environmental human rights defenders”) and even fewer convictions.<sup>26</sup>

Population growth<sup>27</sup> and environmental stresses, especially climate change, will make the situation worse. The world is already experiencing much human suffering and political turmoil associated with migration. The World Bank’s *Groundswell* report predicts massive internal migration—more than 143 million people—by 2050.<sup>28</sup> The situation regarding international refugees is at least as dire, with estimates as high as 150 million by 2050 and one billion by the end of the century due to climate change.<sup>29</sup>

Indeed, climate change is exacerbating many of those problems and creating new ones. The *1.5 Degree Report*, by the IPCC, reports that the Earth has already warmed more than 1 degree Celsius since the beginning of the Industrial Revolution<sup>30</sup> and that additional warming is inevitable because the atmosphere is already charged with greenhouse gases.<sup>31</sup> It reports that serious steps are needed now to limit global warming but that major harm will still occur.<sup>32</sup> In a roughly similar assessment, the United States National Climate Assessment identified

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24. Simeon Tegel, *The Deadly Toll of Environmental Activism*, U.S. NEWS (Jul. 29, 2019), <https://perma.cc/6QVP-4NJS>.

25. Jonathan Watts, *Almost Four Environmental Defenders a Week Killed in 2017*, THE GUARDIAN (Feb. 2, 2018), <https://perma.cc/BU6D-TD94>.

26. JOHN H. KNOX, ENVIRONMENTAL HUMAN RIGHTS DEFENDERS: A GLOBAL CRISIS 5, 12 (Feb. 2017).

27. Elizabeth A. Hadly & Anthony D. Barnosky, *Population Growth Is Driving the Migration Crisis*, CONSENSUS FOR ACTION (Sept. 18, 2015), <https://perma.cc/PPD3-TPNH>.

28. KANTA KUMARI RIGAUD ET AL., THE WORLD BANK, *GROUNDSWELL: PREPARING FOR INTERNAL CLIMATE MIGRATION* xvii (2018).

29. *Id.*

30. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Summary for Policymakers* of SPECIAL REPORT: GLOBAL WARMING OF 1.5°C, at 4 (V. Masson-Delmotte et al. eds., 2018), <https://perma.cc/P8T8-C8YK>.

31. *Id.* at 4–5.

32. *Id.* at 5–10.

serious threats to human health and the environment in the U.S.<sup>33</sup> The Arctic presents a particular problem because it is warming twice as fast as the rest of the planet and in a manner containing troubling positive feedback loops.<sup>34</sup> The situation is also threatening in Antarctica, which experienced its warmest recorded temperature of almost 65 degrees Fahrenheit in February 2020.<sup>35</sup>

The consequences of climate change are dire. They include sea level rise; acidification and decreased productivity of oceans; increased frequency and severity of storms; increased flooding and wildfires; changes in the ranges of disease vectors; stresses on agricultural production such as shorter growing seasons; reduced access to food and clean water; human displacement—both internal migration and transboundary migration (as discussed above); increased conflict over natural resources; and political turmoil. There are also possible tipping points, such as cessation of the Gulf Stream, which could put virtually all of Northern Europe, Canada, and the northern United States under ice.<sup>36</sup>

It is important to recognize that climate change is already happening. For example, July 2019 was the hottest month on record anywhere;<sup>37</sup> the five hottest years on record have all occurred since 2015; and nine of the ten hottest years have occurred since 2005.<sup>38</sup> Glaciers are melting at alarming rates around the world, disrupting water supplies and local ecosystems; and Iceland's Okjökull glacier disappeared—the first glacier known to have disappeared completely because of climate change.<sup>39</sup>

Extremely serious in its own right, climate change makes the other two most serious existential threats facing humankind—i.e., nuclear warfare and a lethal global pandemic—more likely to occur, because, for example, of increased social tension and decreased biological resilience, respectively. Climate change also exacerbates other serious threats, such as water shortages and poverty.

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33. U.S. GLOBAL CHANGE RES. PROGRAM, *Chapter 1: Overview*, in *FOURTH NATIONAL CLIMATE ASSESSMENT* (D.R. Reidmiller et al., eds. 2018), <https://perma.cc/6XEG-RTVV>.

34. Brooks Hays, *NOAA: Arctic Warming at Twice the Rate of the Rest of the Planet*, UNITED PRESS INT'L (Dec. 12, 2018), <https://perma.cc/WA7L-BQF7>.

35. *Antarctica Hit 65 Degrees this Week — Potential Record High for the Continent*, Associated Press (Feb. 7, 2020), <https://perma.cc/5HNB-NW5N>.

36. See generally Ove Hoegh-Guldberg et al., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Chapter 3: Impacts of 1.5°C Global Warming on Natural and Human Systems*, in *SPECIAL REPORT: GLOBAL WARMING OF 1.5°C* (V. Masson-Delmotte et al. eds., 2018).

37. *July 2019 was Hottest Month on Record for the Planet*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. (Aug. 15, 2019), <https://perma.cc/D2HV-MMMD>.

38. *2019 was 2<sup>nd</sup> hottest year on record say NOAA, NASA*, NASA, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. (Jan. 15, 2020), <https://perma.cc/VQW2-NV7J>.

39. David Bressan, *Iceland Mourns 'Dying' Glacier with Memorial and 'Letter to the Future'*, FORBES (Aug. 19, 2019), <https://www.forbes.com/sites/davidbressan/2019/08/19/iceland-commemorates-dead-glacier-with-ceremony-and-letter-to-the-future/#28764879131b>.

In a sense, problems such as these are not new. Aristotle decried the scourge of soil depletion in Ancient Greece;<sup>40</sup> and William Wordsworth wrote:<sup>41</sup>

The world is too much with us; late and soon,  
Getting and spending, we lay waste our powers;  
Little we see in Nature that is ours . . .

What is different is the severity and scope of the threats facing humankind.

Several points are notable about these reports, primary among which is that they were not written by hacks. They were prepared by professionals who are among the most highly qualified and reputable scientists in the world. Despite inevitable uncertainties, there is no reason to doubt these conclusions: they will happen. Even the World Economic Forum recognizes the criticality of these problems. In its 2020 report on global risks, the first five global risks it identifies in terms of “Likelihood” are environmental threats, and “water crises” is listed as 8<sup>th</sup>.<sup>42</sup> Moreover, in terms of “Impact,” “Climate Inaction” is listed as the greatest risk, with five other environmental threats (including water crises) listed in the top ten.<sup>43</sup> There is a different kind of rule of law at work here, that of Nature, which is not subject to political considerations. To quote Leonardo da Vinci: “Nature never breaks her own laws.”<sup>44</sup>

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40. Tiziano Gomiero, *Soil Degradation, Land Scarcity and Food Security: Reviewing a Complex Challenge*, 8 Sustainability 281, at 9 (2016), <https://perma.cc/WG5N-E7RR> (“Historically, warnings about the state of the soil have been a constant. Early Greek scholars such as . . . Aristotle (384–322 BC) . . . warned [his] compatriots (without much success) about the detrimental effects of improper agricultural practice and soil over-exploitation.”); Curtis C. Runnels, *Environmental Degradation in Ancient Greece*, SCIENTIFIC AM., Mar. 1995, at 96 (“Plato and Aristotle . . . gave accurate and apparently eyewitness accounts of deforestation and soil erosion in the fourth century B.C.”); *id.* at 99 (“In the time of the Trojan Wars the Argive land was marshy and could only support a small population, whereas the land of Mycenae was in good condition (and for this reason Mycenae was superior). But now the opposite is the case . . . the land of Mycenae has become dry and barren . . .” (quoting 1 ARISTOTLE, METEOROLOGICA ch. 14)). Aristotle also said:

“The greater number obtain a living from the fruits of the soil. Such are the modes of subsistence which prevail among those “whose industry is employed immediately upon the products of nature”, and whose food is not acquired by exchange and retail trade—there is the shepherd, the husbandman, the pirate, the fisherman, the hunter.” 1 ARISTOTLE, THE POLITICS OF ARISTOTLE 13 (Benjamin Jowett trans., Oxford, Clarendon Press 1885), <https://perma.cc/FRX9-CNEF>.

41. William Wordsworth, *The World Is Too Much With Us*, POETS.ORG, <https://perma.cc/J4D3-U7WL> (last visited June 4, 2020).

42. WORLD ECON. FORUM, GLOBAL RISKS REPORT 2020, at Figure II (2020), <https://perma.cc/5578-NQBF>.

43. *Id.* For an analysis regarding threats to children, see Helen Clark et al., *A Future for the World's Children? A WHO–UNICEF–Lancet Commission*, 395 LANCET 605 (2020), [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)32540-1/fulltext?dgcid=etoc-edschoice\\_email\\_tlchildhealth20\\_infocus20](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)32540-1/fulltext?dgcid=etoc-edschoice_email_tlchildhealth20_infocus20).

44. *Famous Quotes*, LEONARDODAVINCI.NET, <https://perma.cc/NP6N-VC52> (last visited June 4, 2020).

The problems identified by the reports are inter-related in terms of causes, effects, and solutions. For example, forests are vitally important to many ecosystem services: deforestation leads to erosion and a loss of biodiversity, and it eliminates an agent for water purification and a sink for greenhouse gasses. Viewed from the flip side, forests are part of the solution for most environmental problems.<sup>45</sup> This is another aspect of *Fifty Shades of Green*.

Dealing with these problems requires both local action and international cooperation. The old nostrum “Think globally, act locally” no longer is enough. We need to do that, but we also need to “Think locally and act globally.” This is why the current efforts to combat climate change by some U.S. states, cities, businesses, and universities, though extremely important and laudable, will not be enough. The U.S. and other governments need to act at the national and international levels.

Temporally, the effects of these conditions are being felt now. We and our children are experiencing the consequences now; there is no need to focus on abstract questions of rights of future generations, as important as they are.<sup>46</sup> This realization is significant in its own right; but there is an important corollary. There is a temptation to believe that each of us, our children, and even our grandchildren will be OK, because they will have sufficient resources and be sufficiently well-educated to weather the storm just fine. That temptation must be resisted. Even disregarding ethical and moral considerations, political upheaval, social unrest, and migration do not respect the wealthy, nor do disease vectors, hurricanes, floods, or wildfires.

These problems raise issues directly related to rule of law and human rights. To cite but one example of the relation between the environment and the rule of law, the original 1215 Magna Carta contained four provisions concerning forests,<sup>47</sup> that is, the original Magna Carta was in part an environmental

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45. Several studies have concluded that forests can contribute significantly to climate change mitigation efforts. See, e.g., James Mulligan et al., *Carbon Shot: Federal Policy Options for Carbon Removal in the United States* 20 (World Res. Inst., Working Paper, 2020), <https://perma.cc/6ZWF-NHPH> (noting the carbon capture benefits of restocking existing forests).

46. See generally EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS (1988).

47. That four of the its 63 chapters related to forests reflected the importance of forests to both the King and commoners at that time, the extent of King John’s and his forbearers’ abuses of power relating to them, and the fact that barons, knights, the clergy, and others had been making serious efforts to stop or circumvent those injustices in the decades preceding 1215, including by paying the King to disafforest (i.e., remove their status as Royal Forest) specific parcels of Royal Forest. One chapter—chapter 48—required that 12 knights be chosen in each county by “upright men” of the same county, with the mandate to investigate “all the evil customs relating to forests and . . . foresters . . .” which are to be abolished within 40 days of the investigation. The other three provided protection to non-forest dwellers from being called before forest justices (chapter 44), returned forests that had been declared Royal Forests by King John to their earlier status (chapter 47), and provided respite to King John during his time on Crusade, if any, with respect to doing justice concerning the disafforestation or retention of forests that John’s predecessors King Henry II and Richard the Lionheart had afforested (chapter 53). For the text, see DANIEL BARSTOW MAGRAW, ANDREA MARTINEZ & ROY E. BROWNELL II, *MAGNA CARTA AND THE RULE OF LAW* 389–98 (2014).



instrument.<sup>48</sup> Even more to the point, when Magna Carta was reissued in 1217,<sup>49</sup> the forest provisions were elaborated into the Carta de Foresta—the Charter of the Forest—an extraordinary environmental and sustainability instrument of equal status to Magna Carta that was relied on in English courts to protect individual’s rights more often than Magna Carta over the ensuing centuries.<sup>50</sup>

It is important to bear in mind that, as daunting as these problems are, there has been progress both locally and internationally. Examples of local progress in the U.S. include: air quality in Los Angeles has improved dramatically;<sup>51</sup> the Cuyahoga River no longer catches on fire;<sup>52</sup> and the ban on DDT resulted in the recovery of the Bald Eagle from 417 nesting pairs in 1963 in the continental U.S. to 9789 nesting pairs in 2007.<sup>53</sup> There have been successes at the international level as well, such as reversing the depletion of the ozone layer that protects the earth from ultraviolet radiation<sup>54</sup> and integrating human rights and environmental protection.

### III. ENVIRONMENT AND HUMAN RIGHTS

#### A. GENERAL

Scholars and activists began working in earnest to establish the linkage between human rights and the environment in the mid-1980s. At the most basic level, it seemed self-evident that if the right to life was violated by being killed by a gunshot, that right was also violated by being killed by mercury poisoning. It was also evident why environmentalists would want to make that connection. Linking environmental protection and human rights not only would reinforce

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48. Forests were of utmost importance to nobility and common folk alike in the 13<sup>th</sup> century. See NOAM CHOMSKY, WHO RULES THE WORLD 86 (2016) (“In thirteenth-century England, the forest was no primitive wilderness. It had been carefully nurtured by its users over generations, its riches available to all, and protected for future generations . . .”).

49. The 1215 Magna Carta of Magna Carta was invalidated by Pope Innocent III ten weeks after it had been agreed to by King John. Sandra Day O’Connor, *Foreword* to MAGRAW, MARTINEZ & BROWNELL, *supra* note 47, at XIII.

50. Blackstone stated that the Forest Charter was equally as important as Magna Carta, referring to them as “sacred charters.” WILLIAM BLACKSTONE, THE GREAT CHARTER AND CHARTER OF THE FOREST, TO WHICH IS PREFIXED THE HISTORY OF THE CHARTERS vliiv (Oxford, Clarendon Press 1759). The Forest Charter was reaffirmed more than 30 times over the 200 years after its original issuance, and it was relied on in court cases more than Magna Carta because of the importance of forests. See Daniel Magraw & Natalie Thomure, *Carta de Foresta: The Charter of the Forest Turns 800*, 47 ENVTL. L. REP. 10,934, 10,936 (2017).

51. Lea Terhune, *Once Smog-Shrouded, LA has Improved Its Air Quality*, ShareAmerica (Aug. 11, 2015), <https://perma.cc/MD43-KLS6>.

52. Tim Folger, *The Cuyahoga River Caught Fire 50 Years Ago. It Inspired a Movement.*, NAT’L GEOGRAPHIC (June 21, 2019), <https://perma.cc/X96H-TYQR>.

53. U.S. FISH & WILDLIFE SERV., BALD EAGLE: *HALIAETUS LEUCOCEPHALUS* 1–2 (2007), <https://perma.cc/HAL9-3WDR>.

54. *Ozone on Track to Heal Completely in Our Lifetime, UN Environment Agency Declares on World Day*, UN NEWS (Sept. 16, 2019), <https://perma.cc/M8FP-FL8M>.

each body of law but also provide new fora in which to pursue environmental claims by allowing access to the many human rights mechanisms—special rapporteurs, treaty committees, regional commissions and courts, and the UN Human Rights Council—that have no parallel in environmental protection regimes.

As expected, governments and business enterprises opposed this integration. Surprisingly, the human rights community also was not favorably inclined. Some human rights activists emphasized perceived conflicts between environmental protection and human rights; but they also most probably feared that incorporating environmental concerns would both complicate the already-difficult task of protecting human rights and create additional political opposition to human rights generally.<sup>55</sup>

In the face of this situation, environmentalists began by focusing on clearly established rights, especially the right to life, which no one disputes. For example, one important case involved San Mateo, an Andean town in Peru, in which tailings from an abandoned mine were poisoning the water, air and food of local residents. The Center for International Environmental Law (CIEL) filed a complaint in the Inter-American Commission of Human Rights and obtained the first order in this hemisphere that pollution can violate human rights.<sup>56</sup> Environmental activists continued along that vein in the full array of human rights bodies.<sup>57</sup>

After three decades, it has been clearly established that human rights and the environment are interdependent. First, a healthy environment is necessary for the enjoyment of a vast array of human rights.<sup>58</sup> Examples include the rights to life, water, culture, property, food and adequate standard of living.<sup>59</sup> Second, the exercise of human rights is vital to protecting the environment, for example the rights to access to information, assembly, free speech, participation, due process and equal protection.<sup>60</sup> In sum, States must protect human rights from environmental harm: States have procedural and substantive obligations with respect to the environment, and they have heightened obligations to those who are the most vulnerable.<sup>61</sup>

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55. See, e.g., Dinah Shelton, *Human Rights, Environmental Rights, and the Right to Environment*, 28 STAN. J. INT'L L. 103, 133 (1991). Many of the observations in this and the next section are based on the personal experiences and observations of one of the authors (Magraw).

56. Community of San Mateo de Huanchor and Its Members v. Peru, Case 504/03, Inter-Am. Comm'n H.R., Report No. 69/04, OEA/Ser.L/V/II, 122, doc. 5 rev. ¶ 43 (2004). Earthjustice has earlier been involved in prompting the Commission to issue a report to the same effect. Inter-Am. Comm'n H.R., Report on the Situation of Human Rights in Ecuador, OEA/Ser.L/V/II.96, doc.10, rev.1 (1997).

57. See, e.g., Lilian Chenwi, *The Right to a Satisfactory, Healthy and Sustainable Environment in the African Rights System*, in THE HUMAN RIGHT TO A HEALTHY ENVIRONMENT 59, 64 (John H. Knox & Ramin Pejan eds., Cambridge University Press 2018).

58. JOHN H. KNOX, FRAMEWORK PRINCIPLES ON HUMAN RIGHTS AND THE ENVIRONMENT 6 (2018), <https://perma.cc/73Q5-7GYP>.

59. *Id.*

60. *Id.*

61. *Id.* at 6-7.

States' procedural obligations under human rights law include that they must: assess environmental impacts on human rights;<sup>62</sup> make environmental information public;<sup>63</sup> facilitate participation in environmental decision-making;<sup>64</sup> and provide effective remedies for environmental harms to human rights.<sup>65</sup> States' substantive obligations include that they must protect against foreseeable environmental harm to human rights and against harm from non-State actors,<sup>66</sup> and that they must cooperate with each other to establish, maintain and enforce international legal frameworks in order to prevent, reduce and remedy transboundary and global environmental harm that interferes with the full enjoyment of human rights.<sup>67</sup> States have discretion to strike a balance between environmental protection, social development and economic development; but the balance cannot be unreasonable or result in unjustified, foreseeable infringements of human rights.<sup>68</sup> Moreover, in striking a balance, States should take into account international health and environmental standards,<sup>69</sup> should not take retrogressive measures,<sup>70</sup> must not discriminate among persons or groups,<sup>71</sup> and must comply with environmental standards once adopted.<sup>72</sup> States have obligations to protect the most vulnerable persons and communities,<sup>73</sup> e.g., indigenous communities.<sup>74</sup> States have obligations to protect environmental defenders when they are subject to threats, refrain from placing restrictions that would hinder the performance of their work, and conduct serious and effective investigations of any violations against them.<sup>75</sup>

#### B. CLIMATE CHANGE AND HUMAN RIGHTS

Climate change is a massive threat to human rights—perhaps the largest in history. Nevertheless, convincing States to recognize that climate change threatens and otherwise implicates human rights proved to be a particularly difficult challenge. In establishing that relationship, activists encountered the classic trilogy of responses to efforts to establish a new paradigm: First, laughter, e.g., “that is ridiculous, you are hopelessly naïve and uninformed.” Second, anger, e.g., “you are being destructive, you will stop all meaningful action on climate change.” And third, dismissive condescension, e.g., “of course we knew that, so what?”

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62. *Id.* at 12.

63. *Id.* at 11.

64. *Id.* at 14.

65. *Id.* at 15.

66. *Id.* at 6.

67. *Id.* at 19.

68. *Id.* at 17.

69. *Id.*

70. *Id.*

71. *Id.* at 7.

72. *Id.* at 18.

73. *Id.* at 20.

74. *Id.* at 22.

75. *Id.* at 8.; UNIVERSAL RIGHTS GROUP, EHRD RESOURCE PAPER: WHAT ARE MY RIGHTS? THE RIGHTS OF ENVIRONMENTAL HUMAN RIGHTS DEFENDERS (EHRD) 3, <https://perma.cc/C7PA-T5R9>.

Extensive efforts were required to successfully include language about human rights in the Paris Agreement on climate change.<sup>76</sup> Understanding what the linkage between climate change and human rights means in practice is still ongoing at the time of this writing; the process of getting to the current recognition and understanding is described below.

The first major effort to establish the climate change-human rights linkage was a claim filed in the Inter-American Commission on Human Rights against the United States on behalf of Canadian and U.S. Inuit, an indigenous group that lives in the Arctic. This claim caused laughter in a meeting of mining company lawyers and executives in Vancouver, Canada.<sup>77</sup> The Inuit, led by Sheila Watt-Cloutier,<sup>78</sup> were not laughing, however, as they experienced the environment on which their lives and culture are based deteriorating because of climate change.

The Arctic is warming much faster than the rest of the planet, with multiple effects. Sea ice is melting, such that hunters and travelers are falling through the ice (which melts from below). Buildings are falling into the sea due to increased erosion because there is less shore ice; in fact, four communities have been identified as needing to be relocated. The perma-frost is melting, causing buildings, roads and airstrips to collapse. The quality of snow is changing, complicating the construction of igloos necessary to travel over the ice on hunting trips or between villages.<sup>79</sup>

Why are these changes threats to human rights? For example, the rights to life and health are threatened because the melting ice leads to injuries and deaths as Inuit hunters and travelers fell though the ice; the right to property is threatened because the melting permafrost undermines the foundations of roads and buildings and the decrease in shore ice leads to increased erosion and buildings literally falling into the sea. The right to enjoy culture is threatened, because hunting is significantly more dangerous and traveling across the ice is sometimes impossible because the changed snow texture makes constructing igloos, which protect travelers, impossible. The right to a standard of living is threatened because Inuit diet is based in part on hunting, which had become both less productive as climate change affected the availability of wildlife and more dangerous for reasons

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76. Paris Agreement preamble, Mar. 14, 2016, No. I-54113, <https://perma.cc/SEM8-UG7E>.

77. Personal communication from one of the meeting's participants.

78. Sheila Watt-Cloutier was then leader of the Inuit Circumpolar Conference. She had been a leader in the negotiations of the Stockholm Convention on Persistent organic Pollutants and spearheaded efforts to put a human face on climate change, including by catalyzing the case in the Inter-American Commission on Human Rights described below. For a description of her and others' efforts in this regard, see generally SHEILA WATT-CLOUTIER, *THE RIGHT TO BE COLD: ONE WOMAN'S STORY OF PROTECTING HER CULTURE, THE ARCTIC AND THE WHOLE PLANET* (2015).

79. See *id.* at 189–92; Petition from Sheila Watt-Cloutier, on Behalf of All Inuit of the Arctic Regions of the United States and Canada, to the Inter-American Commission on Human Rights (Dec. 7, 2005), [https://www.ciel.org/Publications/ICC\\_Petition\\_7Dec05.pdf](https://www.ciel.org/Publications/ICC_Petition_7Dec05.pdf); ANA NÚÑEZ, *THE INUIT CASE STUDY 2* (Center for International Environmental Law 2007), [https://www.ciel.org/Publications/Inuit\\_CaseStudy\\_Sep07.pdf](https://www.ciel.org/Publications/Inuit_CaseStudy_Sep07.pdf).

described above.<sup>80</sup> Thus, it is clear that climate change is harming fundamental human rights of the Inuit.

The Inuit case was filed for several reasons, including: to bring a human face to climate change; to inject a consideration of human rights into the international climate change dialogue; to force a discussion of the issues involved, including within the U.S. government; and to increase awareness of the plight of the Inuit. The brief, which was drafted with the participation of the Center for International Environmental Law (CIEL) and Earthjustice, focused on the well-established rights mentioned above, and the brief also raised the right to a healthy environment.<sup>81</sup> Inuit leader Sheila Watt-Cloutier refers to an additional right: the right to be cold.<sup>82</sup>

Ultimately, the Commission decided not to proceed with the case, which was not unexpected given what a wicked problem climate change is. At the same time, however, the Commission made clear through its staff that it would welcome a petition to hold a hearing on human rights and climate change. Such a petition was filed, and the Commission did hold a hearing webcast around the world on the relation of human rights and climate change.<sup>83</sup>

The Inuit case led the Republic of the Maldives to approach CIEL about working with them on linking climate change to human rights. The Maldives consists of roughly 1200 low-lying islands along the west coasts of India and Sri Lanka. It is the lowest country in the world with an average height above sea level of 1 meter. Tourism, including marvelous snorkeling and Scuba diving, is among its largest export earners.<sup>84</sup> Sea level rise is causing great difficulties, however, and the Maldives have already begun moving people from the outlying islands because of that and accompanying storm surges.<sup>85</sup> It is clear that the Maldives will disappear with business-as-usual, and they are taking significant steps not only to mitigate climate change but also to adapt to it.

The Inuit and Maldives are located in vastly different areas of the world with almost diametrically opposite environmental, social and economic conditions. In one sense, however, they are distressingly alike: for each of them the human rights impacts of climate change are so devastating that society itself is threatened.

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80. See Petition from Sheila Watt-Cloutier, *supra* note 79; WATT-CLOUTIER, *supra* note 78, at 187.

81. For discussions of the right to a healthy environment, see generally JOHN H. KNOX, REPORT OF THE SPECIAL RAPPORTEUR ON THE ISSUE OF HUMAN RIGHTS OBLIGATIONS RELATING TO THE ENJOYMENT OF A SAFE, CLEAN, HEALTHY, AND SUSTAINABLE ENVIRONMENT, (United Nations General Assembly, A/73/188 2018); THE HUMAN RIGHT TO A HEALTHY ENVIRONMENT, *supra* note 57.

82. WATT-CLOUTIER, *supra* note 78, at xxii.

83. *Id.* at 253–55.

84. See *The Maldives - Government and Politics*, THE MALDIVES EXPERT (Nov. 18, 2018), <https://perma.cc/KK4T-7R92>.

85. Hartwig Schafer, *Bracing for climate change is a matter of survival for the Maldives*, WORLD BANK: END POVERTY IN SOUTH ASIA (Jan. 20, 2019), <https://perma.cc/CGB6-ABRX>.

The Maldives' strategy was to organize a conference of small island developing States in order to finalize and adopt an intergovernmental instrument calling for action on the human rights implications of climate change.<sup>86</sup> At the request of the Maldives, CIEL participated in drafting the Malé Declaration on the Human Dimension of Climate Change, which was approved by a conference in the Maldives of small island developing States in 2007. Twenty-five small island developing States signed the Malé Declaration, which was the first intergovernmental agreement to specifically address the relationship between human rights and climate change. The Malé Declaration articulates the right to a healthy environment as the "right to an environment capable of supporting human society and the full enjoyment of human rights."<sup>87</sup> Significant efforts are now underway to achieve official recognition of this right by the Human Rights Council and the UN General Assembly.<sup>88</sup>

The Inuit's and Maldives' efforts led to many other steps in both the human rights and climate regimes. These include: a hearing and report by the UN Office of the High Commissioner for Human Rights; UN Human Rights Council resolutions on environment and human rights, and ultimately on climate change and human rights; resolutions in the UNFCCC Conference of the Parties on human rights and climate change; and separate and joint statements by UN Special Rapporteurs on how climate change is affecting each of the rights they were mandated to protect.

Finally, after much effort by many people, language on human rights was included in the 2015 Paris Agreement on Climate Change. The language is in the preamble (efforts to include language in the operative text were rebuffed) and is two-fold: a direct statement about the applicability of human rights in the context of climate change and a call for a "just transition" for workers disadvantaged by climate change actions and effects, which is an aspect of environmental justice.<sup>89</sup> This is the first time that a multilateral environmental agreement included human rights language.

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86. For a discussion of the Maldives' situation and approach and the Malé Declaration on the Human Environment, see DANIEL MAGRAW & KRISTINA WIENHÖFER, *The Malé Formulation of the Overarching Environmental Human Right*, in THE HUMAN RIGHT TO A HEALTHY ENVIRONMENT, *supra* note 57, at 221–31 (discussing the Maldives' situation and approach to addressing the human rights implications of climate change, and the Malé Declaration on the Human Environment).

87. *Malé Declaration on the Human Dimension of Climate Change*, CTR. FOR INT'L ENVTL L. (Nov. 14, 2007), <https://perma.cc/A5CS-2KTR>. For earlier language that is similar in content, see also U.N. Conference on the Human Environment, *Declaration on the Human Environment*, in REPORT OF THE U.N. CONF. ON THE HUM. ENV'T, 4, U.N. Doc. A/CONF.48/14/Rev.1, (June 16, 1972) ("Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations.").

88. See, e.g., KNOX, *supra* note 81; see generally THE HUMAN RIGHT TO A HEALTHY ENVIRONMENT, *supra* note 57.

89. See Daniel Magraw, Anabella Rosemberg & Deepika Padmanabhan, *Human Rights, Labour and the Paris Agreement on Climate Change*, 46 ENVTL. POL'Y & L. 313, 314 (2016).

Work is now underway to define exactly what the relationship between climate change and human rights is. At the macro level, there are three components. First, States' efforts to mitigate and adapt to climate change must respect, protect and fulfil human rights, just as other State actions must do. Second, States must take meaningful action to mitigate and adapt to climate change. Third, States must respect the human rights of migrants and of the populations in the territories through which migrants move and in which they ultimately settle. What this means at the micro-level is more complex and depends on many factors. Much work will be required to elaborate this relationship in practice.

#### IV. THE FUTURE: WHAT CAN BE DONE

There is no need to be afraid to acknowledge and address climate change and other environmental issues. Progress can be made to mitigate and adapt to climate change. Examples in the United States include the use of biochar in the San Juan Islands,<sup>90</sup> new drainage systems in Miami,<sup>91</sup> conversion to electric buses in Los Angeles,<sup>92</sup> and purchase and demolition of homes in flood plains in New York City and North Carolina.<sup>93</sup> In addition and very importantly, the price of clean energy such as solar and wind energy has dropped precipitously, and their installation and use have mushroomed.<sup>94</sup>

The bad news is that there is no silver bullet. The good news is that there are multitudes of green buckshot, from relatively small behavioral changes by individuals, families and communities, to efforts by towns, cities and states, to changes in business practices, to litigation such as the *Urgenda* case in the Netherlands in which the court ordered the government to reduce greenhouse gas emissions 25 percent from 1990 levels by 2020,<sup>95</sup> to larger actions at policy and political levels. Individual behavioral changes, for example, could include eliminating commercially grown beef from diets, reducing the use of single-use plastics, and planting trees.

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90. S. Gao et al., *Locally Produced Wood Biochar Increases Nutrient Retention and Availability in Agricultural Soils of the San Juan Islands, USA*, 233 AGRIC. ECOSYSTEMS & ENV'T 43, 48, 51 (2016).

91. *Stormwater Program*, MIAMI BEACH RISING ABOVE, <https://perma.cc/C6W6-YVF2> (last visited June 7, 2020).

92. *Los Angeles Buys 155 Zero-Emission Electric Buses for Fleet*, NBC LOS ANGELES (Feb. 20, 2020, 9:51 PM), <https://perma.cc/2HFC-74DR>.

93. REBECCA KIHSLINGER ET AL., THE ENVTL. LAW INST. & UNIV. OF N.C.—CHAPEL HILL INST. FOR THE ENV'T, FLOODPLAIN BUYOUTS: AN ACTION GUIDE FOR LOCAL GOVERNMENTS ON HOW TO MAXIMIZE COMMUNITY 12–13, 17, 21, 33, 48, 54 (2017).

94. *New Electric Generating Capacity in 2020 Will Come Primarily from Wind and Solar*, U.S. ENERGY INFO. ADMIN.: TODAY IN ENERGY (Jan. 14, 2020), <https://perma.cc/WG4F-677F>; David Weston, *Offshore Wind and Batteries LCOE Falling Sharply*, WINDPOWER MONTHLY (Mar. 29, 2019), <https://perma.cc/B9A4-MTN4>.

95. HR 20 december 2019, NJ 2020, 41 m.nt. JS (The State of the Netherlands/Stichting Urgenda) (Neth.).

Fortunately, there are many institutions that welcome volunteers or provide guidance and many sources of information that provide practical guidance on steps that can be taken. Some are intended for lawyers,<sup>96</sup> some for educated lay-people generally,<sup>97</sup> and some for youth.<sup>98</sup> This is another aspect of *Fifty Shades of Green*: many, many avenues exist for taking meaningful steps to protect nature and human health.

#### CONCLUSION

In conclusion, there are at least fifty shades of green environment to be protected and fifty shades of serious environmental problems to confront. Similarly, there are fifty shades of actors who can and should be involved in addressing environmental problems and fifty shades of solutions to address those problems. There is no silver bullet, but there are a myriad of green buckshot—if we have the political will to use them. The generation of that political will is in large part up to civil society.

To paraphrase the UN Secretary General António Guterres,<sup>99</sup> the question for each of us is whether we are willing to be an accomplice to the destruction of our children's future. This brings us back to William James. We invite you to think about what you pay attention to, how you want to be defined, what you want your legacy to be.

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96. Michael Gerrard & John Dembach, *How Lawyers Can Help Save the Planet*, LAW360 (May 21, 2019, 4:21 PM), <https://perma.cc/39G2-85BL>.

97. *Drawdown 2020: The World's Leading Resource for Climate Solutions*, PROJECT DRAWDOWN, <https://perma.cc/UDX3-WM3L> (last visited June 7, 2020).

98. See, e.g., Denis Hayes & Daniel Magraw, *Earth Day at 50: A Time to Engage*, 84(1) SOC. EDUC. 18, 22 (2020).

99. António Guterres, Sec'y Gen., U.N., Remarks at 2019 Climate Action Summit (Sept. 23, 2019) ("I refuse to be an accomplice in the destruction of [our grandchildren's] home and only home."), <https://perma.cc/WK5U-RLEC>.



## APPENDIX A

## BECOMING ENVIRONMENTALLY CONSCIOUS IN INDIA

BY DANIEL MAGRAW

As noted above, William James said that a person is defined by what he or she pays attention to.<sup>100</sup> I have paid attention to environmental protection and in the relation between environmental protection and human rights for five decades. My interest in those areas is founded on my experience as a Peace Corps Volunteer in South India in the late 1960s.

I joined the Peace Corps after college for reasons of economic justice. As a volunteer, I lived on a small farm set against the Nilgiris Mountains, a remarkable range that stretches along the southwest coast of India and rises abruptly to a height of 9000 feet. The mountains' steep slopes are home to wild boar, deer, tigers, leopards, monkeys, cobras, and elephants, and are covered in magnificent forests of palm trees, tropical fruit trees, teak, rosewood, and eventually pine. You can imagine how beautiful they were at dawn, as the rising sun gradually lit up the myriad hues of green and blue. Indeed, one literally could see more than fifty shades of green during those sunrises.

The one exception to that vista was the ridge that ran from directly behind my house up to the mountains. In stark contrast to the mountains, the ridge was brown—barren of vegetation except thorn bushes, barren of wildlife except lizards and snakes, and riven by eroded gullies. This wasteland had been caused by overgrazing livestock and overharvesting firewood.

The environmental and social consequences were stark: the water table dropped, people needed to travel further to feed their animals, and women needed to need to walk further to gather firewood and water. This had a direct impact on women's lives and livelihoods, and also children's lives because children were pulled out of school to help in those tasks. This led me to two important realizations: environmental conditions directly affect economic and social conditions; and a healthy environment is essential to maintaining our society. Nowadays we refer to the first concept as sustainable development,<sup>101</sup> and to the second as ecosystem services—what nature provides humankind for free (as is described in part II, above). These realizations profoundly changed my life.

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100. James, *supra* note 1.

101. See D. Magraw & L. Hawke, *Sustainable Development*, in INTERNATIONAL ENVIRONMENTAL LAW 611–638 (D. Bodansky, J. Brune & E. Hey eds., 2007).