VERMONT JOURNAL OF ENVIRONMENTAL LAW

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EPA AND NEPA'S INTERNATIONAL COOPERATION PROVISION

Terrence Neal*

ABSTRACT

The goal of this Article is to analyze and highlight EPA's authority to undertake international activities—a topic that has been more overlooked than EPA's foreign policy role itself. In accomplishing this goal, it places particular focus on the nature and scope of Section 102(2)(I) of the National Environmental Policy Act (NEPA). This Article asserts that Section 102(2)(I) is not merely a policy statement. It prescribes both an authorization and a discretionary duty to engage in international environmental cooperation. NEPA's text and legislative history, as well as persuasive judicial and administrative decisions, affirm this. After clarifying Section 102(2)(I)'s legal nature, this Article demonstrates how EPA may leverage this provision to bolster its legal justifications for undertaking international activities pursuant to statutes that neither preclude nor expressly authorize such activities.

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INTRODUCTION

Although the United States Environmental Protection Agency (EPA) has engaged in international activities since the 1970s,[1] its role in foreign

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relations is often overlooked. EPA's Office of International Affairs coordinates the agency's international programs,[2] which provide scientific, policy, and legal expertise to international organizations, foreign governments, foreign research institutions, and other federal agencies to address bilateral, regional, and global human health and environmental issues.[3]

These programs were indispensable in advancing the Biden-Harris Administration's objective of restoring the United States' leadership and engagement internationally. Among other Biden-era engagements, EPA hosted the Global Methane Initiative secretariat;[4] participated in the United States' negotiation of international legal instruments, such as the Indo-Pacific Economic Framework for Prosperity and the United Nations plastic agreement;[5] and chaired the governing body of the Commission for Environmental Cooperation, an intergovernmental organization comprising the United States, Mexico, and Canada.[6] In addition, the agency entered into more than 20 arrangements with foreign governments and foreign research institutions to facilitate technical exchanges and scientific collaboration. For example, EPA signed memoranda of understanding (MOUs) with Australia's

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the United States Environmental Protection Agency (EPA) who I collaborated with on a range of international initiatives during my time as an EPA attorney-adviser.

1. *See generally* J. T. Dale, *The Global Interface: EPA's Office of International Activities*, 50 J. WATER POLLUTION CONTROL FED'N 600 (1978); *see also* Jamison Koehler & Scott A. Hajost, *1989: Advent of a New Era for EPA's International Activities*, 1 COLO. J. INT'L ENV'T. L. & POL'Y 181 (1990).

2. In coordination with this office, many EPA offices have engaged in international activities, including the Office of Chemical Safety and Pollution Prevention, Office of Air and Radiation, Office of Research and Development, Office of Land and Emergency Management, Office of Enforcement and Compliance Assurance, and Office of Policy and Regulatory Management. *See, e.g.*, *International Activities Related to Pesticides*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/pesticides/international-activities-related-pesticides (last updated Sept. 12. 2025) ("EPA's Office of Chemical Safety and Pollution Prevention (OCSPP) will continue to work with Health Canada's Pest Management Regulatory Agency (PMRA) on a variety of projects."). EPA regional offices also conduct international activities. *See, e.g.*, JOINT STATEMENT OF COOPERATION ON THE GEORGIA BASIN AND PUGET SOUND ECOSYSTEM OF ENVIRONMENT CANADA AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, ACTION PLAN AND REPORT ON PROGRESS 2 (2003), ("Regionally, Environment Canada - Pacific Yukon Region (EC-PYR) and the US Environmental Protection Agency (EPA)-Region 10 have a long standing and successful relationship."); *Interior and EPA Leverage Funding and Expertise in Support of Clean Water and Utility Efficiency in the Freely Associated States*, U.S. DEP'T OF THE INT. (Nov. 30, 2020), https://www.doi.gov/oia/press/interior-and-epa-leverage-funding-and-expertise-support-clean-water-and-utility-efficiency.

3. *See* 40 C.F.R. § 1.27(a) (2025); *see generally* Dale, *supra* note 1.

4. *See Secretariat*, GLOBAL METHANE INITIATIVE (GMI), https://www.globalmethane.org/secretariat/index.aspx (last visited Mar. 31, 2026).

5. *See U.S. Trade and Investment Agreements*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/international-cooperation/us-trade-and-investment-agreements (last updated Nov. 5, 2025).

6. *See CEC Council Sessions*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/international-cooperation/cec-council-sessions#2024 (last updated Sept. 12, 2025).

Department of Climate Change, Energy, the Environment and Water,[7] Israel's Ministry of Environmental Protection,[8] and Singapore's National Environment Agency.[9] These MOUs formalized the three foreign agencies' intent to cooperate with EPA on environmental justice and solid waste-management related matters.

Despite the breadth and importance of EPA's international activities,[10] the legal authorities permitting EPA to engage in such activities have been even more overlooked than EPA's foreign policy role itself. Thus, the goal of this Article is to highlight statutes that authorize EPA to engage in international activities. It places particular focus on Section 102(2)(I) of the National Environmental Policy Act (NEPA), clarifying its nature and scope.[11]

As amended by the Fiscal Responsibility Act (FRA) in 2023, Section 102(2)(I) states:

> The Congress authorizes and directs that, to the fullest extent possible . . . all agencies of the Federal Government shall . . . consistent with the provisions of this chapter, recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment[.][12]

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7. Memorandum of Understanding Between the Environmental Protection Agency of the United States of America and the Department of Climate Change, Energy, the Environment and Water of the Government of Australia on Environmental Cooperation (Oct. 20, 2023).

8. Memorandum of Understanding Between the Ministry of Environmental Protection of Israel and the United States Environmental Protection Agency (Sept. 18, 2023).

9. Memorandum of Understanding Between the Environmental Protection Agency of the United States of America and the National Environmental Agency of the Republic of Singapore on Environmental Cooperation (July 19, 2023).

10. For purposes of this Article, "international activities" is used broadly to, for example, include regulatory cooperation with foreign governments and international organizations, technical assistance and capacity building for foreign governments, international research collaboration, and other activities conducted between EPA and foreign governments and international organizations.

11. 42 U.S.C. § 4332(2)(I). At least two commentators have opined on Section 102(2)(I)'s pre-FRA amendment text, but their analyses are brief and not very detailed. *See* Dale, *supra* note 1, at 600; Joan R. Goldfarb, *Extraterritorial Compliance with NEPA Amid the Current Wave of Environmental Alarm*, 18 B.C. ENV'T AFFS. L. REV. 543, 572 (1991) ("NEPA currently requires agencies merely to 'lend appropriate support to initiatives[.]'"); *see also* DANIEL R. MANDELKER, NEPA LAW AND LITIGATION § 5.18 (2d ed. 2012) (noting NEPA's scope). For example, in 1978, J. T. Dale contemplated that Section 102(2)(F) of NEPA provided a mandate for such activities. *See* Dale, *supra* note 1, at 600.

12. 42 U.S.C. § 4332(2)(I).

I assert that this provision prescribes a discretionary or directory duty for EPA, as well as all other federal agencies with environmental protection-related competencies, to engage in international environmental cooperation. Additionally, I reason that EPA may cite Section 102(2)(I) to supplement its justifications for undertaking international activities pursuant to federal statutes that neither preclude nor expressly authorize such activities.[13]

This Article proceeds in five Parts. Part I explains the continued relevance of international environmental cooperation for fulfilling EPA's mission. Part II analyzes the extent to which the 2023 FRA amendments have altered NEPA's international cooperation provision. Part III describes the legal nature of Section 102(2)(I) of NEPA. Part IV examines the scope of Section 102(2)(I)'s authorization to agencies to support international environmental cooperation. Finally, Part V demonstrates how EPA can leverage NEPA to bolster the legal justifications for its international activities.

I. THE CONTINUED RELEVANCE OF NEPA'S INTERNATIONAL COOPERATION PROVISION

Senator Henry Jackson drafted Section 102(2)(I)'s pre-Fiscal Responsibility Act (FRA) amendment text.[14] When describing the need for the provision to his colleagues, he highlighted that:

> Cooperation in dealing with [the environmental problems all nations and all people share] is necessary, for the problems are urgent and serious . . . . We must seek solutions to environmental problems on an international level because they are international in origin and scope. The earth is a common resource, and cooperative effort will be necessary to protect it. Perhaps also, in the common cause of environmental management, the nations of the earth will find a little more sympathy and understanding for one another . . . .[15]

Today, Senator Jackson's sentiments are more relevant than ever. In our globalized world, most environmental challenges affecting the United States

13. This is particularly relevant to consider following the abrogation of the *Chevron* doctrine. *See generally* Loper Bright Enters. v. Raimondo, 144 S. Ct. 2244 (2024).

14. 115 CONG. REC. 40416.

15. *Id*. at 40417.

have international dimensions. The best example of this is the climate crisis. The atmosphere is a global common into which every country emits greenhouse gases contributing to climate change.[16] The deterioration of this global common, in turn, poses risks to all people and ecosystems.

In the United States, climate change is linked to increased wildfire frequency and severity,[17] heavier rainfall and increased flooding, sea level rise and higher storm surges along coastlines,[18] and much more. These climate-intensified phenomena threaten the Environmental Protection Agency's (EPA) ability under existing environmental statutes and regulations to fulfill its mission to protect human health and the environment in the United States. For instance, wildfires worsened by climate change emit substantial amounts of particulate matter, and their emissions could offset air quality improvements that EPA particulate matter regulations have achieved.[19] Additionally, heavier precipitation events could undermine achievements made in improving water quality under the Clean Water Act. Such events often overwhelm stormwater and sewage systems and contribute to flooding that releases chemicals and debris into the environment.[20]

In conjunction with the climate crisis, humans and other living beings in the United States are also affected by the global issue of plastic pollution. Annually, approximately 11 million metric tons of plastics enter the ocean.[21] The Pew Charitable Trusts projects that this figure could nearly triple by 2040, to 29 million metric tons per year.[22] While this tragedy directly affects the United States' coastline and coastal waters, the United States is incapable of solving this transboundary pollution issue alone, for example, through EPA's regulation of solid waste. Many plastics in the ocean originate from plastic waste that is mismanaged in foreign countries, causing it to be

16. *See generally* Robert Stavins et al., *International Cooperation: Agreements & Instruments*, *in* CLIMATE CHANGE 2014: MITIGATION OF CLIMATE CHANGE. CONTRIBUTION OF WORKING GROUP III TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 1001 (2014); ENV'T PROT. AGENCY, CLIMATE CHANGE INDICATORS IN THE UNITED STATES 6 (5th ed. 2024).

17. *See* Christopher J. Fettig et al., *Forests*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT 7-1, 7-9 (Brooke Eastman et al., eds., 2023); Allison R. Crimmins et al., *Focus on Western Wildfires*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT F2-1, F2-3 (Ellen M. Considine et al., eds., 2023).

18. *See* Ariane O. Pinson et al., *Water*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT 4-1, 4-17 (Beth M. Haley et al., eds., 2023).

19. *See* Christopher G. Nolte et al., *Air Quality*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT 14-1, 14-6 (Neal Fann et al., eds., 2023); Abageal Giles, *Is Vermont Seeing More Wildfire Smoke Because of Climate Change*, CAI (Aug. 21, 2025), https://www.capeandislands.org/text/2025-08-21/vermont-more-wildfire-smoke-climate-change.

20. *See* Pinson et al., *supra* note 18, at 4-17.

21. *See* THE PEW CHARITABLE TRUSTS, BREAKING THE PLASTIC WAVE 25 (2020); *Fighting for Trash Free Seas*, OCEAN CONSERVANCY, https://oceanconservancy.org/trash-free-seas/plastics-in-the-ocean (last visited Mar. 31, 2026).

22. THE PEW CHARITABLE TRUSTS, *supra* note 21, at 9.

released into waterways and the ocean from land-based sources.[23] As these plastics break down into micro- and nano-plastics from weathering and abrasion, they also find their way into the tissues of plants and animals that humans eat, as well as the air and precipitation.[24]

In short, without international cooperation, EPA cannot fulfill its mission or achieve the federal policy goals established under the National Environmental Policy Act (NEPA)—especially the goal of ensuring for all Americans, including future generations, a safe and healthy environment.[25] The pressing need for EPA's engagement in international environmental cooperation is bolstered by the International Court of Justice's unanimous advisory opinion on the obligations of states in respect of climate change.[26] This authoritative opinion affirms that countries have a duty to cooperate to address environmental degradation under customary international law. Specifically, it declares that all countries have a duty under customary international law to undertake sustained and continuous cooperation with other countries to protect the climate system from emissions of greenhouse gases.[27]

II. THE FRA'S MINOR CHANGES TO NEPA'S INTERNATIONAL COOPERATION PROVISION

Since President Richard Nixon signed the National Environmental Policy Act (NEPA) into law in 1970, NEPA has expressly recognized the global nature of environmental issues, as well as the importance of international cooperation to address them.[28] NEPA's original international cooperation provision was designated as Section 102(2)(E). It stated:

> The Congress authorizes and directs that, to the fullest extent possible . . . all agencies of the Federal Government shall . . . recognize the worldwide and long-range character of environmental problems and, where consistent with the

23. *Land-based Marine Debris*, NOAA, https://marinedebris.noaa.gov/where-does-marine-debris-come/land-based-marine-debris (last updated Mar. 28, 2025).

24. SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, CBD TECH. SERIES 83, MARINE DEBRIS: UNDERSTANDING, PREVENTING AND MITIGATING THE SIGNIFICANT ADVERSE IMPACTS ON MARINE AND COASTAL BIODIVERSITY 11 (2016); JULIANO CALIL ET AL., NEGLECTED: ENVIRONMENTAL JUSTICE IMPACTS OF MARINE LITTER AND PLASTIC POLLUTION 41–44 (2021).

25. *See* 42 U.S.C. § 4331(b)(1)–(2).

26. Obligations of States in Respect of Climate Change, Advisory Opinion, 2025 I.C.J. ¶ 308 (2025) ("Climate change is a common concern. Co-operation is not a matter of choice for States but a pressing need and a legal obligation.").

27. *See generally id.*

28. *See* Pub. L. No. 97–190, § 102(2)(E) (1970) (codified at 42 U.S.C. § 4332(2)(I)).

> foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment . . . .[29]

In 1975, Congress redesignated this provision to Section 102(2)(F).[30] Later, in 2023, the Fiscal Responsibility Act (FRA) redesignated Section 102(2)(F) to Section 102(2)(I) and added "consistent with the provisions of this Act" before "recognize" in the provision's operative text.[31] These minor changes do not significantly alter the text's meaning. International environmental cooperation remains consistent with NEPA's broad purpose of "promot[ing] efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man,"[32] as well as with its policy goals of "creat[ing] and maintain[ing] conditions under which man and nature can exist in productive harmony."[33] In addition, such cooperation does not necessarily conflict with other NEPA provisions, such as those pertaining to environmental reviews of major federal actions (e.g., Section 102(2)(C) of NEPA). Therefore, authoritative analyses of Section 102(2)(I)'s pre-FRA amendment text, for example by federal courts, may be relied upon to interpret Section 102(2)(I).

This Part does not foreclose the possibility that the FRA's addition of "consistent with the provisions of this Act" may affect the interpretation of other NEPA provisions that are not the focus of this Article. Congress added this clause to Section 102(2)(I) as part of a permitting reform initiative.[34] Thus, it is more relevant for understanding the relationship between Section 102(2)(I) and Section 102(2)'s environmental review requirements. For instance, the clause could be construed to affect the extent to which agencies must "recognize the worldwide and long-range character of environmental problems" in preparing the environmental impact statements for major federal actions required under Section 102(2)(C) of NEPA.[35]

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29. *See id.*

30. *See* Pub. L. No. 94–83 (1975).

31. *See* Fiscal Responsibility Act of 2023, Pub. L. No. 118–5, § 321(a)(7) (2023).

32. 42 U.S.C. § 4321.

33. 42 U.S.C. § 4331(a).

34. The FRA amendments to the international cooperation provision are located under Title III of the FRA, which is named "TITLE III–PERMITTING REFORM." Pub. L. No. 118–5, § 321(a)(7).

35. 42 U.S.C.§ 4332(2)(I); *cf*. Update to Regulations Implementing the Procedural Provisions of NEPA, 85 Fed. Reg. 43304, 43346 (finalized July 16, 2020) ("[Section 102(2)(F)] does not indicate in any way that the requirements of section 102(2)(C) to prepare detailed statements applies outside of U.S. territorial jurisdiction.").

III. SECTION 102(2)(I)'S LEGAL NATURE

Section 102(2)(I) prescribes both an authorization and a discretionary or directory duty to engage in international environmental cooperation. Its authorization is explicit.[36] Section 102(2)(I) plainly states that "Congress *authorizes* and directs that, to the fullest extent possible . . . [federal agencies] shall . . . where consistent with the foreign policy of the United States, lend appropriate support . . . ."[37] While the duty under Section 102(2)(I) arguably is less explicit, it is nonetheless evidenced by the National Environmental Policy Act's (NEPA) structure and legislative history,[38] a persuasive United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit) opinion,[39] and Nuclear Regulatory Commission (NRC) orders.[40]

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36. *See* King v. Burwell, 576 U.S. 473, 486 (2015) ("If the statutory language is plain, we must enforce it according to its terms.") (citing Hardt v. Reliance Std. Life Insurance Co., 560 U.S 242, 251 (2010)); Meyers v. Birdsong, 83 F.4th 1157, 1160 (9th Cir. 2023) ("In statutory interpretation, the plain meaning of a statute controls where that meaning is unambiguous.") (internal quotations marks omitted). NEPA's legislative history provides additional support. In 1969, Senator Henry Jackson explained that Section 102(2)(I)'s pre-amendment text provides "statutory authority to all Federal agencies to participate in the development of a positive, forward looking program of international cooperation in dealing with the environmental problems all nations and all people share." 115 CONG. REC. 40416–17. He also expressed:

> I am hopeful that the United Nations Conference in 1972 on "the Problems of the Human Environment" will unite leaders of nations throughout the world in the effort of achieving solutions to international environmental problems. I am, however, concerned that at the present time the Federal Government is not doing enough to plan and prepare for the 1972 U.N. Conference. [Section 102(2)(I)'s pre-amendment text] provides the Federal agencies and the administration with the authority to make a positive and a far-reaching contribution to this international effort to deal with this critical and growing international problem. I am hopeful that this authority will be utilized.

Id. at 40417.

37. 42 U.S.C. § 4332(2)(I) (emphasis added).

38. *See* Robinson v. Shell Oil Co., 519 U.S. 337, 341 (1997) ("The plainness or ambiguity of statutory language is determined by reference to the language itself, the specific context in which that language is used, and the broader context of the statute as a whole."); Loving v. I.R.S., 742 F.3d 1013, 1016 (D.C. Cir. 2014) ("In determining whether a statute is ambiguous and in ultimately determining whether the agency's interpretation is permissible or instead is foreclosed by the statute, we must employ all the tools of statutory interpretation, including text, structure, purpose, and legislative history.") (internal quotation marks omitted).

39. *See* Env't. Def. Fund, Inc. v. Massey, 986 F.2d 528, 536 (D.C. Cir. 1993); *see also* Nat. Res. Def. Council, Inc. v. Nuclear Regul. Comm'n, 647 F.2d 1345, 1387 (D.C. Cir. 1981) (Robinson III, J., concurring) (positing that NEPA's international cooperation provision is a directive that federal agencies must comply with).

40. *See* Babcock & Wilson, 5 N.R.C. 1332, 1338–39, 1346–48 (1977); Westinghouse Electric Corp., 11 N.R.C. 631, 649–50, 661–62 (1980); *but see* Update to Regulations Implementing the Procedural Provisions of NEPA, 85 Fed. Reg. 43304, 43346 (finalized July 16, 2020) ("International cooperation is inherently voluntary . . . .").

Regarding NEPA's structure, Section 101 of NEPA pronounces aspirational policies and goals.[41] Section 101's inclusion of language, such as "declares that it is the continuing policy of the Federal Government" and "should," make apparent it does not stipulate legal obligations.[42] In contrast, Section 102's provisions, including Section 102(2)(I), stipulate actions that agencies have a duty to implement.[43] Since these provisions are all subject to the operative terms "directs" and "shall," it is evident that Congress intended that they be given effect.[44]

NEPA's legislative history's description of the relationship between Section 101 and Section 102 supports this finding. When endorsing NEPA in 1969, the Senate Committee on Interior and Insular Affairs expressed that Section 102 was designed to effectuate NEPA's goals and policies.[45] Specifically, the Committee clarified that Section 102's international cooperation provision and its environmental review provisions were included in NEPA "to remedy . . . shortcomings in the legislative foundation of existing [federal] programs, and to establish action-forcing procedures which will help to insure that the policies enunciated in section 101 are implemented."[46] Thus, in accordance with their fundamental importance in NEPA's legislative scheme, Congress enacted Section 102's subparagraphs as "directives" requiring federal agency compliance.[47]

Consistent with Congress's intent, the D.C. Circuit recognized the legal character of Section 102(2)(I) in its dicta in *Environmental Defense Fund v. Massey*.[48] The central question in this case was whether Section 102(2)(C) of NEPA required the National Science Foundation (NSF) to undertake an environmental review of its proposed plan to incinerate waste in Antarctica.[49] NSF averred that Section 102(2)(I)'s pre-Fiscal Responsibility Act (FRA) amendment text prescribed NEPA's only requirement for agencies

41. *See* H.R. REP. No. 91-765, at 9 (1969) (Conf. Rep.); S. REP. No. 91-296, at 19–20 (1969).

42. 42 U.S.C. § 4331; *see* United States v. Santos-Portillo, 997 F.3d 159, 167 (4th Cir. 2021).

43. 42 U.S.C. § 4332(2)(I).

44. *See* Nat. Res. Def. Council, Inc. v. Tenn. Valley Auth., 367 F. Supp. 122, 125 (E.D. Tenn. 1973) ("The phrase in § 102 of the NEPA that 'Congress authorizes and directs that, to the fullest extent possible . . . ' has been consistently construed to require compliance with NEPA."); *cf.* National Environmental Policy Act Implementing Regulations Revisions Phase 2, 89 Fed. Reg. 35442, at 35508 ("[S]ection 102(2)(I) of NEPA . . . requires Federal agencies to 'recognize the worldwide and long-range character of environmental problems[.]'"). In comparison, "[t]he term 'authorize' is generally given a permissive connotation rather than a mandatory one, and has been held to denote ordinarily a power to act as opposed to an obligation to act." United States v. Maryland, 471 F. Supp. 1030, 1038 (D. Md. 1979).

45. *See* S. REP. NO. 91-296, at 17–20; *see also* H.R. REP. NO. 91-765, at 7–8.

46. S. REP. NO. 91-296, at 19.

47. H.R. REP. No. 91-765, at 9; *see also* Goldfarb, *supra* note 11, at 572.

48. *See* Env't. Def. Fund, Inc. v. Massey, 986 F.2d 528, 536 (D.C. Cir. 1993).

49. *See id.* at 529–30.

conducting activities internationally.[50] In ruling against NSF, the D.C. Circuit found that while Section 102(2)(I)'s pre-FRA amendment text stipulated an obligation, it did not negate the applicability of Section 102(2)(C).[51] The Court remarked:

> NSF has chosen to ignore the clear interrelationship between the Section 102 subsections and the Section 102 mandate as a whole. Section 102 lists several requirements under NEPA for "all Federal agencies." Compliance with one of the subsections can hardly be construed to relieve the agency from its duty to fulfill the obligations articulated in other subsections.[52]

In several nuclear reactor export licensing proceedings, the NRC similarly concluded that agencies have a duty to support international environmental cooperation under NEPA.[53] In *Babcock & Wilcox*, an environmental organization contended that the NRC was required under Section 102(2)(C) of NEPA to consider a nuclear reactor's potential environmental effects in the foreign country where it would be operated before deciding whether to license the reactor's export.[54] Although the NRC decided that NEPA did not require it to consider these effects, it noted international cooperation's importance under NEPA.[55] The NRC asserted that "NEPA requires the United States, where consistent with U.S. foreign policy, to lend appropriate support to efforts aimed at maximizing international cooperation on environmental matters"[56] and thus, "[a]gencies are to seek and encourage cooperation with other nations on environmental problems."[57] The NRC also expressed that its "cooperative ventures fully implement NEPA provisions *mandating* that the United States lend appropriate support to international cooperation in environmental matters."[58]

A few years after *Babcock & Wilcox*, the NRC was presented with similar questions regarding NEPA's extraterritorial application in

50. *Id.* at 530.

51. *See id.* at 536.

52. *Id.*; *see* Nat. Res. Def. Council, Inc. v. Nuclear Regul. Comm'n, 647 F.2d 1345, 1387 (D.C. Cir. 1981) (Robinson III, J., concurring) (citation omitted) (positing that NEPA's international cooperation provision is a directive that federal agencies must comply with).

53. *See* Babcock & Wilson, 5 N.R.C. 1332, 1338–39, 1346–48 (1977); Westinghouse Electric Corp., 11 N.R.C. 631, 649–50, 661–62 (1980).

54. *See* Babcock & Wilson, *supra* note 53, at 1334–37.

55. *See id.* at 1338–39, 1346–47.

56. *Id.* at 1346.

57. *Id.* at 1338–39.

58. *See id.* at 1347–48 (emphasis added).

Westinghouse Electric Corp.[59] This administrative proceeding concerned a license for exporting a nuclear reactor to the Philippines.[60] The NRC seized this opportunity to reaffirm that the pre-FRA amendment version of Section 102(2)(I) prescribed a legal requirement.[61] Furthermore, to demonstrate its compliance with this requirement, the NRC outlined that:

> The NRC pursuant to its NEPA obligations and existing bilateral and multilateral cooperation agreements, exchanges nuclear health, safety, and environmental information with other countries, and encourages adoption of health and safety standards and establishment and improvement of safety and regulatory practices by foreign governments. The NRC currently has agreements with eighteen countries including the Republic of the Philippines. As part of these exchanges the NRC provides notification of its decisions affecting design and operation of reactor types similar to those exported; analyses of problems similar to those encountered abroad, if requested; and copies of NRC standards, environmental impact statements and other health and safety documentation . . . . NRC also arranges for representatives of foreign regulatory organizations to be assigned to the NRC technical staff to work with NRC safety experts for periods of from four months to two years to gain experience in safety and regulatory matters. Representatives of foreign countries also attend 1–3 week NRC training courses on a range of regulatory topics.[62]

Nonetheless, even if Section 102(2)(I) stipulates a duty, its inclusion of the terms "appropriate support" and "where consistent with . . . foreign policy" reflects that Congress intended to grant agencies broad discretion regarding when and how to support international cooperation.[63] As the NRC has reasoned, these qualifiers further suggest that the discretionary duty that Section 102(2)(I) prescribes is not judicially enforceable.[64] Indeed, legal

59. *See* Westinghouse Electric Corp., *supra* note 40, at 649–50, 661–62.

60. *See id.* at 632.

61. *See id.* at 661.

62. *Id.* at 649–50.

63. 42 U.S.C. §4332(2)(I).

64. *See* Babcock & Wilson, *supra* note 53, at 1339 ("Section 102(2)(F) does not appear to create enforceable obligations for agencies. To the contrary, the very conspicuousness of the foreign policy qualification indicates a concern for the practical problems of conducting foreign policy and responding to the vicissitudes of international relations.").

claims to force an agency to provide support to a particular international initiative would likely be non-justiciable. Judicial review of such claims would require a court to determine the content of United States foreign policy, as well as what constitutes appropriate forms of support to maximize international cooperation. In other words, these claims would invite a court to question the prudence of Congress or the Executive Branch in matters of foreign policy constitutionally committed to their discretion, which is impermissible under the political questions doctrine.[65]

However, the inability to seek judicial recourse does not mean that Section 102(2)(I) is merely a policy statement. NEPA explicitly directs agencies to comply with this provision "to the fullest extent possible."[66] In a concurring opinion in a NEPA environmental review case, Judge Spottswood William Robinson III highlights this.[67] He reasoned that "to the fullest extent possible" applies to the NEPA obligation to support international environmental cooperation and that agencies "should remain cognizant of this responsibility."[68]

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65. *See* Japan Whaling Ass'n v. Am. Cetacean Soc'y, 478 U.S. 221, 230 (1986) ("The political question doctrine excludes from judicial review those controversies which revolve around policy choices and value determinations constitutionally committed for resolution to the halls of Congress or the confines of the Executive Branch."); *see also* People's Mojahedin Org. of Iran v. U.S. Dep't of State, 182 F.3d 17, 23 (D.C. Cir. 1999) (applying the political question doctrine and declining to review an agency's determination that the terrorist activity of an organization "threatens the security of United States nationals or the national security of the United States," which is one of the criteria for listing an organization as "foreign terrorist organization" under the Antiterrorism and Effective Death Penalty Act).

66. 42 U.S.C. § 4332(2)(I). As House managers emphasized in 1969 when deliberating NEPA's text, this clause's purpose is "to make it clear that each agency . . . shall comply with the directives set out in [Section 102(2)] unless the existing law applicable to such agency's operations expressly prohibits or makes full compliance with one of the directives impossible." H.R. REP. NO. 91-765, at 9. Federal appeals courts have echoed this. For example, in *Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n*, an environmental review case, the D.C. Circuit declared that NEPA's "Section 102 duties . . . must be complied with to the fullest extent, unless there is a clear conflict of statutory authority." 449 F.2d 1109, 1114–15 (D.C. Cir. 1971) (emphasis omitted) (deeming certain Atomic Energy Commission rules inconsistent with NEPA's environmental review provisions); *see also* Jamul Action Comm. v. Chaudhuri, 837 F.3d 958, 961 (9th Cir. 2016) (reasoning that "to the fullest extent possible" means that "NEPA applies unless the existing law applicable to such agency's operations expressly prohibits or makes full compliance with one of the directives impossible.") (internal quotation marks omitted).

67. *See* Nat. Res. Def. Council, Inc. v. Nuclear Regul. Comm'n, 647 F.2d 1345, 1387 (D.C. Cir. 1981) (Robinson III, J., concurring).

68. *Id.* Judge Robinson III further expressed that:

> NRC may [not] ignore its other NEPA obligations . . . . [A] determination that a formal EIS is unnecessary 'is not to say that environmental concerns are irrelevant.' For example, pursuant to NEPA's policy directives and its provision for multinational cooperation the Commission has inaugurated information interchange programs and other cooperative efforts, and certainly it should continue to pursue these diligently.

Id. (internal quotation marks omitted).

Considering the above, to implement Section 102(2)(I), agencies with environmental protection-related competencies, at a minimum, should have the capacity to lend support to international environmental cooperation activities that the President or the Department of State deems to be a United States foreign policy priority.[69] Additionally, in the absence of judicial enforcement of this provision, requests for relevant information under the Freedom of Information Act, congressional oversight (e.g., via committee hearings, oversight letters, and requests for information), Council on Environmental Quality NEPA guidance, and Presidential directives (e.g., via memoranda or executive orders) may serve as means of promoting Section 102(2)(I)'s implementation.

IV. THE SCOPE OF SECTION 102(2)(I)'S AUTHORIZATION

This Part seeks to clarify the scope of Section 102(2)(I)'s authorization because, in this regard, its plain text is unclear. Section 102(2)(I) uses broad language (i.e., "The Congress authorizes and directs that, to the fullest extent possible . . . all agencies of the Federal Government shall . . . lend appropriate support . . . "). Could, for example, an agency rely on this language as its sole authority for training foreign environmental regulators, or would another statute need to authorize the agency to perform trainings?

In addressing this scope question, federal court opinions are illuminating. As the Nuclear Regulatory Commission (NRC) has highlighted, "courts have made clear that NEPA does not expand a federal agency's substantive or jurisdictional powers."[70] For example, in *Natural Resource Defense Council, Inc. v. EPA*, the Environmental Protection Agency (EPA) averred before the D.C. Circuit that the National Environmental Policy Act (NEPA) expanded EPA's permitting authority under the Clean Water Act (CWA).[71] In particular, EPA asserted that it could impose any condition in a National Pollution Discharge Elimination System permit that it considered necessary to address a facility's environmental effects, including effects

69. *See* 40 C.F.R. § 1507.2 (2020) ("Each agency shall be capable (in terms of personnel and other resources) of complying with the requirements of NEPA and the regulations [in this subchapter] . . . . Agencies shall . . . [f]ulfill the requirements of [Section 102(2)(I)'s pre-amendment text].").

70. Mountain Valley Pipeline, LLC, 171 F.E.R.C. 62632, 62682 (2020) (considering that NEPA did not "authorize the [Federal Energy Regulatory] Commission to deny a certificate application based on emissions from the upstream production or downstream use of transported natural gas."); *see also* Cape May Green, Inc. v. Warren, 698 F.2d 179, 188 (3d Cir. 1983) ("[T]he National Environmental Policy Act provides little, if any, support for an agency taking substantive action beyond that set forth in its enabling act."); Gage v. U.S. Atomic Energy Comm'n, 479 F.2d 1214, 1220 n.19 (D.C. Cir. 1973) (holding that NEPA does not "mandate action which goes beyond [an] agency's organic jurisdiction.").

71. *See* Nat. Res. Def. Council, Inc. v. EPA, 859 F.2d 156, 169–70 (D.C. Cir. 1988).

unrelated to the facility's effluent.[72] The D.C. Circuit rejected EPA's argument, reasoning that:

> Any action taken by a federal agency must fall within the agency's appropriate province under its organic statute(s) . . . . [Therefore,] EPA may not . . . under the guise of carrying out its [environmental review] responsibilities under NEPA transmogrify its obligation to regulate discharges [under the CWA] into a mandate to regulate the plants or facilities themselves. To do so would unjustifiably expand the agency's authority [under the CWA] beyond its proper perimeters.[73]

Since NEPA's environmental review provisions and Section 102(2)(I) are all subparagraphs of Section 102—and thus subject to the same chapeau and authorizing text—the D.C. Circuit's reasoning may be extended to Section 102(2)(I).[74] Indeed, NEPA's legislative history reflects that Congress intended for Section 102(2)(I) to be of the same legal nature as Section 102's other subparagraphs. The Report on the National Environmental Policy Act of 1969 of the Senate Committee on Interior and Insular Affairs collectively characterizes Section 102's subparagraphs as "action-forcing procedures" and "operating procedures."[75] In comparison, the 1969 Conference Report collectively characterizes them as a "congressional authorization and directive to all agencies."[76]

Therefore, Section 102(2)(I) does not endow agencies with any new substantive powers. Instead, this provision permits, as well as directs, agencies to use the respective substantive statutes they administer to support international environmental cooperation. This is limited only to the extent it would not be incompatible with those statutes or *ultra vires*.[77] Put differently, Section 102(2)(I) clarifies how agencies may use their powers, as well as instructs agencies on how to use them. For example, if a statute broadly authorizes an agency to train environmental officials, Section 102(2)(I) would remove any ambiguity as to whether the agency could use this authority to train foreign officials as part of an international initiative. As an

72. *See id.*

73. *Id.* at 169–70.

74. *See* 42 U.S.C. § 4332(2).

75. S. REP. No. 91-296, at 19–20.

76. H.R. REP. No. 91-765, at 9–10.

77. *See id.* at 9 (expressing Congress's intent that NEPA was only to be complied with to the extent permissible under agencies' existing or other statutory authorizations); S. REP. No. 91-296, at 8 (stating that NEPA's purpose is "to guide Federal activities").

additional example, if a statute delegates an agency broad authority to promulgate environmental regulations and does not bar the consideration of international factors, Section 102(2)(1) would help justify the agency's consideration of international environmental cooperation objectives in its rulemakings.[78] For avoidance of doubt, Section 102(2)(I) also extends to agencies' exercise of power delegated to them from the President, including the President's independent foreign affairs powers under Article II of the Constitution.[79]

V. APPLYING SECTION 102(2)(I) AT EPA

Despite not providing the Environmental Protection Agency (EPA) with any additional substantive powers, Section 102(2)(I) of the National Environmental Policy Act (NEPA) is a useful tool for EPA's engagement in international environmental cooperation. This provision elevates such cooperation from merely a good policy idea to a statutorily stipulated objective of the federal government. It provides EPA's often resource-constrained programs with a clear basis for prioritizing such cooperation (e.g., in terms of budget and personnel allocation).

In making international cooperation a core part of their work in line with Section 102(2)(I), EPA programs can rely on a range of express statutory authorities.[80] For example, the Federal Insecticide, Fungicide, and Rodenticide Act authorizes EPA to "participate and cooperate in any international efforts to develop improved pesticide research and regulations."[81] The National Environmental Education Act permits EPA to fund "environmental education and training programs for . . . design and

78. *Cf.* Elena Chachko, *International Factors in Domestic Regulation: What the District Court Got Wrong in Louisiana v. Biden,* YALE J. ON REG. (Mar. 3, 2022), https://www.yalejreg.com/nc/international-factors-in-domestic-regulation-what-the-district-court-got-wrong-in-louisiana-v-biden-by-elena-chachko/.

79. *See, e.g.*, U.S. Dep't of State, Case-Zablocki Act Memorandum on the Statement Regarding the Agreement between Saudi Arabia for Cooperation in the Global Program (Sept. 30, 2002) (citing Article II of the Constitution and the pre-FRA amendment version of Section 102(2)(I) as the authority for the United States to conclude the international agreement).

80. *See, e.g.*, 22 U.S.C. § 5452(b) (authorizing EPA "to undertake such educational, policy training, research, and technical and financial assistance, monitoring, coordinating, and other activities as the Administrator may deem appropriate, either alone or in cooperation with other United States or foreign agencies, governments, or public or private institutions, in protecting the environment in Poland and Hungary."); 42 U.S.C. § 7671p(b) ("The [EPA] Administrator, in consultation with the Secretary of State, shall support global participation in the Montreal Protocol by providing technical and financial assistance to developing countries that are Parties to the Montreal Protocol and operating under article 5 of the Protocol."); 42 U.S.C. § 7415 (authorizing EPA to address international air pollution where there is reciprocity in pollution prevention and control efforts.).

81. 7 U.S.C. § 136o(d)(1).

demonstration of projects to foster international cooperation in addressing environmental issues and problems involving the United States and Canada or Mexico."[82] Further, the Save Our Seas 2.0 Act empowers EPA to work with the Department of State and the U.S. Agency for International Development "to build partnerships, as appropriate, with the governments of foreign countries and to support international efforts to combat marine debris."[83] Finally, the North American Free Trade Agreement-related legislation,[84] in conjunction with Executive Order 12,915,[85] authorizes EPA to represent the United States in the Commission for Environmental Cooperation's governing body.

EPA may also engage in international cooperation pursuant to statutory provisions that neither preclude nor expressly authorize such activities. Section 102(2)(I) of NEPA can bolster EPA's legal justifications for claiming implied authority under these provisions.[86] This is because Section 102(2)(I)'s directive that agencies "shall . . . recognize the worldwide and long-range character of environmental problems" and support international environmental cooperation "to the fullest extent possible" may inform EPA's interpretation and application of its authorities. Indeed, Congress incorporated "to the fullest extent possible" into Section 102 partly to ensure that agencies would not adopt "excessively narrow" interpretations of their authorities in implementing NEPA.[87] Furthermore, Section 102(2)(I) can be coupled with Section 102(1) to help support claims of authority under ambiguous or non-explicit statutory provisions. Section 102(1) "authorizes

82. Pub. L. No. 101-619, § 6(b)(5), 104 Stat. 3325 (1990); *see id.* §§ 5(b)(4), 10(a)(B)(2)(C).

83. Save Our Seas 2.0 Act, Pub. L. No. 116-224, § 204(b), 134 Stat. 1072 (2020).

84. *See* 19 U.S.C. § 3472. In January 2026, President Trump issued a memorandum expressing the intent of his administration to withdraw from the Commission for Environmental Cooperation. Withdrawing the United States from International Organizations, Conventions, and Treaties that Are Contrary to the Interests of the United States, 99 Fed. Reg. 2281 (Jan. 7, 2026). However, this memorandum cannot supersede applicable federal statutes. *Cf.* City of S.F. v. Trump, 897 F.3d 1225, 1235 (9th Cir. 2018) ("Because Congress did not authorize withholding of funds, the Executive Order violates the constitutional principle of the Separation of Powers.").

85. Exec. Order. No. 12,915, 59 Fed. Reg. 95 (May 18, 1994).

86. *See* 33 U.S.C. §§ 1254(b), (h); 42 U.S.C. § 7403(b); *cf.* 42 U.S.C. § 6981; 33 U.S.C. § 1443(a); 7 U.S.C. § 136r(a). Additionally, certain CAA provisions provide implied authority for EPA to engage in international regulatory cooperation. *See* Nat'l Ass'n of Clean Air Agencies v. EPA, 489 F.3d 1221, 1224 (D.C. Cir. 2007) (rejecting challenges to EPA's airplane emissions under Section 231 of the Clean Air Act that sought to align United States standards with International Civil Aviation Organization (ICAO) standards); Bluewater Network v. EPA, 372 F.3d 404, 412–13 (D.C. Cir. 2004) (rejecting a challenge to EPA's promulgation of a rule under Section 213 of the CAA that would align certain United States' emissions standards for nonroad engines with Annex VI to the International Convention on the Prevention of Pollution from Ships); *cf.* George E. Warren Corp. v. EPA, 159 F.3d 616, 623–24 (D.C. Cir. 1998) (reasoning that EPA could consider the United States' obligations under an international agreement in promulgating rules under 42 U.S.C. § 7545(k)(8)).

87. H.R. REP. No. 91-765, at 10.

and directs that, to the fullest extent possible . . . the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in [NEPA]."[88]

To demonstrate how Section 102(2)(I) can support EPA's use of implied authorities to engage in international environmental cooperation, the remainder of this Part examines several Clean Air Act (CAA) and Clean Water Act (CWA) provisions. For clarity, this Part's focus is on the interpretation of statutes from the perspective of an EPA attorney seeking to identify colorable readings of a statute to help EPA programs and policymakers achieve their objectives.[89] This focus is pertinent because EPA attorneys do not make policy and regulatory decisions—EPA programs and policymakers do. Additionally, in practice, these decisionmakers may desire to undertake a particular international activity regardless of whether it can be definitively based on either a clear or express delegation of authority from Congress. In this context, it is the attorney's role to advise the decisionmakers on how to minimize legal risks, including by identifying colorable legal justifications for undertaking the decisionmakers' planned activities.

Moreover, for international activities, EPA attorneys may often have to develop legal justifications in the absence of controlling case law. EPA's application and interpretation of many of its authorities related to international cooperation, such as those pertaining to training, scientific collaboration, and the making of cooperative agreements, are not commonly reviewed by courts.[90] Accordingly, the analysis in this Part pertains to how EPA attorneys can best guide, in every day internal decision-making and not necessarily in a litigation context, the interpretation and application of the statues that EPA administers.

A. Section 231 of the CAA

Section 231 of the CAA stipulates that the EPA Administrator: "shall, from time to time, issue proposed emission standards applicable to the emission of any air pollutant from any class or classes of aircraft engines which in his judgment causes, or contributes to, air pollution which may reasonably be anticipated to endanger public health or welfare."[91] This provision further provides that after EPA proposes standards, EPA shall issue such standards "with such modifications as [it] deems appropriate."[92]

88. 42 U.S.C. § 4332(2)(I).

89. *See* Thomas O. McGarity, *The Role of Government Attorneys in Regulatory Agency Rulemaking*, 61 L. & CONTEMPORARY PROBLEMS 19 (1998).

90. *See, e.g.*, 33 U.S.C. §§ 1254(b), (h); 42 U.S.C. §§ 7671e, 7403(b); 7 U.S.C. § 136r(a).

91. 42 U.S.C. § 7571(a)(2)(A).

92. *Id.* § 7571(a)(3).

Since 1982, invoking Section 231, EPA has consistently promulgated rules to align United States aircraft emission standards with international standards adopted by the International Civil Aviation Organization (ICAO),[93] to which the United States is a member.[94]

In its 1982 rule, EPA amended exhaust emissions from new and in-use commercial aircraft gas turbine engines. EPA explained that "one intent of this rulemaking . . . [was] to achieve as much commonality with international standards as is feasible without compromising with U.S. environmental goals."[95] Similarly, EPA's 2005 rule amending exhaust emissions from new commercial aircraft gas turbine engines describes that it "will help establish consistency between U.S. and international standards, requirements, and test procedures . . . and thus, the public can be assured they are receiving the air quality benefits of the international standards."[96] EPA's 2021 rule establishing aircraft engine carbon dioxide emissions standards continued the trend.[97] It states:

> In order to promote international cooperation on GHG emissions regulation and international harmonization of aviation standards and to avoid placing U.S. manufacturers at a competitive disadvantage that likely would result if the EPA were to adopt standards different from the standards adopted by ICAO, as discussed further above, the EPA is adopting standards for GHG emissions from certain classes of engines used on airplanes that match the stringency of the CO2 standards adopted by ICAO.[98]

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93. "One of the core functions of the International Civil Aviation Organization (ICAO) is to adopt Standards and Recommended Practices on a wide range of aviation-related matters, including aircraft emissions." Control of Air Pollution From Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures, 86 Fed. Reg. 2136, 2137 (Jan. 11, 2021); "EPA and the [Federal Aviation Administration (FAA)] work within the standard-setting process of ICAO[] . . . to help establish international emission standards and related requirements." *Id.* at 2140.

94. *See* California v. EPA, 72 F.4th 308, 312 (D.C. Cir. 2023); Control of Air Pollution From Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures, 86 Fed. Reg. 2136, 2140 (Jan. 11, 2021) ("Historically, . . . international emission standards have first been adopted by ICAO, and subsequently the EPA has initiated rulemakings under CAA section 231 to establish domestic standards that are harmonized with ICAO's standards . . . . This rule continues this historical rulemaking approach.").

95. Control of Air Pollution From Aircraft and Aircraft Engines; Emission Standards and Test Procedures, 47 Fed. Reg. 58462, 58469 (Dec. 30, 1982).

96. Control of Air Pollution From Aircraft and Aircraft Engines; Emission Standards and Test Procedures, 70 Fed. Reg. 69664, 69664 (Nov. 17, 2005).

97. Control of Air Pollution From Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures, 86 Fed. Reg. 2136, 2136 (Jan. 11, 2021).

98. *Id.* at 2157; *cf.* Control of Emissions From New Marine Compression-Ignition Engines at or Above 30 Liters Per Cylinder, 68 Fed. Reg. 9746, 9750 (Feb. 28, 2003) ("We have concluded that the

While Section 231 of the CAA does not expressly envision international regulatory cooperation or the consideration of international factors, this is exactly the type of activity that Congress sought to authorize and promote in enacting Section 102(2)(I) of NEPA. Thus, hypothetically, if there was no case law determining that aligning U.S. aircraft emissions standards with international standards is a reasonable exercise of the EPA's delegated authority under Section 231, an EPA attorney could advise that NEPA be cited for support in the administrative record when developing relevant rules. To be sure, I am not advocating that NEPA is a necessary authority for such agency rulemakings. Rather, Section 102(2)(I) of NEPA emphasizes the importance of federal agency engagement in international cooperation. This would provide additional legal support for EPA's international regulatory cooperation under CAA in the face of legal uncertainty.

Under this framing, the utility of Section 102(2)(I) may be accepted even if, in reality, the D.C. Circuit has affirmed EPA's authority under Section 231 to align federal standards with ICAO standards without reference to NEPA.[99] For example, in *California v. EPA*, the D.C. Circuit was not persuaded by 12 states' contentions that EPA "acted unlawfully as well as arbitrarily and capriciously by aligning domestic standards with ICAO's technology-following standards" in the 2021 Aircraft Rule.[100] The court concluded that Congress delegated "'explicit and extraordinarily broad'" authority to EPA in Section 231.[101] It considered that this was evidenced by the fact that "Section 231 does not specify the substantive content of [the aircraft emissions standards that EPA may promulgate], [or] specify any factors the agency must consider [in promulgating such standards]."[102] The D.C. Circuit then proceeded to hold that EPA reasonably harnessed its broad Section 231 authority in aligning federal standards with international standards in the 2021 Aircraft Rule. The Court's opinion states:

> EPA's decision to align domestic regulation with the ICAO standards rested on the reasonable judgment that the best

standards in this final rule (which are equivalent to the internationally negotiated NO_X standards established under MARPOL Annex VI) are the appropriate controls for the near term."); Regulation of Fuels and Fuel Additives: Baseline Requirements for Gasoline Produced by Foreign Refiners, 62 Fed. Reg. 45533, 45533 (Aug. 28, 1997) (revising requirements for imported conventional gasoline to comply with the United States' international trade agreement obligations)

99. *See, e.g.*, California v. EPA, 72 F.4th 308, 314 (D.C. Cir. 2023); Nat'l Ass'n of Clean Air Agencies v. EPA, 489 F.3d 1221, 1224 (D.C. Cir. 2007)

100. *California*, 72 F.4th at 311.

101. *Id*. at 314 (quoting *Nat'l Ass'n of Clean Air Agencies*, 489 F.3d at 1229).

102. *Id*. at 314.

> way to reduce greenhouse gas emissions globally would be to align with international standards, rather than to exceed them . . . . The EPA determined that given the international nature of both aircraft emissions and climate change, it was critically important that domestic regulations not undermine the ICAO standards. Effective reduction of greenhouse gas emissions from aircraft engines requires international coordination because almost three-quarters of such emissions are generated by aircraft beyond the reach of American regulators. In order for the ICAO standards to compel adherence, "[r]eciprocity and consistency are essential, specifically the worldwide mutual recognition of the sufficiency of ICAO's standards and the avoidance of any unnecessary difference from those standards in each [ICAO] Member State's law."
>
> The EPA also explained that a unified set of domestic and international standards would be beneficial for the aircraft industry by "decreas[ing] administrative complexity for airplane manufacturers and air carriers."[103]

There are, of course, statutory provisions that do not provide EPA with as broad authority as CAA Section 231. Invoking Section 102(2)(I) would be more meaningful in those contexts, particularly where the scope of the relevant authority has not been judicially settled and the agency is not entitled to deference.

B. Section 104(b)(2) of the CWA

Section 104(b)(2) empowers EPA to conduct research and a variety of other activities to further the CWA's objective of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the [United States'] waters."[104] It stipulates that EPA:

> is authorized to . . . cooperate with other Federal departments and agencies, State water pollution control agencies, interstate agencies, other public and private agencies, institutions, organizations, industries involved, and individuals, in the preparation and conduct of such

103. *Id*. at 315–16 (internal citations omitted).
104. 33 U.S.C. § 1251(a).

> research and other activities referred to in [Section 104(a)(1) of the CWA].[105]

Section 104(a)(1) of the CWA adds that EPA:

> shall establish national programs for the prevention, reduction, and elimination of pollution and as part of such programs shall . . . in cooperation with other Federal, State, and local agencies, conduct and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of [water] pollution[.][106]

Hypothetically, the EPA Office of Water may wish to invoke Section 104(b)(2) to conduct water pollution-related research or other relevant activities with a public international organization (IO), such as the International Maritime Organization, the International Joint Commission, or the World Health Organization. However, neither the CWA nor case law has defined the term "organizations" for purposes of Section 104(b)(2), which plausibly could be interpreted to exclude IOs. IOs are distinguishable from the private (e.g., non-profits) and public (e.g., state entities and universities) organizations that EPA commonly collaborates with.

IOs are established under international law and generally are comprised of and beholden to foreign nations.[107] Thus, collaborating with IOs is more likely to raise foreign policy concerns or constraints than collaborating with organizations established under federal, state, or Tribal law. Furthermore, since IOs and their officers and employees are entitled to certain privileges and immunities under international and domestic law, EPA has less levers to ensure that these organizations comply with any standards or conditions EPA may wish to impose in terms of engagement.[108] For example, IOs are generally immune from suit and judicial processes in federal and state courts with respect to their non-commercial activities.[109]

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105. § 1254(b)(2).

106. § 1254(a)(1).

107. *See generally* Kirsten Schmalenbach*, International Organizations or Institutions, General Aspects*, *in* MAX PLANCK ENCYCLOPEDIAS OF INTERNATIONAL LAW (2020).

108. *See id.* §§ 33–37; 22 U.S.C. § 288a ("International organizations shall enjoy the status, immunities, exemptions, and privileges set forth in this section.").

109. *See* Jam v. Int'l Fin. Corp., 139 S. Ct. 759, 764 (2019) (interpreting the International Organizations Immunities Act of 1945).

In short, due to IOs' distinct features, the Office of Water's objective of collaborating with IOs pursuant to Section 104(b)(2) of the CWA would raise a degree of legal uncertainty. To strengthen the justification for such activities, EPA attorneys could invoke Section 102(2)(I) of NEPA, which suggests that agencies' substantive authorities should not be construed restrictively as to unnecessarily preclude international environmental cooperation.[110] In addition, the attorneys could advance that CWA's broader context supports construing Section 104(b)(2) of the CWA to encompass international organizations.[111]

In a distinct CWA section concerning penalties for CWA violations, the term "organization" is defined as "a legal entity, other than a government, established or organized for any purpose, and such term includes a corporation, company, association, firm, partnership, joint stock company, foundation, institution, trust, society, union, or any other association of persons."[112] Under the presumption of consistent usage, or "the normal rule of statutory interpretation that identical words used in different parts of the same statute are generally presumed to have the same meaning,"[113] this definition may be used for purposes of Section 104(b)(2). Accordingly, IOs, which have legal personality and are established for a wide range of purposes, including to establish international human health and environmental protection standards,[114] may be considered "organizations."

The specific context in which "organizations" is used in Section 104(b)(2) supports this interpretation.[115] This provision focuses on improving the understanding of water pollution so that its effects and threats to the waters of the United States can be effectively addressed. Additionally, other CWA provisions expressly recognize that ocean pollution and transboundary freshwater pollution affect the waters of the United States.[116] In other words, collaborating with IOs on research, training, and other activities is critical to Section 104(b)(2)'s objective. In sum, as indicated in

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110. *See* 42 U.S.C. § 4332(2)(I).

111. *Compare* Robinson v. Shell Oil Co., 519 U.S. 337, 341 (1997) ("The plainness or ambiguity of statutory language is determined by reference to the language itself, the specific context in which that language is used, and the broader context of the statute as a whole."), *with* United States v. Ng Lap Seng, 934 F.3d 110, 124 (2d Cir. 2019) ("[Public international organizations] easily fall within the broad definition of 'organization' established by 1 U.S.C. § 1 and 18 U.S.C. § 18. And there is no need to exclude such persons from the word 'organization' as used in [18 U.S.C. § 666].").

112. 33 U.S.C. § 1319(c)(3)(B)(iii).

113. IBP, Inc. v. Alvarez, 546 U.S. 21, 34 (2005).

114. *See, e.g.*, Erosion Victims of Lake Superior Regul. v. United States, 12 Cl. Ct. 68, 69 (1987) ("The [International Joint Commission] is an independent, public, legal personality regarding questions within its scope of duty."); *Ng Lap Seng*, 934 F.3d, at 124.

115. *See supra* note 110.

116. *See* 33 U.S.C. §§ 1251(c), 1268, 1276b, 1321c.

Part V.A. above, invoking Section 102(2)(I) of NEPA can be useful to an attorney counseling an EPA decisionmaker in the face of uncertainty.

CONCLUSION

Section 102(2)(I) of the National Environmental Policy Act stipulates a discretional duty and authorization to support international environmental cooperation. The Environmental Protection Agency's (EPA) implementation of this provision is more important than ever. EPA's ability to effectively protect human health and the environment in the United States is dependent on its cooperation with international partners to address environmental issues, which are increasingly global in nature. Accordingly, this Article has demonstrated some ways in which EPA could leverage Section 102(2)(I) to bolster its legal justifications for engaging in international activities and for maintaining its key role in United States foreign policy.
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CARBON MARKETS AND THE DISPOSSESSION OF INDIGENOUS PEOPLES IN TANZANIA

Fredrick Ole Ikayo*

"We do not inherit the earth from our ancestors, we borrow it from our children."[1]

"First we were disposed in the name of kings and emperors, later in the name of state development, and now in the name of conservation."[2]

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INTRODUCTION

Africa has contributed only about 2–3% of global greenhouse gas emissions, yet it is among the most disproportionately vulnerable regions to

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1. *The Maasai and the Earth*, SUSTAINABILITY, https://www.activesustainability.com/environment/the-maasai-and-the-earth/ (last visited Apr. 10, 2026).

2. MARK DOWIE, CONSERVATION REFUGEES: THE HUNDRED-YEAR CONFLICT BETWEEN GLOBAL CONSERVATION AND NATIVE PEOPLES xv (2009) (quoting the Indigenous delegates to the Fifth World Parks Congress, Durban, South Africa, 2003).

the impacts of climate change.[3] Over the past two decades, climate change has evolved from a scientific warning into one of the most pressing global challenges—marked by complex environmental, social, and economic consequences.

As the urgency to address climate change intensifies[4] at both the global and national levels, the market-based solutions of voluntary carbon credit markets (carbon offsetting mechanisms) have emerged as key components of corporate and national climate strategies. In theory, these mechanisms are designed to shift the burden of greenhouse gas emissions to the responsible entities by allowing polluters to purchase carbon credits that ostensibly offset their emissions.[5] As a result, carbon offsetting is often presented as a pragmatic, win-win solution—one that claims to benefit the environment, polluting entities, and the communities or countries that host offset projects.[6] According to the World Economic Forum, carbon credits generally fall into three categories: reduced emissions (such as energy efficiency measures), removed emissions (through carbon capture or reforestation), and avoided emissions (for example, preserving rainforests from deforestation).[7]

The voluntary carbon market, in particular, is projected to grow significantly—"from around [US] $2 billion in 2022 to . . . around [US] $250 billion by 2050."[8] Despite its promise in reducing emissions, the carbon market conceals a complex and contested reality. Beneath the technocratic appeal lies profound ethical, ecological, and legal concerns—especially for Indigenous Peoples and marginalized communities.

Rather than delivering on the promise of climate justice,[9] carbon markets often replicate and reinforce long-standing patterns of exclusion, erasure, and land dispossession. Critical issues in carbon credit schemes include the proliferation of *phantom credits*—instances where emissions reductions are

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3. *Responding to Climate Change*, U.N. ENV'T PROGRAMME, https://www.unep.org/regions/africa/regional-initiatives/responding-climate-change (last visited Apr. 10, 2026).

4. *Urgent Climate Action Can Secure a Liveable Future for All*, IPCC (Mar. 20, 2023), https://www.ipcc.ch/2023/03/20/press-release-ar6-synthesis.

5. U.N. Climate Change, *Paris Agreement Crediting Mechanism*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, https://unfccc.int/process-and-meetings/the-paris-agreement/article-64-mechanism (last visited Apr. 10, 2026).

6. Lei Nguyen, *The Pros and Cons of Offsetting Carbon Emissions*, EARTH.ORG (Mar. 2, 2023), https://earth.org/offsetting-carbon-emissions/.

7. Teresa Hartmann & Douglas Broom, *What Are Carbon Credits and How Can They Help Fight Climate Change?*, WORLD ECON. F. (Nov. 12, 2020), https://www.weforum.org/stories/2020/11/carbon-credits-what-how-fight-climate-change/.

8. *Where the Carbon Offset Market Is Poised to Surge*, MORGAN STANLEY (Apr. 11, 2023), https://www.morganstanley.com/ideas/carbon-offset-market-growth.

9. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE: THE 1990 AND 1992 IPCC ASSESSMENTS (1992) [hereinafter IPCC 1992].

overstated or entirely fabricated, undermining the integrity of carbon markets.[10] These schemes also fail to address the structural and root causes of climate change, such as continued reliance on fossil fuels and unsustainable patterns of consumption in the Global North. Instead, they rely on carbon offset mechanisms that shift the burden disproportionately onto the Global South, where projects are implemented without adequately considering local context and realities.[11]

Another pressing concern is the lack of meaningful participation by host communities, particularly Indigenous Peoples and marginalized groups whose lands are targeted for offset projects.[12] Exclusion from decision-making processes not only violates principles of self-determination and free, prior, and informed consent, but also perpetuates historical patterns of exploitation.[13] Furthermore, even where communities are involved, benefit-sharing arrangements are often absent or insufficient, with profits captured by corporate intermediaries rather than those directly affected by land-use restrictions and conservation measures.[14]

This Article examines Tanzania's domestic legal framework for carbon credit initiatives and argues that it fails to adequately protect the rights and interests of Indigenous communities. The shortcomings stem from gaps in recognition, distributive and procedural fairness, inequitable benefit-sharing, and limited community capacity. In contrast, international human rights law offers a more robust framework by affirming Indigenous Peoples' right to self-determination over their lands and resources, while also holding states

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10. Patrick Greenfield, *Revealed: More than 90% of Rainforest Carbon Offsets by Biggest Certifier are Worthless, Analysis Shows*, THE GUARDIAN (Jan. 18, 2023), https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe.

11. Simon Counsell, *Blood Carbon: How a Carbon Offset Scheme Makes Millions from Indigenous Land in Northern Kenya*, SURVIVAL INT'L, https://www.survivalinternational.org/articles/carbon-offset-scheme-makes-millions-from-Indigenous-land-Northern-Kenya (last visited Apr. 10, 2026).

12. *See generally* Doreen Ajiambo, *As COP30 Nears, Maasai Evictions Expose the Dark Side of Carbon Markets*, GLOB. SISTERS REP. (Oct. 16, 2025) https://www.globalsistersreport.org/environment/cop30-nears-maasai-evictions-expose-dark-side-carbon-markets (discussing proposed carbon sequestration projects targeting the Longido, Simanjiro, and Monduli districts, which are predominantly Maasai).

13. G.A. Res. 61/295, United Nations Declaration on the Rights of Indigenous Peoples, arts. 10, 19, 28 (Sept. 13, 2007); Elizabeth Fraser, *Displacement and Dispossession in Tanzania: How "Conservation" is Destroying the Maasai*, WORLD RAINFOREST MOVEMENT (Mar. 11, 2019), https://www.wrm.org.uy/bulletin-articles/displacement-and-dispossession-in-tanzania-how-conservation-is-destroying-the-maasai.

14. *See generally* Counsell, *supra* note 11 (discussing concerns over distribution of funds generated through carbon sales); Violet George, *New Report Shows Intermediaries Are Profiteering from Carbon Markets*, CARBON HERALD (Feb. 7, 2023), https://carbonherald.com/new-report-shows-intermediaries-are-profiteering-from-carbon-markets/.

accountable for the consequences of their policies. This Article concludes that the most effective way forward is for Tanzania to align its climate strategies with both international human rights standards and the cultural practices and traditional norms of Indigenous Peoples.

Part I explores the role of international human rights law and the broader climate justice movement as key instruments for differentiating and advancing the rights of Indigenous Peoples vis-à-vis those of nation-states. Part II examines Tanzania's domestic legal framework governing carbon credits. Part III analyzes Indigenous rights through the dual lenses of self-determination and recognition, as articulated under international law and within the African context. It considers how these rights are best framed in legal and normative terms and interrogates the implications of carbon credit mechanisms for Indigenous Peoples. Part IV offers a concluding analysis, examining the relationship between sovereignty and self-determination in Tanzania. The Part proposes a conceptual framework that redefines statehood to accommodate pluralism, inclusivity, and the recognition of Indigenous identities, while underscoring the imperative of aligning national legal and policy frameworks with international obligations to ensure climate justice and equitable recognition of Indigenous Peoples.

I. INTERNATIONAL LEGAL FRAMEWORKS AND THE PURSUIT OF CLIMATE JUSTICE

Briefly defined, climate justice refers to principles of democratic accountability and participation, ecological sustainability and social justice, and their combined ability to provide solutions to climate change.[15] Such a notion focuses on the interrelationships between, and addresses the root causes of the social injustice, ecological destruction, and economic domination perpetrated by the underlying logics of pro-growth capitalism. In particular, climate justice articulates a rejection of capitalist solutions to climate change (e.g. carbon markets) and foregrounds the uneven and

15. Swyngedouw argues that dominant climate change discourse tends to create a post-political framing in which climate action becomes a matter of technical management, market mechanisms, or consensus policy—stripping out genuine political contestation over power, inequality, and structural economic drivers of emissions. *See* Erik Swyngedouw, *Apocalypse Forever? Post-Political Populism and the Spectre of Climate Change*, 27 THEORY, CULTURE & SOC'Y 213, 227–28 (2010). Featherstone similarly critiques how climate change is often discussed in ways that detach it from unequal social and environmental relations and neoliberal economic structures. He emphasizes the need to link climate politics to broader struggles over economic and environmental justice. *See* David Featherstone, *The Contested Politics of Climate Change and the Crisis of Neo-Liberalism*, 12 ACME 44, 48, 52–53 (2013).

persistent patterns of eco-imperialism[16] and "ecological debt"[17] because of the historical legacy of uneven use of fossil fuels and exploitation of raw materials, offshoring, and export of wastes.

Climate change is not only an environmental crisis but a deeply rooted issue of global inequality, intersecting with long-standing disparities in economic power, political influence, and historical responsibility. The Paris Agreement, while not providing enforceable remedies, marks a significant development by incorporating human rights into the climate regime for the first time:

> *Acknowledging* that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of [I]ndigenous [P]eoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.[18]

This recognition underscores the dual legal imperative: states must not only act to combat climate change but must also ensure that climate actions do not violate existing human rights obligations. In this light, climate justice is not merely a question of distributive fairness but one of legal accountability and the protection of fundamental rights. While its long-term consequences will be felt worldwide, the harshest and most immediate impacts already fall disproportionately on Africa, Central and South America, Least Developed Countries, Small Island States, the Arctic, and globally on Indigenous Peoples, small-scale producers, and low-income households.[19] For instance, between 2010 and 2020, mortality from floods, droughts, and storms was 15 times higher in highly vulnerable regions than in regions with very low

16. Alejandro Pedregal & Nemanja Lukić, *Imperialism, Ecological Imperialism, and Green Imperialism: An Overview*, 27 J. LABOR & SOC'Y 105, 114–21 (2024).

17. "Ecological debt" refers to the cumulative environmental harm caused by a country through its production and consumption patterns in other countries or in ecosystems beyond national jurisdiction, as well as the long-term exploitation of ecosystems and their goods and services at the expense of other countries' equitable rights to those resources. *See Ecological Debt*, ENV'T JUST. ORGS., LIABS. & TRADE, https://www.ejolt.org/2013/05/ecological-debt/ (last visited Apr. 10, 2026).

18. Paris Agreement to the United Nations Framework Convention on Climate Change, pmbl. ¶ 11, Dec. 12, 2015, T.I.A.S. No. 16-1104 [hereinafter Paris Agreement].

19. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023: SYNTHESIS REPORT: SUMMARY FOR POLICYMAKERS 5, 26 (2023).

vulnerability.[20] From the outset, international climate law has acknowledged this asymmetry.

The First Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 1990 recognized that industrialized nations bear "specific responsibilities," observing that most greenhouse gas emissions originate from these countries and that they possess the greatest capacity to implement change.[21] The Report also suggested that industrialized nations should cooperate with developing countries on international climate initiatives without impeding their developmental aspirations.[22] These foundational principles were enshrined in the United Nations Framework Convention on Climate Change (UNFCCC), adopted at the 1992 Earth Summit in Rio de Janeiro.[23] Central to the UNFCCC is the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC)—a legal recognition that while climate change is a common concern, not all states share equal responsibility or capacity to address it.[24] Article 2 of the Paris Agreement establishes the regime's long-term objective of holding the increase in the global average temperature to well below 2°C above pre-industrial levels. Article 2 pushes to limit the increase to 1.5°C and provides the framework for the implementation of the entire Agreement. It reads: "This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances."[25]

Building on these global discussions, the Environmental Justice and Climate Change Initiative emerged as a pivotal response in 2001, following the first Climate Justice Summit held alongside Conference of the Parties (COP6) to the UNFCCC in The Hague.[26] In 2002,[27] the Initiative released a landmark statement articulating Principles of Climate Justice.[28] These principles marked one of the earliest efforts to articulate a normative climate

20. *Id.*

21. IPCC 1992, *supra* note 9, at 117.

22. *Id.*

23. *See History of the Convention*, U.N. CLIMATE CHANGE, https://unfccc.int/process/the-convention/history-of-the-convention (last visited Apr. 10, 2026).

24. *See* United Nations Framework Convention on Climate Change, art. 3.1, May 9, 1992, 1771 U.N.T.S. 107.

25. Paris Agreement, *supra* note 18, at art. 2.2. Beyond the principle of CBDR-RC, the Paris Agreement also invokes related concepts, including equity, *id.* at art. 1, 3, 4, 18–19, sustainable development, *id.* at art. 1, 3, 4, 7–8, 9, 12, 15, equitable access to sustainable development, *id.* at art. 1, poverty eradication, *id.* at art. 1, 3, 4, 8, and climate justice, *id.* at art. 2.

26. David Schlosberg & Lisette B. Collins, *From Environmental to Climate Justice: Climate Change and the Discourse of Environmental Justice*, 5 WIREs CLIMATE CHANGE 359, 362 (2014).

27. Rosmel Rodríguez, *Historical Construction of Climate Justice*, TIREDEARTH (Nov. 30, 2024), https://www.tiredearth.com/articles/historical-construction-of-climate-justice.

28. EJNET, 10 PRINCIPLES FOR JUST CLIMATE CHANGE IN THE U.S.

justice framework from the perspective of environmental justice communities. They emphasized, among other things, the need to: (1) drastically reduce greenhouse gas emissions and fossil fuel dependence; (2) protect and prioritize the interests of vulnerable and frontline communities; (3) ensure a just and equitable transition to renewable energy systems; (4) promote inclusive, democratic participation in climate policymaking; (5) respond to scientific uncertainty with precautionary action; (6) protect the rights of future generations; (7) affirm the right of Indigenous Peoples and affected communities to represent and speak for themselves; (8) affirm the rights of communities dependent on natural resources for their livelihood and culture to own and manage those resources sustainably, while rejecting the commodification of nature and its resources; and (9) ensure that any market-based or technological approach to climate change—such as carbon trading or carbon sequestration—adheres to the principles of democratic accountability, ecological sustainability, and social justice.[29]

Despite the promise of international cooperation under the UNFCCC, climate negotiations have been fraught with geopolitical tensions and asymmetries in power. The Kyoto Protocol, "which entered into force in 2005,"[30] codified the principle of common but differentiated responsibilities (CBDR), imposing legally binding emission reduction obligations exclusively on developed countries.[31] Major emerging economies such as China, India, and Brazil were exempt from these commitments,[32] reflecting historical disparities in contributions to climate change.[33] This exemption generated friction, particularly in the United States, which cited the lack of obligations on emerging emitters as a rationale for withdrawing from the treaty.[34] Such dynamics reflect broader inequities in climate governance, including the retreat by developed countries from commitments to climate

29. *Id.*

30. *Marking the Kyoto Protocol's 25th Anniversary*, U.N. (Dec. 11, 2022), https://www.un.org/en/climatechange/marking-kyoto-protocol%E2%80%99s-25th-anniversary.

31. Francesco Bassetti, *Success or Failure? The Kyoto Protocol's Troubled Legacy*, CLIMATE FORESIGHT (Dec. 8, 2022), https://www.climateforesight.eu/articles/success-or-failure-the-kyoto-protocols-troubled-legacy/.

32. Under the Kyoto Protocol, developed countries are designated as Annex I Parties, while all other countries are classified as non-Annex I Parties. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 2303 U.N.T.S. 162, Annex I.

33. Mollie Simon, *Lessons Learned: From Kyoto to Paris*, KLEINMAN CTR. FOR ENERGY POL'Y (Jun. 8, 2017), https://kleinmanenergy.upenn.edu/commentary/blog/lessons-learned-from-kyoto-to-paris/.

34. *Id.*

finance—such as contributions to the Green Climate Fund[35]—which are essential to support adaptation and mitigation in the Global South.

Given the limits of international consensus, a robust domestic legal framework employing a bottom-up approach is essential to realizing climate justice. Domestic law can provide communities, particularly those most affected, with mechanisms to participate in decision-making and seek remedies. However, national efforts must be complemented by international cooperation; without it effective climate action and accountability mechanisms remain elusive. Only through a multilateral regime can states develop monitoring systems, share resources, and coordinate legal standards.

II. THE FRAMEWORK FOR CARBON CLIMATE GOVERNANCE WITHIN TANZANIA'S DOMESTIC LAWS

In the Tanzanian context, the intersection of climate change and Indigenous rights exemplifies the challenges of climate justice. Tanzania's climate and economic policies often marginalize Indigenous Peoples, such as the Maasai, who already bear the disproportionate burdens of a changing climate.[36] For example, the 2017 drought in the Ngorongoro Conservation Area (NCA) resulted in the loss of 77,389 heads of cattle, 72,881 heads of goats, and 78,490 heads of sheep, a loss of approximately 70% compared to the livestock numbers in 2016.[37] These communities, deeply tied to their ancestral lands and ecosystems, possess subsistence-based economies and low-carbon lifestyles. They contribute minimally to the global climate crisis, yet face disproportionate impacts—including prolonged droughts, flooding, wildfires, and ecosystem degradation.[38]

Moreover, as is discussed in more detail in Parts III and IV, the collective ownership of land among the Maasai enhances ecological resilience.[39] Traditional practices such as rotational grazing not only support

35. Matteo Civillini, *After US Cuts Cash, Green Climate Fund Head Urges Others to Step Up*, CLIMATE HOME NEWS (Feb. 11, 2025), https://www.climatechangenews.com/2025/02/10/after-us-cancels-cash-for-green-climate-cuts-funds-its-head-warns-of-consequens.

36. Joseph Ole Simel, *Pastoralism and The Challenges of Climate Change*, 3-4 INDIGENOUS AFFAIRS 30, 32 (2009).

37. Cecilia M. Leweri et al., *Rainfall Variability and Socio-Economic Constraints on Livestock Production in the Ngorongoro Conservation Area, Tanzania*, 3 SN APPLIED SCIS. 1, 6 (2021).

38. Ayansina Ayanlade et al., *Africa*, *in* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, WORKING GROUP II, CLIMATE CHANGE 2022: IMPACTS, ADAPTATION AND VULNERABILITY, at 1286 (2022).

39. *Maasai Communities Harness the Resilience of Native Plants to Restore Grasslands in Tanzania,* U.N. DEV. PROGRAMME CLIMATE PROMISE (Sept. 23, 2024), https://climatepromise.undp.org/news-and-stories/maasai-communities-harness-resilience-native-plants-restore-grasslands-tanzania; Kokel Melubo, *Why Are Wildlife on the Maasai Doorsteps? Insights from the Maasai of Tanzania,* 16 ALTERNATIVE: AN INT'L J. INDIGENOUS PEOPLES 180, 182 (2020).

sustainable livelihoods but also promote carbon sequestration and biodiversity conservation.[40] In contrast, individualized and commodified land tenure systems tend to foster fragmentation, overexploitation, and environmental degradation. Despite this, Tanzanian domestic law offers no cause of action through which Indigenous communities can seek redress for climate-related harms or hold major emitters accountable. Nor is there a legal mechanism to recognize the collective relocation or resettlement of Indigenous communities in response to climate displacement.

Tanzania, as a State Party to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreement,[41] has committed itself to global efforts aimed at mitigating climate change. These international legal instruments provide the normative foundation for market-based mechanisms such as carbon trading, which are intended to facilitate emissions reductions.[42] Recognizing its significant carbon sequestration potential—particularly within its conserved and protected areas, which cover approximately 43.7% of the national territory[43]—Tanzania has increasingly positioned itself to participate in international carbon markets.[44] At the Conference of the Parties (COP29), Tanzania secured $408.9 million out of "the $722.6 million pledged . . . for environmental conservation and climate-related initiatives."[45]

A carbon credit is a tradable permit granting an entity the right to emit one metric ton of carbon dioxide or an equivalent amount of other greenhouse gases (GHGs) into the atmosphere.[46] Carbon credits are created and issued by regulatory authorities that administer compliance markets, such as cap-and-trade systems, within specific jurisdictions. Participation in these markets is legally mandated for certain entities that emit GHGs, requiring them to adhere to established emissions limits.[47] Entities receive carbon credits that authorize emissions up to a prescribed limit, which typically

40. PASTRES, THE BENEFITS OF PASTORALISM FOR BIODIVERSITY AND CLIMATE 3, 4 (2022).

41. *Parties to the United Nations Framework Convention on Climate Change*, U.N CLIMATE CHANGE, https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states (last visited Apr. 13, 2026).

42. ARETA A. JEZ ET AL., MINTZ, CARBON CREDIT & CARBON OFFSET FUNDAMENTALS 8 (2022).

43. *United Republic of Tanzania - Country Profile*, CONVENTION ON BIOLOGICAL DIVERSITY, https://www.cbd.int/countries/profile?country=tz (last visited Apr. 9, 2026).

44. Peter Nyanje, *Carbon Market Investors Begin to Stream into Tanzania*, BUS. INSIDER (July 15, 2025), https://businessinsider.co.tz/carbon-market-investors-begin-to-stream-into-tanzania/.

45. Theodora Stankova, *Tanzania Earmarks $463M for Climate Action Amid Carbon Trading Challenges*, CARBON HERALD (Apr. 29, 2025), https://carbonherald.com/tanzania-earmarks-463m-for-climate-action-amid-carbon-trading-challenges/.

46. JEZ ET AL., *supra* note 42, at 13.

47. *Id.*

decline over time.[48] Entities that maintain emissions below their allocated limit may sell surplus credits to other participants, creating a market-based incentive to reduce GHG emissions.[49] In practice, carbon credits are primarily traded within compliance markets.[50]

In contrast, a carbon offset also represents one metric ton of carbon dioxide or its equivalent, but it differs fundamentally from a carbon credit. Whereas credits permit emissions, offsets correspond to carbon that has been avoided or permanently removed from the atmosphere.[51] Offsets may arise from avoidance or reduction projects, such as renewable energy initiatives, methane capture or other emissions-reducing facilities, or from removal and sequestration projects, including reforestation, soil carbon storage, or direct carbon capture.[52]

Entities voluntarily committing to GHG emissions reductions drive the demand for carbon offsets. Such entities may either reduce emissions directly or purchase offsets from projects that achieve reductions elsewhere, thereby fulfilling voluntary commitments.

Carbon markets can be divided into two distinct frameworks: compliance, or mandatory, markets and voluntary markets.[53] Compliance markets, also referred to as regulatory markets, operate under legal or regulatory mandates.[54] They allow participants to buy and sell carbon credits or offsets to meet emissions reduction obligations, such as those established under the Kyoto Protocol or subsequent international agreements. Compliance obligations typically involve a "cap" on total emissions, compelling entities that exceed their allocated limits to acquire additional credits from entities with surplus allowances.[55] Such markets are frequently described as "cap-and-trade" systems. Compliance markets are governed through international, regional, or subnational schemes, including the internationally transferred mitigation outcomes—trading mechanisms under Article 6.2 of the Paris Agreement, the European Union Emissions Trading Scheme (EU-ETS), and the California Carbon Market.[56] Each scheme specifies a unit of tradable emissions reductions and establishes protocols for

48. *Id.*
49. *Id.*
50. *Id.*
51. *Id.*
52. *Id.*
53. *See* CHRISTINA SEEBERG-ELVERFELDT, MICCA, ENV'T & NAT. RES. MGMT. WORKING PAPER 34, CARBON FINANCE POSSIBILITIES FOR AGRICULTURE, FORESTRY, AND OTHER LAND USE PROJECTS IN A SMALLHOLDER CONTEXT 5–11 (2010).
54. *Id.*
55. *Compliance vs. Voluntary Carbon Markets, Explained*, CFP ENERGY (Sept. 3, 2024), https://www.cfp.energy/en/insights/compliance-vs-voluntary-carbon-markets-explained.
56. JEZ ET AL., *supra* note 42, at 15.

tracking, verifying, and transferring reductions.[57] For example, under the Paris Agreement, a country may generate internationally transferred mitigation outcomes by reducing or removing emissions, recording the reductions in its national GHG inventory, and transferring them to another country's inventory after a corresponding adjustment.[58] Transfers may occur at governmental or corporate levels and are subject to oversight by a supervisory body charged with reviewing recognized credits.

Voluntary markets, in contrast, operate outside regulatory obligations, allowing the trade of carbon offsets to meet voluntary corporate or individual environmental commitments. Voluntary offsets cannot be used to satisfy compliance obligations under nationally determined contributions (NDCs) or other regulatory GHG reduction targets.[59] Nevertheless, they are valuable tools for companies seeking to supplement direct emissions reductions. Projects wishing to participate in voluntary markets must first register with a recognized voluntary carbon offset program or registry. For example, leading carbon offset registries in the United States comprise of the American Carbon Registry,[60] the Verified Carbon Standard (Verra),[61] the Gold Standard Impact Registry,[62] and the Climate Action Reserve.[63] Each registry applies specific criteria, methodologies, and protocols to quantify project-based emissions reductions, often drawing upon international sustainability standards. Once certified, projects may issue offsets, which are traded on platforms such as the American Carbon Registry, Verra, APX Inc., and Markit.[64]

Until recently, the lack of a domestic legal framework created significant challenges for the development and implementation of carbon trading projects in Tanzania. In response to this regulatory gap, the Government of Tanzania enacted the Environmental Management (Control and Management of Carbon Trading) Regulations, 2022,[65] marking the country's first formal legal framework specifically addressing carbon trading activities. These Regulations establish a comprehensive legal infrastructure designed to

57. *Id.* at 15–16.

58. *Id.* at 15.

59. *Id.*

60. *A Global Leader That Delivers Ambitious Climate Results*, ACR, https://acrcarbon.org/about-us/ (last visited Apr. 9, 2026).

61. *Verified Carbon Standard*, VERRA, https://verra.org/programs/verified-carbon-standard/ (last visited Apr. 9, 2026).

62. *Gold Standard Registries Impact Registry*, GOLD STANDARD, https://www.goldstandard.org/project-developers/impact-registry (last updated Dec. 12, 2025).

63. Carbon Market Directory, CLIMATE ACTION RESERVE, https://climateactionreserve.org/how/carbon-market-directory/ (last visited Apr. 9, 2026).

64. JEZ ET AL., *supra* note 42, at 15.

65. The Environmental Management Act, Regulations (2022) 42, pt. I, GOV'T NOTICE NO. 636 (Tanz.).

ensure environmental integrity, transparency, and equitable benefit-sharing across all carbon trading projects operating within mainland Tanzania.[66]

The 2022 Regulations delineate responsibilities across multiple domains, including institutional oversight,[67] project registration and approval processes,[68] technical verification and certification,[69] environmental and social safeguards, cost and benefit allocation, public participation,[70] and compliance enforcement.

Under this regulatory regime, the project proponent needs to have expertise in carbon trading, have the financial capacity to invest, and comply with relevant laws. The first step is to submit a Project Concept Note (PCN) to the Designated National Authority or National Focal Point (DNA/NFP), the government office responsible for overseeing carbon trading projects.[71] The PCN should include basic details such as the proponent's name and address, the project's location and size, and the type of project.[72] It must be submitted using the official application form and be accompanied by a non-refundable fee of $250 USD for citizens and $500 USD for non-citizens.[73] If the proposal meets the criteria, the DNA/NFP will issue an endorsement letter allowing the proponent to move forward with a more detailed plan.[74]

The next step is preparing a Project Document (PD),[75] which sets out the project's objectives, activities, monitoring and verification methods, risks and mitigation measures, legal and social safeguards, and anticipated environmental and community impacts.[76] This document is reviewed by the National Carbon Projects Assessment Technical Committee (NCPATC), which evaluates projects against technical, social, economic, environmental, and legal standards.[77]

Once the PD is approved, the project proponent must enter into contractual agreements with relevant parties, such as government agencies, local authorities, and community stakeholders.[78] These agreements outline roles, responsibilities, benefit-sharing arrangements, dispute resolution

66. *Id.*
67. *Id.* pt. IV.
68. *Id.* pt. VI.
69. *Id.* pt. VII.
70. *Id.* pt. IX.
71. *Id.* pt. IV § 9.
72. *Id.* pt. VI § 27(2).
73. *Id.* pt. VI § 26(b), at 31.
74. *Id.* pt. VI § 27(4)(a).
75. *Id.* pt. VI § 28(1).
76. *Id.* pt. V § 24(2); *id.* pt. VI § 28(5).
77. *Id.* pt. IV § 12(b).
78. *Id.* pt. VI § 29.

mechanisms, and other key terms.[79] After the agreements are signed and the necessary permits are obtained, the project can begin implementation, provided it follows the monitoring and reporting requirements.[80]

To certify emission reductions or removals, the project must be independently verified by an accredited third party following an international carbon standard.[81] If successful, the verifier issues a certification report, allowing the project's carbon credits to be registered in a recognized registry for trading.

III. APPLYING TANZANIA'S CARBON TRADING LEGAL FRAMEWORKS TO ITS INDIGENOUS COMMUNITIES: CHALLENGES AND ISSUES

Although the Tanzanian government affirms its sovereignty over the entirety of mainland Tanzania and Tanzania Zanzibar, including territorial waters,[82] Tanzania is home to over 125 distinct ethnic groups. These are generally classified into four broad linguistic and cultural categories: Bantu, Cushitic, Nilo-Hamitic, and San.[83] Among these, four groups—the hunter-gatherer Akie and Hadzabe, and the pastoralist Barabaig and Maasai—are widely recognized, particularly within international legal and human rights frameworks, as Indigenous Peoples.[84] These communities maintain a deep and enduring connection to their lands, possess distinct cultural identities, and face common challenges including land tenure insecurity, poverty, marginalization, and limited political representation.[85]

While these groups broadly share common legal rights under national and international law, the extent to which these rights are realized varies depending on geographic and administrative context. For instance, Maasai communities residing within the Ngorongoro Conservation Area (NCA) are subject to more restrictive regulatory frameworks governing land use and access to resources. These limitations arise primarily from the Ngorongoro Conservation Area Act, which imposes constraints on livelihood activities

79. *Id.*§ 29(2).

80. *Id.* pt. VI § 30; *id.* pt. XI § 41.

81. *See* The Environmental Management Act, Regulations (2022) 42, pt. VII, GOV'T NOTICE NO. 636 (Tanz.); *How Can We Uphold the Integrity of a Growing Carbon Market?*, CARBON TANZ. (Nov. 1, 2021), https://carbontanzania.com/how-can-we-uphold-the-integrity-of-a-growing-carbon-market/#.

82. CONSTITUTION OF THE UNITED REPUBLIC OF TANZANIA Apr. 26, 1977, art. 2 § 1.

83. *Tanzania*, INDIGENOUS NAVIGATOR, https://indigenousnavigator.org/indigenous-data/countries/tanzania# (last visited Apr. 9, 2026).

84. *Id.*

85. *Id.*

and curtails the exercise of land and cultural rights.[86] As a result, the legal rights of Maasai residents within the NCA are significantly impaired relative to those residing outside the conservation area.[87]

The right to self-determination lies at the heart of many contemporary human rights struggles, especially those involving Indigenous Peoples.[88] In the context of climate change—where land use, environmental governance, and cultural survival intersect—this right takes on renewed significance. For Indigenous communities, whose cultural identities and traditional scientific knowledge systems are intimately tied to land, recognition and self-determination are essential to safeguarding both their livelihoods and the ecosystems they have sustainably managed for generations.

A. Recognition of Indigenous Peoples in Tanzania

To grasp the legal and political dimensions of the concept of Indigenous Peoples, one must first examine its articulation within settler-colonial contexts, notably the CANZUS states—Canada, Australia, New Zealand, and the United States—where legal frameworks have historically grappled with questions of prior habitation, sovereignty, and the enduring impacts of colonial conquest. In these countries, Indigenous Peoples are recognized as the original inhabitants of lands and territories prior to colonial conquest and occupation, as reflected in scholarly analyses of the doctrine of discovery.[89] Yet they are outnumbered and constitute only a small portion of the population, approximately "4 per cent in Canada, 2.6 per cent in Australia, 1.5 per cent in the USA and 15 per cent in New Zealand," while settler communities form the overwhelming majority.[90] Terms such as First Nations,

86. *See* Fredrick Ole Ikayo, *Re-Indigenizing Food Sovereignty in the Ngorongoro Conservation Area*, 26 VT. J. ENV'T L. 279, 279 (2025).

87. Christine Ro, *7 Myths Harming the Maasai People in Tanzania*, FORBES, https://www.forbes.com/sites/christinero/2024/09/09/7-myths-harming-the-maasai-people-in-tanzania/ (last visited Apr. 9, 2026).

88. *See, e.g.*, *Self-Determination and Indigenous Peoples*, AUSTL. HUM. RTS. COMM'N (Aug. 4, 2023), https://humanrights.gov.au/our-work/aboriginal-and-torres-strait-islander-social-justice/self-determination-and-indigenous; *"It's Like Killing Culture": Human Rights Impacts of Relocating Tanzania's Maasai,* HUM. RTS. WATCH (July 31, 2024), https://www.hrw.org/report/2024/07/31/its-killing-culture/human-rights-impacts-relocating-tanzanias-maasai.

89. The doctrine of discovery was a principle developed during the colonial period that Western colonizing powers used to legitimize their claims of political and legal authority (superior sovereignty) over lands traditionally inhabited and owned by Indigenous peoples. *See* Robert A. Williams, Jr., *Columbus's Legacy: Law as an Instrument of Racial Discrimination Against Indigenous Peoples' Rights of Self-Determination*, 8 ARIZ. J. INT'L & COMP. L. 51, 71–82 (1991); ROBERT A. WILLIAMS, JR., SAVAGE ANXIETIES: THE INVENTION OF WESTERN CIVILIZATION (2012).

90. Kirsty Gover, *Settler-State Political Theory, 'CANZUS' and the UN Declaration on the Rights of Indigenous Peoples*, 26 EUR. J. INT'L L. 345, 356 (2015); WILLIAMS, *supra* note 89.

Native Americans, and Aboriginal communities are commonly used interchangeably with Indigenous Peoples, while others denote more specific entities,[91] reflecting both historical aboriginality and ongoing claims to land, culture, and political rights.

Africa presents a contrasting context. Political independence did not create settler populations that outnumbered indigenous inhabitants; the majority of the population remained of African descent. As a result, some policymakers resist adopting the label "Indigenous Peoples" in Africa, asserting that all Africans are inherently indigenous to the continent.[92] However, this perspective risks obscuring the particular marginalization experienced by certain communities who, despite being African, face social, economic, and political exclusion.

In Tanzania, this denial has been consistent and formalized. The government has refused to recognize the existence of Indigenous Peoples within its borders, a stance that undermines both individual and collective rights of communities such as the Maasai, Hadzabe, Barabaig, and Akie.[93] Indeed, this Article argues that Tanzania's refusal to recognize Indigenous Peoples—and the corresponding denial of their right to self-determination—constitutes a violation of international human rights law, particularly in the context of climate-related projects (carbon credits and carbon offset mechanisms). While these communities satisfy internationally recognized criteria of indigeneity, their lack of legal recognition in Tanzania precludes meaningful participation in land governance and climate-related decision-making. Consequently, Indigenous Peoples must navigate a political system in which power is vested in majority rule and where minority claims to land, identity, and self-determination are routinely marginalized.

Although there is no universally established definition of "Indigenous Peoples" under international law, international legal standards, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the International Labour Organization Convention No. 169 (ILO Convention 169), affirm the centrality of self-identification in establishing Indigenous status.[94] The principle of self-identification reflects a broad

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91. Elizabeth Prine Pauls, *Tribal Nomenclature: American Indian, Native American, and First Nation*, ENCYCLOPEDIA BRITANNICA, https://www.britannica.com/topic/Tribal-Nomenclature-American-Indian-Native-American-and-First-Nation-1386025 (last visited Apr. 9, 2026).

92. Elifuraha Laltaika, *Chapter 2: Indigeneity, National Unity, Modernity and Public Policy in Africa*, *in* HANDBOOK OF INDIGENOUS PUBLIC POL'Y 35, 35–36 (Sheryl Lightfoot & Sarah Maddison ed., 2024).

93. *See, e.g.*, *Unity Amid Diversity: Tanzania's Approach to Indigenous Identity*, THE GUARDIAN (May 17, 2024), https://ippmedia.co.tz/the-guardian/features/read/unity-amid-diversity-tanzanias-approach-to-indigenous-identity-2024-05-17-123828.

94. Hum. Rts. Council, Rep. of the Expert Mechanism on the Rights of Indigenous Peoples on Its Twelfth Session, U.N. DOC. A/HRC/EMRIP/2019/3/Rev.1, at 5 (2019).

international consensus that rigid legal definitions are neither necessary nor desirable in protecting Indigenous rights.

Article 33(1) of UNDRIP and Article 1(2) of ILO Convention 169 both affirm that self-identification shall serve as the primary criterion in determining who qualifies as Indigenous. These provisions underscore the reality that Indigenous Peoples' rights are grounded not in historical precedence or sovereign status, but in the continuing existence of culturally distinct communities whose identities, livelihoods, and knowledge systems remain rooted in ancestral lands. In this context, Indigenous law and traditional scientific knowledge—such as that of the Maasai's rotational grazing systems—form the basis of sustainable environmental governance and are vital to addressing global climate challenges.

Within this conceptual framework, Indigenous Peoples are entitled to exercise their human rights through collective existence, grounded in their traditional modes of life, as an indispensable component of their right to cultural survival. The Inter-American Court of Human Rights has affirmed that cultural identification is a social and historical fact tied to autonomy and should be respected by States.[95] Within Africa, the African Commission on Human and Peoples' Rights (ACHPR) has adopted similar standards, acknowledging that self-identification, together with group acceptance, forms a critical part of establishing indigeneity.[96]

The African Commission on Human and Peoples' Rights (ACHPR) also addressed the frequently advanced argument that "all Africans are Indigenous."[97] In response, the ACHPR clarified that, for the purposes of international human rights law, the term "Indigenous Peoples" refers specifically to communities whose cultural identities, ways of life, and social institutions differ markedly from those of the dominant national society.[98]

The ACHPR's Working Group of Experts on Indigenous Populations/Communities has further articulated key criteria for identifying Indigenous communities in Africa.[99] The Working Group emphasizes their cultures and ways of life are markedly different from those of the dominant society, often to the extent that they face the risk of cultural extinction.[100] Their survival is deeply tied to access to their traditional lands and natural

95. Xákmok Kásek Indigenous Cmty. v. Paraguay, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R., (ser. C) No. 214, ¶ 37 (Aug. 24, 2010).

96. African Comm'n on Hum. & Peoples' Rts. v. Republic of Kenya, No. 006/2012, Judgment, ¶¶ 107–08, 157 (African Ct. on Hum. & Peoples' Rts., May 26, 2017).

97. *See* ACHPR & IWGIA, REPORT OF THE AFRICAN COMMISSION'S WORKING GROUP OF EXPERTS ON INDIGENOUS POPULATIONS/COMMUNITIES 60 (2005).

98. *Id.* at 89.

99. *Id.*

100. *Id.*

resources, which sustain their livelihoods and identities.[101] Despite their rich heritage, these groups frequently experience discrimination and are often perceived as less developed or less advanced compared to more dominant societal sectors.[102] Many live in remote, inaccessible regions, further isolating them from mainstream political and economic systems.[103] As a result, they are vulnerable to marginalization, domination, and exploitation within national structures "commonly designed to reflect the interests and activities of the national majority."[104] The Working Group emphasizes that defining Indigenous Peoples solely based on their historical precedence, being the *first* inhabitants, is limiting and counterproductive.[105] Instead, contemporary analytical perspectives focus on issues of marginalization, cultural distinctiveness, and the right to self-identification at the international level, shifting the discourse towards recognition and inclusion.[106]

In this regard, at least some of the 125 ethnic groups in Tanzania (Maasai, Hadzabe, Barabaig, and Akie) clearly meet the definitional criteria of Indigenous Peoples established by the ACHPR and other international bodies. Their cultural identity, knowledge systems, and communal relationship to land are profoundly rooted in longstanding traditions, spiritual cosmologies, and intergenerational stewardship practices. Yet Tanzania's continued denial of their Indigenous status and its assertion of a homogenous national identity contravene regional and international legal obligations. Such state rhetoric and policies not only erase Indigenous identities but also functionally deprive these communities of access to justice, land security, and meaningful participation in environmental governance.

International law places positive obligations on States to recognize and protect the rights of Indigenous Peoples' collective identity and corresponding rights.[107] These rights exist independently of domestic acknowledgment. Terminological substitutions such as *tribes*, *minorities*, or *vulnerable groups* do not relieve States of their responsibilities under international human rights law. Indeed, treaty-monitoring bodies have repeatedly criticized States for failing to afford formal recognition and denying effective remedies in cases of violations of rights.[108]

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101. *Id.*
102. *Id.*
103. *Id.*
104. *Id.*
105. Laltaika, *supra* note 92, at 89–90.
106. *Id.*
107. Hum. Rts. Council, Rep. of the Expert Mechanism on the Rights of Indigenous Peoples on Its Twelfth Session, U.N. Doc. A/HRC/EMRIP/2019/3/Rev.1, at 18 (2019).
108. *See* Int'l Convention on the Elimination of All Forms of Racial Discrimination, Comm. on the Elimination of Racial Discrimination, Reps. Submitted by States parties under Article 9 of the

One reason for Tanzania's refusal to recognize any of its ethnic groups as Indigenous Peoples under international law is a concern that recognition might incite ethnic tension or encourage tribalism. These concerns, however, reflect a fundamental misunderstanding of the Indigenous rights framework. Recognition is not a vehicle for privileging certain groups, but a remedial mechanism aimed at rectifying historical injustices. As the UN Special Rapporteur on the Rights of Indigenous Peoples has emphasized, UNDRIP "is fundamentally a remedial instrument," designed to address entrenched marginalization and discrimination rather than confer special privileges.[109]

In the African context, the ACHPR has similarly underscored that recognizing Indigenous rights contributes to national unity, democratic development, and peace.[110] Failing to address structural inequality and dispossession fosters instability. By contrast, inclusion and affirmative legal protections promote societal cohesion and justice.

B. The Impact of Carbon Credit Schemes on Indigenous Peoples

A persistent and critical challenge lies in the systematic exclusion of Indigenous Peoples from environmental and climate governance, rooted in the absence of formal recognition and the denial of their right to self-determination. In the absence of legal acknowledgment, Indigenous communities are consistently deprived of secure land tenure, marginalized in policy-making processes, and excluded from the design and implementation of climate adaptation and mitigation strategies. This marginalization is further exacerbated by the proliferation of carbon credit schemes, conservation programs, and development initiatives undertaken on Indigenous lands without obtaining their free, prior, and informed consent (FPIC), in direct contravention of established international legal standards.[111]

The 2009 forced eviction of the Indigenous Ogiek people from their ancestral lands in Kenya's Mau Forest provides a stark example of the risks posed when conservation is pursued without regard for Indigenous rights. The Ogiek, a hunter-gatherer community with centuries-long ties to the Mau

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Convention, U.N. Doc. CERD/C/FRA/CO/20-21, at 19–20 (2013) (regarding France territorial collectivities).

109. James Anaya, Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People at 8 Statement Before the Third Committee of the 64th Session of the General Assembly (Item No. 68) (Oct. 19, 2009).

110. ACHPR & IWGIAF, *supra* note 97, at 103.

111. *Maasai Demand Volkswagen Pull out of Carbon Offset Scheme on Their Lands*, SURVIVAL INT'L (July 8, 2025), https://www.survivalinternational.org/news/14293; DAVID R. BOYD ET AL., REF. AL TZA 2/2019, SPECIAL PROCEDURES COMMUNICATION 1–2 (Oct. 11, 2019).

Forest,[112] had already secured a landmark victory in May 2017 when the African Court on Human and Peoples' Rights ruled that Kenya had violated their rights.[113] Kenya defended the eviction as a lawful and proportionate restriction justified by the public interest of conserving the Mau Forest.[114] The Court rejected this claim, finding violations of multiple provisions of the African Charter on Human and Peoples' Rights, including the right to property (Article 14), recognized both individually and collectively; the right to culture (Article 17(2)–(3)), also individual and collective; and the right of peoples to freely dispose of their natural resources (Article 21).[115]

Despite this ruling, on November 2, 2023, a joint force of the Kenya Forest Service, Wildlife Service, and police entered the Sasimwani area of the Mau Forest, targeting roughly 700 Ogiek households.[116] Homes and personal property were demolished or burned, and some residents were coerced into dismantling their own homes.[117] The eviction was carried out allegedly under the pretext of conservation linked to forest carbon credit schemes,[118] but in practice it displaced entire communities in flagrant violation of established human rights norms. Such actions, disguised as environmental protection, result in the erosion of cultural continuity, the disruption of social structures, and the deepening of historical injustices. These dynamics are not isolated incidents, but rather part of a broader global trend in which climate mitigation is used to rationalize territorial appropriation.

For the Indigenous Maasai people, the rapid expansion of carbon credit projects exacerbates existing threats by further restricting access to land and natural resources that are essential to their pastoral way of life.[119] These projects often require large areas to be set aside for conservation or carbon sequestration, which directly undermines the Maasai's mobility and seasonal grazing routes, compounding pressures from ongoing land privatization and fragmentation. Because the Maasai typically hold customary rather than

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112. *Ogiek Case: Protection of an Indigenous Community in Kenya*, AMNESTY INT'L (June 25, 2023), https://www.amnesty.org/en/latest/campaigns/2023/06/ogiek-case-protection-of-an-indigenous-community-in-kenya/.

113. African Comm'n on Hum. & Peoples' Rts. v. Republic of Kenya, No. 006/2012, Judgment, ¶ 216 (African Ct. on Hum. & Peoples' Rts., May 26, 2017).

114. *Id.* at 220.

115. *Id.* ¶ 227.

116. *Kenya Government Illegally Evicts Ogiek from Their Ancestral Forests During King Charles's State Visit*, SURVIVAL INT'L (Nov. 3, 2023), https://www.survivalinternational.org/news/13787.

117. *Id.*

118. Claire Marshall, *Kenya's Ogiek People Being Evicted for Carbon Credits - Lawyers*, BBC (Nov. 9, 2023), https://www.bbc.com/news/world-africa-67352067.

119. Ajiambo, *supra* note 12.

formal land rights, they are not meaningfully consulted in decision-making processes, leaving them vulnerable to dispossession and displacement.[120] Moreover, traditional ecological practices such as rotational grazing (pastoralism) and controlled burning—integral to maintaining the health of savannah ecosystems[121]—are often prohibited under carbon schemes, despite their proven role in sustaining biodiversity. At the same time, revenue from carbon credits tends to flow to governments or private companies, with little benefit to the communities whose lands are affected, thereby deepening economic insecurity and inequality. Yet dominant conservation narratives frequently frame mobile pastoralism as incompatible with environmental protection. Under carbon offset programs, these narratives are weaponized to reclassify Maasai lands as 'degraded,' 'in need of restoration,' or 'aligned with national development interests,' thereby justifying increased surveillance, restriction, and displacement. In this way, carbon credit initiatives intensify the marginalization of the Maasai, disrupt cultural continuity, and replicate the historical injustices long associated with conservation and land governance. According to the Maasai International Solidarity Alliance's recent report, in areas such as Longido and Monduli, Tanzania, carbon credit initiatives will significantly limit land use and mobility, threatening traditional land use practices.[122] These interventions proceed without genuine community consultation and with little recognition of the Maasai's historical and ongoing contributions to biodiversity and landscape management.

Beyond the question of displacement lies a deeper issue: the commodification of land and life itself. Carbon credit markets are predicated on a transactional logic in which carbon is measured, verified, and sold as a financial asset. This logic imposes a model of property ownership and environmental management that conflicts with Indigenous worldviews.[123]

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120. *See, e.g.*, *Tanzania: Authorities Brutally Violated Maasai Amid Forced Evictions from Ancestral Lands* AMNESTY INT'L (June 6, 2023), https://www.amnesty.org/en/latest/news/2023/06/tanzanian-authorities-brutally-violated-maasai-amid-forced-evictions/; Joseph Lee, *Indigenous Maasai Ask the United Nations to Intervene on Reported Human Rights Abuses*, MONGABAY (Apr. 21, 2023), https://news.mongabay.com/2023/04/indigenous-maasai-ask-the-united-nations-to-intervene-on-reported-human-rights-abuses/.

121. Roderick P. Neumann, *The Production of Nature: Colonial Recasting of the African Landscape in Serengeti National Park*, *in* POLITICAL ECOLOGY: AN INTEGRATIVE APPROACH TO GEOGRAPHY AND ENVIRONMENT-DEVELOPMENT STUDIES 240, 248–49 (Karl S. Zimmerer & Thomas J. Bassett eds., 2003).

122. MAASAI INT'L SOLIDARITY ALL., SOIL CARBON CREDITS: ANOTHER WAVE OF LAND ALIENATION IN NORTHERN TANZANIA? 2, 18 (2025).

123. For example, the Maasai communities manage grazing lands collectively and view their relationship with the environment as a shared, intergenerational responsibility. Imposing a transactional model of carbon ownership can undermine these communal systems and disrupt cultural practices and stewardship of their ancestral territories. *See, e.g.*, Melubo, *supra* note 39.

For many Indigenous communities, including the Maasai, land is not a commodity but a source of identity, spirituality, and collective responsibility.[124] Climate-related contracts that restrict traditional land use or impose external definitions of stewardship can undermine the cultural, political, and ecological integrity of Indigenous societies.

Even when Indigenous communities are included in climate projects or their consent is sought, these initiatives often fail to provide meaningful benefits,[125] and communities are frequently left unaware of the benefit-sharing arrangements.[126] The majority of payments flow to intermediaries,[127] while Indigenous Peoples face potential restrictions on mobility and land use.[128] For example, the implementation of carbon credit projects threatens to restrict the traditional mobility of the Maasai people, which undermines their pastoral way of life and limits their access to grazing lands. Carbon principles such as permanence and additionality are central to carbon accounting. Permanence requires that greenhouse gas (GHG) reductions or removals from a mitigation activity be lasting. Additionality mandates that such reductions would not occur without the financial incentive of carbon credit revenues.[129] However, these principles often undermine the value of Indigenous practices such as seasonal burning, rotational grazing, and herd diversification. Though ecologically sound, these practices do not fit neatly into Western scientific frameworks, and carbon projects seek to replace them with practices inspired from Western science such as rapid rotational grazing.[130] As a result, Indigenous communities are burdened with the responsibility of climate mitigation, while continuing to experience marginalization and dispossession.

One of the most insidious aspects of voluntary carbon markets is the illusion that they provide neutral, scientific solutions to the climate crisis. In reality, these markets are deeply shaped by colonial histories and

124. *The Cattle Economy of the Maasai*, NAT'L GEOGRAPHIC, https://education.nationalgeographic.org/resource/cattle-economy-maasai/ (last visited Apr. 6, 2026).

125. *See, e.g.*, *Indigenous Land Disputes Cloud Kenya's Carbon Market Ambition*s, CLIMATE HOME NEWS (May 15, 2025), https://www.climatechangenews.com/2025/05/15/indigenous-land-disputes-cloud-kenyas-carbon-market-ambitions/.

126. MAASAI INT'L SOLIDARITY ALL., *supra* note 122, at iv.

127. Luke Barratt & Joe Sandler Clarke, *How Middlemen Carbon Brokers Take a Cut from Money Meant to Help Offset Emissions*, UNEARTHED (May 2, 2022), https://unearthed.greenpeace.org/2022/05/02/carbon-offsetting-market-climate/.

128. MAASAI INT'L SOLIDARITY ALL., *supra* note 122, at 18.

129. *The Core Carbon Principles*, INTEGRITY COUNCIL FOR THE VOLUNTARY CARBON MKT., https://icvcm.org/core-carbon-principles/ (last visited Apr. 6, 2026).

130. Akil Kasubhai, *Kenyan Pastoralists vs. Northern Rangelands Trust*, ARCGIS STORYMAPS (Apr. 15, 2024), https://storymaps.arcgis.com/stories/4186114e8521427387bdbc192c40be76.

contemporary power imbalances.[131] International mechanisms such as the Clean Development Mechanism (CDM) established under the Kyoto Protocol and Article 6 of the Paris Agreement have been criticized for privileging extractive practices and market-oriented approaches over sustainable, community-led practices. These practices often exacerbate emissions and undermine the rights, territories and livelihoods of Indigenous Peoples.[132] By enabling industrialized countries and corporations to offset their emissions through projects in developing regions, these mechanisms frequently ignore Indigenous Peoples' rights and traditional land stewardship practices.[133]

For Indigenous Peoples, this epistemic violence delegitimizes their knowledge systems, governance structures, and spiritual relationships with land. Growing research confirms that Indigenous Peoples are effective and enduring stewards of the world's biodiversity.[134] Indigenous Peoples draw on knowledge, innovations, and practices that sustain ecosystems.[135] Yet, they continue to be marginalized by a global climate architecture that prioritizes financial instruments over lived experience and ancestral wisdom.

Climate action can be people-led, community-driven, and non-extractive, centering local knowledge, rights, and sustainable stewardship over profit-driven interventions. In Australia, the 2019–2020 bushfires heightened interest in Indigenous cultural burning as a strategy to mitigate fire risk.[136] In response, the Australian government launched a Royal Commission, which examined the history and benefits of cultural burning and recommended engaging Traditional Owners to strengthen natural disaster resilience.[137] Increased public and government support, including

131. Zeynep Durmaz & Heike Schroeder, *Indigenous Contestations of Carbon Markets, Carbon Colonialism, and Power Dynamics in International Climate Negotiations*, 13 CLIMATE J., Aug. 2025, at 1, 5, 11–15.

132. *COP 25 – Was It Worth It? What Did We Do? Why Is This an Important Moment?*, INDIGENOUS CLIMATE ACTION, https://www.indigenousclimateaction.com/entries/cop25-was-it-worth-it-what-did-we-do-why-is-this-an-important-moment (last visited Apr. 6, 2026); Emily Boyd et al., *Reforming the CDM for Sustainable Development: Lessons Learned and Policy Futures*, 12 ENV'T SCI. & POL'Y 820, 821 (2009).

133. Durmaz & Schroeder, *supra* note 131, at 5.

134. Douglas Broom & Madeleine North, *Here's How Indigenous People Are Protecting the Planet*, WORLD ECON. F. (Aug. 7, 2023), https://www.weforum.org/stories/2023/08/indigenous-people-protecting-planet/.

135. *Championing Indigenous Peoples' Stewardship of Biodiversity*, U.N. ENV'T PROGRAMME (Aug. 2023), https://www.unep-wcmc.org/en/news/championing-indigenous-peoples-stewardship-of-biodiversity.

136. Isabella Higgins, *Indigenous Fire Practices Have Been Used to Quell Bushfires for Thousands of Years, Experts Say*, ABC NEWS (Jan. 8, 2020), https://www.abc.net.au/news/2020-01-09/indigenous-cultural-fire-burning-method-has-benefits-experts-say/11853096.

137. ROYAL COMM'N INTO NAT'L NAT. DISASTER ARRANGEMENTS, ROYAL COMMISSION INTO NATIONAL NATURAL DISASTER ARRANGEMENTS REPORT 19, 388, 390, 396 (2020).

funding through state programs,[138] the National Bushfire Recovery Fund, and the Black Summer Bushfire Recovery Grants Program, helped expand savanna burning initiatives.[139] By 2020, these programs generated $15 million AUD annually for Indigenous land managers,[140] and by 2023, carbon projects from savanna burning produced $50 million AUD annually, cutting over one million tons of emissions, and creating employment, training opportunities, and cultural revitalization within Indigenous communities.[141]

British Columbia, Canada, provides another example of how carbon market arrangements can be structured to incorporate Indigenous participation and benefit-sharing. Through the Atmospheric Benefit Sharing Agreement,[142] Coastal First Nations are able to own and sell carbon offsets derived from forest conservation.[143] This creates incentives to limit industrial logging while establishing a long-term revenue source for Indigenous communities.[144] Despite the jurisdictional complexities surrounding Crown lands,[145] the benefit-sharing agreement marks a significant initial step toward enabling First Nations to negotiate carbon rights directly with the government through treaties and reconciliation agreements.[146]

Comparable outcomes can also be observed in the agreement between Mosaic Forest Management and Indigenous communities in British Columbia. The agreement links forest protection with income generated from carbon credit markets. Under this arrangement, logging is postponed for

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138. *See, e.g.*, *Cultural Fire Grants*, VICTORIA STATE GOV'T, https://www.environment.vic.gov.au/grants/cultural-fire-grants (last visited Apr. 6, 2026) [https://web.archive.org/web/20251113081957/https://www.environment.vic.gov.au/grants/cultural-fire-grants].

139. *$2 Million for Indigenous Fire Management*, AUSTL. GOV'T NAT'L EMERGENCY MGMT. AGENCY (Mar. 19, 2021), https://www.indigenous.gov.au/news/2-million-indigenous-fire-management; *Cultural Burning: Fighting Fire with Fire*, AUSTL. GOV'T NAT'L EMERGENCY MGMT. AGENCY (Sept. 23, 2022), https://nema.gov.au/stories/cultural-burning-fighting-fire-with-fire.

140. *Indigenous Fire Revolution*, THE NATURE CONSERVANCY AUSTL. (Feb. 18, 2020), https://web.archive.org/web/20250908054933/https://www.natureaustralia.org.au/newsroom/indigenous-fire-revolution/.

141. Judah Lieblich, *Cultural Burning Can Mitigate Climate Change and Produce Income for Native American Tribes*, 51 ECOLOGY L.Q., July 2024, at 1, 7 n.47 (citing *Cultural Burning*, *supra* note 138).

142. Coastal First Nations 2015 Atmospheric Benefit Sharing Agreement, B.C.-Cent. & N. Coast First Nations, Jan. 19, 2016.

143. *Carbon Credits*, COASTAL FIRST NATIONS, https://coastalfirstnations.ca/our-land/carbon-credits/ (last visited Apr. 6, 2026).

144. *Id.*

145. Crown land, also known as public land, refers to land in Canada that is owned and managed by either the federal or provincial governments. The authority to administer and control these lands is vested in the Crown, from which the term is derived. See V.P. Neimanis, *Crown Land*, THE CANADIAN ENCYCLOPEDIA (Nov. 14, 2024) https://www.thecanadianencyclopedia.ca/en/article/crown-land.

146. MICHELLE CONNOLLY, FIRST NATIONS CARBON: A BCAFN DISCUSSION PAPER 8–9 (2022).

extended periods, allowing Indigenous communities to receive substantial financial returns from carbon offset sales.[147] Notably, Mosaic's commitment to defer logging for 25 years across roughly 100,000 acres in Vancouver Island and Haida Gwaii is projected to yield as much as CA$300 million in carbon revenues for Indigenous Peoples.[148] By centering Indigenous land stewardship and systems of environmental governance, these examples illustrate that conservation objectives, economic development, and emissions mitigation are not competing aims but can operate in a legally and practically synergistic manner.

By contrast, current carbon market structures reveal not only technical shortcomings but also political failures. Carbon credit schemes, as presently designed, are inadequate responses to the intertwined crises of climate change and Indigenous dispossession. While they may reduce emissions on paper, they often do so at the expense of cultural survival, territorial sovereignty, and climate justice. For the Maasai, as for many Indigenous Peoples worldwide, the costs of carbon markets are not adequately captured by monetary valuations or emissions metrics; they are borne instead through land dispossession land, exclusion from decision-making, erosion of cultural practices, and the developed states' continued inability to confront their historical emissions in a manner consistent with principles of equity and justice.

A deeper concern lies in the Environmental Management (Control and Management of Carbon Trading) Regulations, which fail to meaningfully accommodate the rights, interests, and participation of Indigenous communities—many of whom live on lands targeted for carbon offset initiatives. Although the Regulations reference benefit-sharing and public participation,[149] they do not guarantee FPIC, nor do they recognize Indigenous governance systems as legally binding sources of authority. This gap is particularly troubling given Tanzania's refusal to legally recognize Indigenous Peoples, despite international human rights norms.

In practice, the absence of formal recognition can lead to exclusionary project implementation, with communities treated merely as stakeholders to be consulted rather than as rights-holders entitled to land, culture, and self-determination. As carbon projects expand under market-driven logics of efficiency and climate urgency, communities risk displacement,

147. Jennifer L., *Carbon Credits End the War Between Indigenous Peoples and Loggers*, CARBON CREDITS.COM (July 29, 2022), https://carboncredits.com/carbon-credits-end-the-war-between-indigenous-peoples-and-loggers/.

148. *Id.*

149. The Environmental Management Act, Regulations (2022) 42, §§ 34, 36, GOV'T NOTICE NO. 636 (Tanz.).

dispossession, or passive subjection to externally imposed environmental strategies.

To prevent such outcomes, Tanzania's regulatory framework must be interpreted—and amended where necessary—to ensure alignment with the State's obligations under international human rights law. This includes instruments such as the UNDRIP,[150] ILO Convention 169,[151] the African Charter on Human and Peoples' Rights,[152] the Paris Agreement,[153] and the International Covenant on Civil and Political Rights.[154] Collectively, these frameworks obligate States to respect, protect, and fulfill the collective rights of Indigenous and marginalized communities, particularly regarding land, self-determination, and participation in environmental decision-making.

Procedural safeguards must be institutionalized to guarantee Indigenous self-determination and FPIC, ensure equitable distribution of benefits from carbon projects, and facilitate culturally appropriate, continuous consultation throughout project lifecycles. Without such protections, carbon markets risk replicating historical patterns of exploitation, imposing social, economic, and ecological burdens on communities while privileging external interests.

A rights-based approach to carbon governance is not merely aspirational; it is a legal imperative under binding international law. Such an approach is essential to ensure that climate mitigation strategies do not perpetuate structural inequalities but instead advance climate justice, uphold the dignity and agency of Indigenous Peoples, and support their self-determination within a profoundly unequal global order.

IV. CONCLUSIONS AND RECOMMENDATIONS

In the context of the escalating global climate crisis, the relationship between state sovereignty and the Indigenous Peoples' right of self-determination must be fundamentally re-evaluated. While international legal frameworks have increasingly recognized the unique rights of Indigenous communities to determine their own affairs within existing nation-states, many governments—particularly in Africa—remain hesitant to adopt or implement

150. G.A. Res. 61/295, United Nations Declaration on the Rights of Indigenous Peoples, (Sept. 13, 2007).

151. Convention Concerning Indigenous and Tribal Peoples (No. 169), June 27, 1989, 1650 U.N.T.S. 383.

152. African Charter on Human and Peoples' Rights, June 27, 1981, 1520 U.N.T.S. 217.

153. Paris Agreement, *supra* note 18.

154. International Covenant on Civil and Political Rights, Dec. 16, 1966, 999 U.N.T.S. 171.

these standards domestically.[155] Tanzania exemplifies this dynamic.[156] The state's reluctance to formally recognize Indigenous Peoples in Tanzania[157] stems not only from a deep-seated misunderstanding of what self-determination entails, but also reflects deeper anxieties concerning national cohesion, territorial integrity, and the perceived political implications of acknowledging group-specific rights.

These tensions are evident in official governmental positions. For instance, Tanzanian authorities have historically limited formal recognition of "Indigenous Peoples" to only a few hunter-gatherer communities, excluding pastoralists such as the Maasai. In a cited statement, officials from the Ministry of Natural Resources and Tourism argued that only certain groups are considered Indigenous because they have "maintained their traditional lifestyle," implicitly excluding pastoralist communities despite their equally longstanding customary lifeways.[158]

At the heart of this reluctance lies a persistent conflation of self-determination with state sovereignty. In many African contexts, assertions of Indigenous identity or demands for self-determination are not treated as claims for inclusion within the state, but are instead interpreted by governments as expressions of secessionist aspirations, ethnic fragmentation, or tribalism, thereby posing a perceived threat to the cohesion and territorial integrity of the nation-state. This position is not merely theoretical; it is reflected in official state statements in international forums.

For example, at the 24th session of the United Nations Permanent Forum on Indigenous Issues, the Government of Tanzania reiterated its longstanding position that:

> There are no specific category of indigenous peoples in the United Republic of Tanzania as there are more than 120 tribes and ethnic groups, Maasai being one of them. It follows that in the quest to achieve national unity, Tanzanians do not identify themselves through ethnic groupings; rather, we belong to a nation which is rich in

155. *See, e.g.*, G.A. Res. 61/295, *supra* note 150; Convention Concerning Indigenous and Tribal Peoples, *supra* note 151.

156. Constantine Akitanda, *Unity Amid Diversity: Tanzania's Approach to Indigenous Identity*, THE GUARDIAN (May 17, 2024), https://ippmedia.co.tz/the-guardian/features/read/unity-amid-diversity-tanzanias-approach-to-indigenous-identity-2024-05-17-123828.

157. *Id.*

158. President John Magufuli, *An Open Letter to the Tanzanian Government with Regard to its Response to the Oakland Institute's Report, Losing the Serengeti*, THE OAKLAND INST. (June 6, 2018), https://www.oaklandinstitute.org/open-letter-tanzanian-government-response-losing-serengeti.

> cultural diversity and made up of persons from different backgrounds.[159]

Such claims are viewed as destabilizing challenges to the post-colonial state, whose legitimacy has historically rested on transcending ethnic difference in favor of a singular national identity. This interpretive framework casts Indigenous demands not as lawful claims for inclusion and redress, but as existential threats to the unity of the state. As a result, governments often respond by denying the existence of Indigenous Peoples altogether or by reframing Indigenous claims as generic issues of poverty, vulnerability, or underdevelopment, thereby avoiding the legal and political implications associated with formal recognition.

This logic is reflected in official state discourse surrounding the relocation of Maasai pastoralists from the Ngorongoro Conservation Area in Tanzania. In defending the relocation policy, Deputy Minister Masanja characterized the initiative as a "humanitarian" intervention advanced under the leadership of President Samia Suluhu Hassan. She stated:

> I strongly urge the people of Ngorongoro to ensure that they unite with their fellow citizens, including those of Msomera and leave with dignity. Living with wildlife is very dangerous. Children are unable to attend school because they are afraid of facing lions and other dangerous wild animals. We have said no; parents are better placed to know the pains of the child. Our beloved president is the one who initiated this, and we are supporting it.[160]

The framing of relocation as humanitarian protection, rather than as a question of Indigenous land rights, displacement, and self-determination, illustrates how state narratives frequently recast structural dispossession in developmental and welfare-oriented terms.

This conflation, however, stands in sharp contrast to the conceptual distinctions established in international law. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), adopted in 2007, affirms that Indigenous Peoples have the right to self-determination.[161] Importantly,

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159. United Republic of Tanzania, Statement at the 24th Session of the United Nations Permanent Forum on Indigenous Issues (Apr. 25, 2025); INT'L FUND FOR AGRIC. DEV. (IFAD), UNITED REPUBLIC OF TANZANIA: COUNTRY TECHNICAL NOTE ON INDIGENOUS PEOPLES' ISSUES (2012).

160. NGORONGORO CONSERVATION AREA RESIDENTS, THE TRUTH, FALSITY AND MISMANAGEMENT: NEED FOR AN INTERDISCIPLINARY COMMUNITY-LED MULTIFUNCTIONAL LANDSCAPE MANAGEMENT MODEL IN NGORONGORO 114 (2022).

161. G.A. Res. 61/295, *supra* note 150, at arts. 3–5.

UNDRIP does not equate self-determination with a right to independence or external sovereignty. Rather, it articulates a model of internal self-determination that operates firmly within the territorial and constitutional framework of existing states. UNDRIP provides:

> Article 3: Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.
> Article 4: Indigenous peoples, in exercising their right to self-determination, have the right to autonomy or self-government in matters relating to their internal and local affairs, as well as ways and means for financing their autonomous functions.
> Article 5: Indigenous peoples have the right to maintain and strengthen their distinct political, legal, economic, social and cultural institutions, while retaining their right to participate fully, if they so choose, in the political, economic, social and cultural life of the State.[162]

Understood in this way, self-determination is not principally a claim o secession or external sovereignty, but rather a demand for meaningful participation, legal recognition, and institutional space within the state. It encompasses the right of Indigenous communities to maintain and develop their own governance systems, preserve their relationships with traditional lands and resources, and exercise decision-making authority over matters directly affecting their lives and futures.

Far from undermining sovereignty, internal self-determination invites a reconceptualization of sovereignty itself as relational and pluralistic, capable of accommodating multiple legal orders and overlapping forms of authority within a single political community. As S. James Anaya explains, Indigenous self-determination is facilitative of cultural survival, integrity, and identity; it functions not as an end in itself, but as a means through which Indigenous Peoples may sustain their collective existence, institutions, and ways of life.[163] James Anaya further observes:

> Constitutive self-determination does not itself dictate the outcome of such procedures; but where they occur it

162. *Id.*

163. S. JAMES ANAYA, INDIGENOUS PEOPLES IN INTERNATIONAL LAW 82 (Oxford Univ. Press 1996).

> imposes requirements of participation and consent such that the end result in the political order can be said to reflect the collective will of the people, or peoples, concerned . . . . from self-determination's constitutive aspect, which applies to discrete episodes of institutional birth or change, ongoing self-determination continuously enjoins the form and functioning of the governing institutional order. In essence, ongoing self-determination requires a governing order under which individuals and groups are able to make meaningful choices in matters touching upon all spheres of life on a continuous basis.[164]

Similarly, according to Professor Erica-Irene A. Daes, self-determination entails a process:

> [T]hrough which indigenous peoples are able to join with all the other peoples that make up the State on mutually-agreed upon and just terms, after many years of isolation and exclusion. This process does not require the assimilation of individuals as citizens like all others, but the recognition and incorporation of distinct peoples in the fabric of the State, on agreed terms.[165]

The United Nations Declaration on the Rights of Indigenous Peoples reinforces this understanding by protecting the rights of Indigenous communities to maintain traditional governance institutions, preserve their relationships with ancestral lands and resources, and participate meaningfully in decisions affecting their communities. In this sense, self-determination functions not only as a legal principle, but also as a practical remedy for the ongoing impacts of colonialism, dispossession, and exclusion.[166]

Nevertheless, the legal precision of instruments such as UNDRIP does not always translate into political will at the domestic level. In Tanzania, as in other post-colonial African states, national unity remains heavily shaped by historical efforts to integrate ethnically diverse populations into a single, cohesive polity. In this context, recognizing Indigenous groups as distinct with special rights can be seen as politically destabilizing. Such recognition

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164. *Id.*

165. *Id.* at 87 (citation omitted).

166. S. James Anaya, *A Contemporary Definition of the International Norm of Self-Determination*, 3 TRANSNAT'L L. & CONTEMP. PROBS. 131, 143–45 (1993).

raises concerns over whether other ethnic or marginalized communities might assert similar claims, or whether acknowledging distinct land rights could impede state-planned infrastructure or development projects. Furthermore, Indigenous communities such as the Maasai people reside in regions that extend across contemporary borders between Tanzania and Kenya. Their recognition might be perceived as reviving debates over colonial-era boundary lines, adding another layer of complexity to state territorial claims.

The resistance to recognition has profound consequences for Indigenous Peoples, particularly in an era where climate change threatens to erode the very environmental foundations upon which their cultural and economic systems depend. Indigenous communities are uniquely vulnerable to the effects of climate change due to their close and often spiritual connection to the land and natural resources.[167] Pastoral communities such as the Maasai depend on predictable grazing patterns and access to water sources, shifting weather patterns, prolonged droughts, and land degradation have therefore undermined their traditional livelihoods. Despite being on the frontlines of ecological degradation, Indigenous communities often receive minimal support or protection under domestic climate policy frameworks.

This lack of protection is partly rooted in the structure of international climate law itself. The dominant framework—represented by instruments like the (UNFCCC) and the Paris Agreement—generally refrains from attributing direct legal responsibility for climate damage to individual states.[168] And the global nature of climate change does not assign liability to specific states or actors, making it difficult for affected communities to demand redress through international legal mechanisms. However, some jurisdictions have begun to address this gap. In the United States, for example, New York and Vermont have recently enacted legislation aimed at

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167. Eunice Olembo & Agnes Kabajuni, *Centering Indigenous Voices in the Fight for Climate Justice*, MINORITY RIGHTS GROUP INT'L IDRC BLOG (Aug. 20, 2025), https://minorityrights.org/idrc-blog/; Julia M. Blocher & Emmanuel O. Kileli Leyani, *In Relatively Peaceful Tanzania, Climate Change and Migration Can Spur Conflict*, MIGRATION POL'Y INST. (Nov. 13, 2020), https://www.migrationpolicy.org/article/tanzania-climate-change-migration-conflict.

168. The UNFCCC (1992) sets out broad obligations for states to reduce greenhouse gas emissions and cooperate in addressing climate change, yet it does not include provisions that impose specific legal liability on states for climate-related harms. Likewise, the Paris Agreement (2015) establishes a system of nationally determined contributions and a framework for reporting and transparency, but it similarly does not create direct state-level legal responsibility or enforceable mechanisms for compensation. *See, e.g.*, United Nations Framework Convention on Climate Change, *supra* note 24; Paris Agreement *supra* note 18. This position is also reflected in Decision 1/CP.21 accompanying the Paris Agreement, which expressly provides that Article 8 on loss and damage "does not involve or provide a basis for any liability or compensation." See Conference of the Parties, Adoption of the Paris Agreement, ¶ 51, U.N. Doc. FCCC/CP/2015/10/Add.1 (Jan. 29, 2016).

holding fossil fuel companies financially responsible for their historical contributions to climate change.[169] These laws seek to recover costs associated with climate-related damages and adaptation measures by imposing financial liability on major greenhouse gas emitters for past emissions and their role in driving global warming.[170]

Parallel developments are emerging at the international level. The International Court of Justice, the principal judicial organ of the United Nations,[171] recently issued its first advisory opinion addressing states' obligations with respect to climate change under international law.[172] The Court concluded that such obligations arise not only from climate treaties like the Paris Agreement, but also from human rights law and customary international law, and that a failure to act may expose countries to legal responsibility.[173] Similarly, the Inter-American Court of Human Rights has affirmed that the right to a healthy environment is a "fundamental right for the existence of humanity" and a prerequisite for the enjoyment of other rights, further concluding that conduct causing "irreversible damage to [life-sustaining] ecosystems" is strictly prohibited.[174]

This emerging legal trend reflects a growing shift toward climate accountability at the international, national, and subnational levels. However, such legal and institutional developments remain largely absent across much of the Global South. Consequently, the responsibility for addressing climate-induced harms, including adaptation, mitigation, and resilience-building, continues to fall predominantly within the purview of national governments. While some progress has been made at the international level, notably through the establishment of the Green Climate Fund[175] and the Loss and Damage Fund,[176] the equitable distribution, implementation, and accessibility of these funds pose another challenge. In countries like Tanzania, where the legal identity and rights of Indigenous Peoples remain

169. William F. Tarantino, *A New Era of Climate Accountability: State Climate Superfund Laws Gain Momentum*, CLASS DISMISSED (Feb. 19, 2025), https://classdismissed.mofo.com/topics/a-new-era-of-climate-accountability-state-climate-superfund-laws-gain-momentum.

170. *Id.*

171. U.N. Charter art. 92 (describing the International Court of Justice as "the principal judicial organ of the United Nations").

172. Press Release, Int'l Ct. of Just., Obligations of States in Respect of Climate Change, ICJ Press Release No. 2025/36, (July 23, 2025).

173. *Id.*

174. Climate Emergency & Human Rights, Advisory Opinion AO-32/25, Inter-Am. Ct. H.R. (ser. A), ¶¶ 272, 294 (May 29, 2025).

175. *About GCF*, GREEN CLIMATE FUND, https://www.greenclimate.fund/about (last visited Apr. 13, 2026).

176. *Fund for Responding to Loss and Damage*, U.N. CLIMATE CHANGE, https://unfccc.int/loss-and-damage-fund-joint-interim-secretariat (last visited Apr. 13, 2026).

contested or unrecognized.[177] These domestic responses often fail to incorporate or prioritize the specific needs, knowledge systems, and contributions of Indigenous communities to biodiversity conservation. Instead, national policies continue to subordinate Indigenous interests to broader economic or conservation agendas, perpetuating exclusion and environmental injustice.

Ironically, Indigenous Peoples are not merely vulnerable to climate change—they are also vital agents in combating it. Across the globe, Indigenous land stewardship practices have proven effective in preserving biodiversity, regulating carbon cycles, and enhancing ecosystem resilience.[178] In the case of the Maasai, the collective ownership and communal management of land support sustainable grazing practices that help maintain the ecological balance of savannah rangelands.[179] These traditional systems are based not on exploitation but on reciprocity with nature—models that are increasingly recognized as essential in the global transition to sustainable development. Yet these practices are frequently undermined by state-led conservation programs and commercial land acquisitions that exclude Indigenous participation and disregard customary land tenure systems.[180]

Advancing climate justice in Africa necessitates a rigorous rethinking of legal and institutional frameworks to ensure equitable governance of land, resources, and climate policy for Indigenous Peoples. For Indigenous communities that elect to participate in carbon markets, the legitimacy of such engagements requires a fundamental reconfiguration of market architecture. New carbon trading mechanisms must be co-designed with Indigenous communities and grounded in their normative systems, cultural values, and governance institutions.[181] Effective regulatory oversight is indispensable to prevent the commodification and standardization of Indigenous lands and to ensure that market actors, including purchasers, comply with principles articulated by Indigenous communities rather than imposing externally defined priorities. In the absence of these protections,

177. Akitanda, *supra* note 156.

178. Rye Karonhiowanen Barberstock, *Forest Stewardship: First Nations' Traditional Practices in Mitigating Wildfires and Carbon Emissions*, INDIGENOUS CLIMATE HUB (July 15, 2024), https://indigenousclimatehub.ca/2024/07/forest-stewardship-first-nations-traditional-practices-in-mitigating-wildfires-and-carbon-emissions/.

179. Ashoka Mukpo, *To Protect the Planet's Rangelands, Give Pastoralists a Boost, UN Report Says*, MONGABAY (July 5, 2024), https://news.mongabay.com/2024/07/to-protect-the-planets-rangelands-give-pastoralists-a-boost-un-report-says/.

180. UNIV. OF ARIZ., JAMES E. ROGERS COLL. OF L., GLOBAL INSIGHTS ON CONSERVATION, PASTORALISM AND SUSTAINABLE LAND STEWARDSHIP (2025).

181. Nicole Redvers et al., *Carbon Markets: A New Form of Colonialism for Indigenous Peoples?*, 9 LANCET PLANETARY HEALTH 421, 423 (2025).

carbon markets risk entrenching extractive practices under the guise of climate mitigation. Achieving justice in the context of climate change is not limited to equitable distribution of environmental harms and benefits (distributive justice),[182] nor confined to procedural justice, which centers on the fairness of the process in environmental decision-making.[183] While these dimensions are crucial, they must rest on the foundation of recognition, which addresses the failure of some groups to respect or acknowledge difference, rather than insisting on sameness or strict equality.[184] Without formal legal and political recognition of Indigenous Peoples, including recognition of their identities, histories, and relationships to land, any effort at redistribution or procedural inclusion is likely to reproduce structural injustices. The lack of formal recognition perpetuates a system in which Indigenous communities are marginalized and regarded as peripheral stakeholders, rather than as legitimate rights-holders with inherent rights.

Recognition in this context goes beyond symbolic acknowledgment. It entails a legal and institutional commitment to protect Indigenous land rights, to involve Indigenous Peoples in climate governance through free, prior, and informed consent, and to ensure that their voices shape the design and implementation of policies that affect them. This multidimensional approach to justice—recognitional, procedural, and distributive—is essential, not only for redressing historical harms, but also for building more inclusive and resilient systems capable of responding to future climate challenges.

Tanzania, therefore, stands at a critical juncture in its legal and policy development. The government has the opportunity to realign its national frameworks into full alignment with its international legal obligations to Indigenous Peoples. Achieving this alignment requires the comprehensive operationalization of free, prior, and informed consent; the safeguarding of Indigenous self-determination and secure land tenure; formal recognition of Indigenous knowledge systems; and acknowledgment of the human right to a clean, healthy, and sustainable environment. It also necessitates adherence to international instruments, including UNDRIP, ILO Convention No. 169, and jurisprudence of the African Commission on Human and Peoples' Rights. Doing so would not threaten state sovereignty; rather, it would enrich the democratic legitimacy of the state by embracing cultural and legal pluralism. Far from inviting division, recognition of Indigenous Peoples can help secure a more durable social contract, one that reflects the diversity of

182. Derek Bell & Jayne Carrick, *Procedural Environmental Justice*, *in* THE ROUTLEDGE HANDBOOK OF ENVIRONMENTAL JUSTICE (Ryan Holifield et al. ed., 2017).

183. *Id.*

184. Kyle Whyte, *The Recognition Paradigm of Environmental*, *in* THE ROUTLEDGE HANDBOOK OF ENVIRONMENTAL JUSTICE (Ryan Holifield et al. ed., 2017).

Tanzania's population and acknowledges the coexistence of multiple legal, cultural, and environmental systems.

Moreover, integrating Indigenous rights into climate governance aligns with global trends in environmental law and human rights. As the international community grapples with the need for climate justice, countries that meaningfully engage Indigenous communities will be better positioned to access global climate finance, foster inclusive development, and demonstrate compliance with evolving human rights norms. The recognition of Indigenous Peoples is thus not only a moral and legal imperative—it is a strategic necessity for any state that aspires to equitable and sustainable development.

Recognition, therefore, must form the cornerstone of any legitimate and effective climate policy. Without it, redistribution and procedural reform will remain hollow, failing to confront the structural inequalities that have long defined the Indigenous experience. All facets of justice—recognitional, procedural, and distributive—are not only interlinked, but mutually reinforcing, and must be pursued in concert. Only through a comprehensive engagement with the full spectrum of Indigenous claims, encompassing land rights, political voice, cultural dignity, and environmental self-determination, can Tanzania articulate a legally coherent, morally defensible, and environmentally sustainable path forward in the era of anthropogenic climate disruption.

LEGAL FRAMEWORKS FOR AIRBORNE PLASTICS POLLUTION: A CRITICAL REVIEW AND RECOMMENDATIONS FOR THE UK REGULATION

Ndubuisi Augustine Nwafor*

ABSTRACT

Plastic particles are infiltrating the air, posing an ever-growing threat to human health and ecosystems. While the world grapples with plastic pollution, the invisible danger of airborne microplastics has largely escaped public and policy attention. This Article critically and doctrinally examines the gap in the global legal framework for the regulations of airborne plastics pollution and its implications for the legal framework in the United Kingdom (UK). The Article scrutinizes the extant governance framework regulating plastic pollution such as the Plastic Packaging Tax, Extended Producer Responsibility, Deposit Return Schemes, and the Single-Use Plastics Directive to evaluate the prospect of airborne plastic regulation within these frameworks. Furthermore, the Article investigates the broader context of sustainable development, examining the alignment of microplastic policy with the Sustainable Development Goals and how this can offer an opportunity to develop airborne plastic regulation in the UK By incorporating technological innovations and considering the role of consumer behaviour, the Article offers recommendations like a ban or market-based regulation of synthetic fibres which is a major source of airborne plastic pollution in the UK This measure will enhance the effectiveness of extant policies and develop new strategies to combat this emerging environmental threat.

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INTRODUCTION

Every year, about 8 to 10 million metric tons of plastics enter the ocean and make up 80% of all marine pollution.[1] It has come to be a persistent environmental challenge with far-reaching effects on ecosystems, human health, and the actualization of Sustainable Development Goals (SDG).[2] The large-scale use of single-use plastics, coupled with the existence of inadequate waste management infrastructure and inefficient recycling practices, has aided in the widespread contamination of terrestrial and aquatic environments.[3] Owing to plastics' longevity and persistent use in the environment, the ecosystem continues to suffer.[4] However, an equally evasive yet overlooked issue threatens ecosystems and human health: airborne microplastics. While the focus has traditionally been on plastics in marine and terrestrial environments, there is a growing need to address the broader spectrum of plastic pollution, one of which airborne microplastics sit at its helm.[5] Evidence has shown that airborne microplastics not only pose

1. Marta Fava, *Ocean Plastic Pollution an Overview: Data and Statistics*, UNESCO (May 9, 2022), https://oceanliteracy.unesco.org/plastic-pollution-ocean/ [https://web.archive.org/web/20250315015545/https://oceanliteracy.unesco.org/plastic-pollution-ocean/]; Govind Singh Chauhan & Saba Wani, *Plastic Pollution: A Major Environmental Threat*, 6 INT'L J. INNOVATIVE RES. TECH. 43, 43 (2019); M. Aminur Rahman et al., *Plastic Pollutions in the Ocean: Their Sources, Causes, Effects and Control Measures*, 6 J. BIOLOGICAL STUD. 37 (2023); Ren-Shou Yu et al., *Global Analysis of Marine Plastics and Implications of Control Measure Strategies*, 10 FRONTIERS MARINE SCI., Dec. 10, 2023, at 1; S.B. Obebe & A.A. Adamu, *Plastic Pollution: Causes, Effects and Preventions*, 4 INT'L J. ENG'G APPLIED SCI. & TECH. 85, 85–95 (2020).

2. Rakesh Kumar et al., *Impacts of Plastic Pollution on Ecosystem Services, Sustainable Development Goals, and Need to Focus on Circular Economy and Policy Interventions*, SUSTAINABILITY, Sept. 6, 2021, at 1, 1–3.

3. Elaheh Daghighi et al., *The Forgotten Impacts of Plastic Contamination on Terrestrial Micro- and Mesofauna: A Call for Research*, 231 ENV'T RSCH., May 25, 2023, at 1, 2; Rakesh Kumar et al., *Impacts of Plastic Pollution on Ecosystem Services, Sustainable Development Goals, and Need to Focus on Circular Economy and Policy Interventions*, 13 SUSTAINABILITY, Sept. 6, 2021, at 1, 2.

4. Plastic contaminating the ecosystem is a pressing worldwide issue. *See* Boris Worm et al., *Plastic as a Persistent Marine Pollutant*, 42 ANN. REV. ENV'T & RES., 2017, at 1, 9–10; Janice Brahney et al., *Plastic Rain in Protected Areas of the United States*, 368 SCI. 1257, 1257 (2020).

5. Karen Duis & Anja Coors, *Microplastics in the Aquatic and Terrestrial Environment: Sources (with a Specific Focus on Personal Care Products), Fate and Effects*, 28 ENV'T SCI. EUR., 2016,

risks to the respiratory health of humans but can also affect climate patterns by way of acting as cloud condensation nuclei.[6] In the United Kingdom (UK), where plastic pollution policies have their primary focus on terrestrial and marine systems, there is an impending need to expand these regulatory efforts to include airborne pathways. This Article provides a doctrinal assessment of the legal frameworks that address airborne plastic pollution in the UK

Airborne plastics introduce a new and critical aspect to the atmospheric pollution crisis, and how it impacts public health and the environment.[7] Recent studies have shown that microplastics, which are derived from the breakdown of larger plastic items, can become suspended in the air and travel over long distances.[8] This raises concerns about the inhalation of microplastics by humans and animals, which is likely to affect them and their environment.[9] Addressing this issue is important to safeguard the integrity of the environment and public health.[10] The interconnectedness of terrestrial, aquatic, and atmospheric systems demands that a comprehensive approach to plastic pollution governance should include the airborne component, which has been largely overlooked in the existing framework. Evidence of various types of microplastics in cloud water samples collected at high altitudes show their potential influence on cloud formation and climate patterns.[11] This underscores the pressing need for the development of strategies that would address the issue of microplastic pollution and its potential impacts on climate and human health. Reducing plastic waste at the sources can significantly reduce the amount of plastic that enters marine

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at 1, 8; Steve Allen et al., *Atmospheric Transport and Deposition of Microplastics in a Remote Mountain Catchment*, 12 NATURE GEOSCIENCE 339, 340 (2019).

6. Stephanie L. Wright & Frank J. Kelly, *Plastic and Human Health: A Micro Issue?*, 51 ENV'T SCI. & TECH. 6634, 6636 (2017); Yize Wang et al., *Airborne Hydrophilic Microplastic in Cloud Water at High Altitudes and Their Role in Cloud Formation*, 21 ENV'T CHEMISTRY LETTERS 3055, 3056 (2023).

7. Joana C. Prata et al., *Airborne Microplastics: Concerns Over Public Health and Environmental Impacts*, *in* HANDBOOK OF MICROPLASTICS IN THE ENVIRONMENT 177, 179–80 (T. Rocha-Santos et al. eds., 2022).

8. Fatima Haque & Chihhao Fan, *Fate and Impacts of Microplastics in the Environment: Hydrosphere, Pedosphere, and Atmosphere*, 10 ENV'T'S, Apr. 24, 2023, at 1, 4; Miri Trainic et al., *Airborne Microplastic Particles Detected in the Remote Marine Atmosphere*, COMMC'NS EARTH & ENV'T, 2020, at 1, 4; Shoulin Xiao et al., *Long-distance Atmospheric Transport of Microplastic Fibres Influenced by Their Shapes*, 16 NATURE GEOSCIENCE 863, 863 (2023).

9. Z. Yang et al., *Human Microplastics Exposure and Potential Health Risks to Target Organs by Different Routes: A Review*, 9 CURR. POLLUTION REPS. 468, 480 (2023).

10. Shampa Ghosh et al., *Microplastics as an Emerging Threat to the Global Environment and Human Health*, SUSTAINABILITY, July 10, 2023, at 1, 7; Joana C. Prata et al., *A One Health Perspective of the Impacts of Microplastics on Animal, Human and Environmental Health*, 771 SCI. TOTAL ENV'T, 2021, at 1, 5.

11. Yize Wang et al., *Airborne Hydrophilic Microplastic in Cloud Water at High Altitudes and Their Role in Cloud Formation*, 21 ENV'T CHEMISTRY LETTERS 3055, 3056–57 (2023).

environments and, subsequently, the atmosphere. Devising and enforcing laws and policies to prevent sources of airborne plastic pollution can reduce the generation and impact of airborne microplastics.

The precautionary principle in Principle 15 of the Rio Declaration is a cornerstone of environmental policy which advocates for action in the face of uncertainty to prevent potential harm.[12] This principle is very relevant in the bid to address airborne microplastics and their threat to ecosystems and human health. While the development of practical methods that would directly remove microplastics from the marine environment still appears to be a problem,[13] the precautionary principle would take up a proactive approach that will primarily focus on prevention rather than reduction. The UK regulatory policies can significantly reduce the release of microplastics into the environment by trying to implement stricter plastic pollution regulation.[14] This would help in mitigating their impact on human health and ecosystems.[15] Alternatively, the adaptation of a better product design that makes use of sustainable materials can offer a complementary approach to prevention.[16] While some remediation techniques, such as filtration and bioremediation, have shown promise, their effectiveness is limited and expensive.[17]

The purpose of this research is to conduct an innovative evaluation of airborne plastic pollution regulation and waste management practices, with a specific focus on airborne plastics in the UK After the general introduction, Part I begins with a comparative overview of airborne plastic pollution.[18] This Part shows how airborne plastics emerge from sources like synthetic fibres and microplastic fragmentation and examines comparative governance

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12. Jeffrey D. Kovar, *A Short Guide to the Rio Declaration*, 4 COLO. J. INT'L ENV'T L. & POL'Y 119, 134 (1993); Xun Wu et al., *Beyond Precautionary Principle: Policy Making Under Uncertainty and Complexity*, 7 POL'Y DESIGN & PRAC., 2024, at 1, 1–2.

13. Currently, there are no practical methods for directly removing uPs from the marine environment. *See* Sina Pourebrahimi & Majid Pirooz, *Microplastic Pollution in the Marine Environment: A Review*, 10 J. HAZARDOUS MATERIALS ADVANCES, 2023, at 1, 7.

14. *Cf.* João Pinto da Costa et al., *The Role of Legislation, Regulatory Initiatives and Guidelines on the Control of Plastic Pollution*, 8 FRONTIERS ENV'T SCI., July 24, 2020, at 1, 2; Sunusi Usman et al., *The Burden of Microplastics Pollution and Contending Policies and Regulations*, 19 INT'L J. ENV'T RSCH. & PUB. HEALTH, June 1, 2022, at 1, 8.

15. Joana C. Prata, *Airborne Microplastics: Consequences to Human Health?*, 234 ENV'T POLLUTION 115, 117 (2018).

16. Denise M. Mitrano & Wendel Wohlleben, *Microplastic Regulation Should be More Precise to Incentivize Both Innovation and Environmental Safety*, 11 NATURE COMMC'NS, 2020, at 1, 9.

17. Charu Thapliyal et al., *Potential Strategies for Bioremediation of Microplastic Contaminated Soil*, 6 ENV'T CHEMISTRY & ECOTOXICOLOGY 117, 126 (2024).

18. *See generally* Sen Wang, *International Law-Making Process of Combating Plastic Pollution: Status Quo, Debates and Prospects*, 147 MARINE POL'Y, 2023, at 1, 1 (outlining current developments in legal frameworks addressing plastic pollution).

approaches across regions, including the European Union (EU), North America, and Southeast Asia. It underscores the challenges posed by airborne plastics, including their health risks and lack of targeted regulations.[19] Part II focuses on the domestic legal framework of the UK, critically analysing policies such as the Plastic Packaging Tax, Extended Producer Responsibility, and the proposed Deposit Return Schemes.[20] It assesses their effectiveness in addressing airborne plastics, highlighting their indirect impact, and the need for specific policies targeting airborne microplastics.[21] Part III extends the discussion to EU regulations, which includes directives like the Packaging and Packaging Waste Directive and the Single-Use Plastics Directive. The Article identifies how these initiatives fail to address the unique challenges posed by airborne microplastics, despite being comprehensive for general plastic pollution. In Part IV, the Article evaluates global legal instruments, such as the Basel and Stockholm Conventions, and the upcoming Global Plastics Treaty, with emphasis on marine and terrestrial plastic pollution rather than airborne microplastics. It critiques the absence of international agreements that directly address airborne plastics, showing the need for a dedicated framework.

The Article then explores the relationship between airborne plastics, technology, and SDGs in Part V. It discusses the role of innovations like air filtration systems, sustainable materials, and microplastic detection technologies in mitigating airborne plastic pollution.[22] These align with specific SDGs, such as SDG 11 (Sustainable Cities and Communities) and SDG 15 (Life on Land), showcasing how sustainable practices can address this environmental challenge. Part VI identifies regulatory gaps and challenges, showcasing issues such as the lack of standardized monitoring, cross-boundary complexities, and weak enforcement. This Part argues that while existing regulations provide a foundation, they are inadequate for addressing the nuanced risks of airborne plastics.[23] In Part VII, the study

19. Luís Fernando Amato-Lourenço et al., *Presence of Airborne Microplastics in Human Lung Tissue*, 416 J. HAZARDOUS MATERIAL, 2021, at 1, 4.

20. Brindha Ramasubramanian et al., *Recent Advances in Extended Producer Responsibility Initiatives for Plastic Waste Management in Germany and UK*, 5 MATERIALS CIRCULAR ECON., 2023, at 1, 6.

21. *See generally* A SEMADENI DAVIES ET AL., DETERMINING THE ECOLOGICAL AND AIR QUALITY IMPACTS OF PARTICULATE MATTER FROM BRAKE AND TYRE WEAR AND ROAD SURFACE DUST (2021).

22. *See generally* SAPEA, A SCIENTIFIC PERSPECTIVE ON MICROPLASTICS IN NATURE AND SOCIETY (2019) (Science Advice for Policy by European Academies 2019) (discussing technological innovations including air filtration systems, sustainable materials, and microplastic detection technologies for addressing microplastic pollution).

23. P. Villarrubia-Gómez et al., Identifying and Overcoming Social-Ecological Barriers to Ending Plastics Pollution (May 27, 2025) (unpublished manuscript) (on file with EarthArXiv).

focuses on the case against synthetic fibres and fragments, identifying them as the major source of airborne microplastics in the UK—greater than 90%, as evidenced by Birmingham-based research.[24] This Part proposes a targeted intervention that includes bans, market-based instruments like taxes, and incentives to shift towards sustainable alternatives, which could significantly mitigate airborne microplastic pollution. The Article concludes by offering recommendations for the effective regulation of airborne plastics in the UK These include implementing a ban or market-based regulation on synthetic fibres, creating a robust legal framework specifically addressing airborne microplastics, and encouraging technological and behavioural innovations.[25] Such measures are essential for tackling this emerging environmental threat while aligning with sustainable development objectives.

I. AIRBORNE PLASTICS GOVERNANCE – COMPARATIVE OVERVIEW

Microplastics, which measure less than 5 mm in size,[26] and nanoplastics, with an approximate range of about 1 to 100 nm (0.001–0.1 μm), present significant environmental challenges due to their small dimensions and widespread presence.[27] The current technological limitations that exist hinder the detection and removal of these microplastics from the environment.[28] These particles are widespread as they can be found across the ecosystem, which includes marine, terrestrial, and atmospheric environments.[29] They emanate from sources like the degradation of macroplastics, microbeads in consumer products, synthetic textile fibres, and industrial activities.[30] The diversity of these sources complicates the regulatory efforts that are channelled towards the mitigation of their release into the environment. Also,

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24. Hassan Khalid Ageel et al., *Microplastics in Indoor Air from Birmingham, UK: Implications for Inhalation Exposure*, 362 ENV'T POLLUTION, 2024, at 1.

25. *See generally* Davi R. Munhoz et al., *Microplastics: A Review of Policies and Responses*, 2 MICROPLASTICS, Dec. 23, 2022, at 1, 1 (providing an overview of legal frameworks addressing microplastics).

26. *Id.*; Fanny Caputo et al., *Measuring Particle Size Distribution and Mass Concentration of Nanoplastics and Microplastics: Addressing Some Analytical Challenges in the Sub-Micron Size Range*, 588 J. COLLOID & INTERFACE SCI. 401, 402 (2021).

27. *See generally* ESFA CONTAM Panel, *Presence of Microplastics and Nanoplastics in Food, with Particular Focus on Seafood*, 14 EFSA J., May 11, 2016, at 1 (explaining the presence of microplastics and nanoplastics in the food chain); *see also* Hassan Khalid Amobonye et al., *Environmental Impacts of Microplastics and Nanoplastics: A Current Overview*, 12 FRONTIERS MICROBIOLOGY, 2021, at 1.

28. *Id.*; *see also* Thuhin K. Dey et al., *Detection and Removal of Microplastics in Wastewater: Evolution and Impact*, 28 ENV'T SCI. & POLLUTION RSCH., 2021, at 1.

29. Karen Duis & Anja Coors, *supra* note 5, at 9–12.

30. Rajul Jain et al., *Microplastic Pollution: Understanding Microbial Degradation and Strategies for Pollutant Reduction*, 905 SCI. TOTAL ENV'T, Sept. 17, 2023, at 1, 2.

the processes associated with the production, packaging, and transportation of plastic products play a huge role in its dispersion into the environment.[31]

The increasing prevalence of microplastics in the environment poses a significant threat to human health in the United Kingdom (UK) and globally. These particles, especially those that are less than 10 micrometres in size, are inhaled, ingested, and absorbed through dermal exposure.[32] The ones that are below 2.5 micrometres are of particular concern owing to their ability to bypass pulmonary defences, thereby entering the bloodstream via the respiratory pathways.[33] The inhalation of these microplastics allows them to penetrate the respiratory system, which inadvertently causes inflammation, irritation, and long-term damage to lung tissue.[34] Studies have linked microplastic exposure to respiratory diseases such as asthma, bronchitis, and chronic obstructive pulmonary disease.[35] Moreover, microplastics can impair lung function, reducing lung capacity and increasing the risk of respiratory distress.[36] Microplastics interact with the immune system, potentially compromising its ability to fight off infections and diseases. This leaves individuals more susceptible to illness and increases the severity of infections. Additionally, they even trigger allergic reactions in some people.[37] Currently, emerging research suggests that microplastics pose risks to reproductive health.[38] Some of these microplastics contain chemicals that disrupt the endocrine system, potentially affecting hormone levels and reproductive function.[39] This highlights the growing concern regarding the potential impact of microplastics on fertility and reproductive outcomes.

Beyond their impact on human health, airborne microplastics also pose significant risks to ecosystems. The deposition of these particles on land and in water disrupts biodiversity, harms wildlife, and contaminates food

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31. Sina Pourebrahimi & Majid Pirooz, *Microplastic Pollution in the Marine Environment: A Review*, 10 J. HAZARDOUS MATERIALS ADV., May 2023, at 1, 3–4.

32. Simon Ducroquet & Shannon Osaka, *The Plastics We Breathe*, WASH. POST (June 10, 2024), https://www.washingtonpost.com/climate-environment/interactive/2024/microplastics-air-human-body-organs-spread.

33. *Id.*

34. Suvash Saha & Goutam Saha, *Effect of Microplastics Deposition on Human Lung Airways: A Review with Computational Benefits and Challenges*, 10 HELIYON, Jan. 30, 2023, at 1, 3.

35. Kuo Lu et al., *Microplastics, Potential Threat to Patients with Lung Diseases*, 4 FRONTIERS TOXICOLOGY, Sept. 28, 2022, at 1, 4.

36. *Id.*

37. Qi Han et al., *Co-exposure to Polystyrene Microplastics and Di-(2-ethylhexyl) Phthalate Aggravates Allergic Asthma Through the TRPA1-p38 MAPK Pathway*, 384 TOXICOLOGY LETTERS 73, 84 (2023).

38. Mei Wang et al., *The Hidden Threat: Unraveling the Impact of Microplastics on Reproductive Health*, 935 SCI. TOTAL ENV'T, May 13, 2024, at 1, 6.

39. Sana Ullah et al., *A Review of the Endocrine Disrupting Effects of Micro and Nano Plastic and Their Associated Chemicals in Mammals*, 13 FRONTIERS ENDOCRINOLOGY, Jan. 16, 2023, at 1.

chains.[40] Microplastics can be ingested by animals, leading to digestive problems, reproductive issues, and even death.[41] Additionally, the accumulation of microplastics in ecosystems can disrupt nutrient cycles and alter food webs, with cascading effects on the entire ecosystem.[42]

The complex nature of airborne microplastics, coupled with the lack of standardized monitoring and measurement methods, poses significant challenges for regulators. Understanding the sources, pathways, and impacts of microplastics requires extensive research and scientific investigation.[43] Developing effective regulations and mitigation strategies necessitates a comprehensive understanding of the risks posed by airborne microplastics and the most effective approaches to address them. For instance, the provision of clear-cut thresholds and guidelines for microplastic control and removal would improve general understanding.[44] One of the challenges in establishing a specific legal framework for airborne microplastics is the need for comprehensive research to understand the sources, pathways, and potential impacts on human health and the environment.[45] Scientific knowledge is essential for informing effective regulatory measures aimed at regulating airborne plastics.

International cooperation is a possible avenue in addressing the global challenge of plastic pollution, particularly airborne microplastics. While efforts to regulate plastic pollution have primarily focused on marine and terrestrial environments, a growing number of countries and regions are recognizing the importance of addressing airborne plastics. The European Union (EU), for example, has taken significant strides in reducing plastic waste through initiatives like the Single-Use Plastics Directive.[46] The EU has also set targets to make all plastic packaging recyclable by 2030 and reduce

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40. Meysam Saeedi, *How Microplastics Interact with Food Chain: A Short Overview of Fate and Impacts*, 61 J. FOOD SCI. & TECH. 403, 411 (2024); Ranjit Singh et al., *The Web of Life: Role of Pollution in Biodiversity Decline*, 10 INT'L J. FAUNA & BIOLOGICAL STUD. 49, 50 (2023).

41. For instance, microplastics in water can be sucked by shellfish, plankton, and floating algae. Eunju Jeong et al., *Animal Exposure to Microplastics and Health Effects: A Review*, 10 EMERGING CONTAMINANTS, May 14, 2024, at 1.

42. *See* Rogers W. Chia et al., *Microplastic Pollution in Soil and Groundwater: A Review*, 19 ENV'T CHEMISTRY LETTERS, Aug. 24, 2021, at 1, 3; *see* Jihye Cha et al., *Microplastics Contamination and Characteristics of Agricultural Groundwater in Haean Basin of Korea*, 864 SCI. TOTAL ENV'T, Mar. 15, 2023, at 1, 2.

43. Chelsea M. Rochman, *Microplastics Research—From Sink to Source*, 360 SCI. 28, 28 (2018).

44. Yu-Ning Chen et al., *Monitoring, Control and Assessment of Microplastics in Bioenvironmental Systems*, 32 ENV'T TECH. & INNOVATION., Nov. 2023, at 1, 15.

45. G. Lamichhane et al., *Microplastics in the Environment: Global Concern, Challenges, and Controlling Measures*, 20 INT'L J. ENV'T SCI. & TECH., May 2022, at 1, 2.

46. Valentina Beghetto et al., *Plastics Today: Key Challenges and EU Strategies Towards Carbon Neutrality: A Review*, 334 ENV'T POLLUTION., Oct. 1, 2023, at 1, 6.

consumption of single-use plastics.[47] This measure will support the reduction of single-use plastic, which upon degeneration can transform into airborne plastic.

Comparatively, North American countries are dynamically addressing the issue of airborne plastic pollution through a combination of policies and regulations targeting the various sources of airborne plastic. The United States is committed to combating plastic pollution both domestically and internationally. This is seen in various national programs such as the National Recycling Strategy, which aims to increase the US recycling rate to 50% by 2030.[48] In addition, Sustainable Materials Management (SMM), promotes efficient use of materials throughout their lifecycle.[49] There is also the WasteWise Program, which assists businesses and organizations in reducing waste and promoting sustainability.[50] In Canada, the Canadian Environmental Protection Act (CEPA) provides the legal framework for regulating substances that are harmful to the environment, which should extend to include microplastics.[51] Several Canadian provinces and municipalities have implemented bans on single-use plastic bags to reduce plastic waste.[52] Mexico's plastic strategy is seen in the collection of legislation to reduce plastic pollution and promote sustainable consumption.[53] Mexico has implemented regulations to ban or restrict certain single-use plastic items, such as straws and bags.[54]

Asia, particularly Southeast Asia, presents a complex picture. Countries like China, South Korea,[55] and Japan have implemented various policies to

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47. European Commission Press Release IP/18/5, Plastic Waste: A European Strategy to Protect the Planet, Defend Our Citizens and Empower Our Industries (Jan. 15, 2018).

48. Press Release, Off. of the Spokesperson, U.S. Dep't. of State, U.S. Actions to Address Plastic Pollution, (Feb. 28, 2022).

49. Chia-Nan Wang et al., *An Information System for Sustainable Materials Management with Material Flow Accounting and Waste Input–Output Analysis*, 27 SUSTAINABLE ENV'T RSCH. 135, 135 (2017).

50. *WasteWise*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/smm/wastewise (last updated Feb. 15, 2024) [https://web.archive.org/web/20250202001632/https://www.epa.gov/smm/wastewise].

51. Canadian Environmental Protection Act 1999, S.C. 1999, c 33 (Can.).

52. Emily Chung, *For Cities and Towns Trying to Cut Out Plastic, Here's What's Worked and What Hasn't*, CBC NEWS (May 7, 2024), https://www.cbc.ca/news/canada/plastic-bans-by-city-town-1.7196086.

53. This is due to the existence of four national regulations, twenty state laws, twenty-six municipal laws, and four official norms. *See* MADISON GRIFFIN & RACHEL KARASIK, DUKE UNIV.: NAT'L INST. FOR ENV'T POL'Y SOLUTIONS, PLASTIC POLLUTION POLICY SPOTLIGHT: MEXICO 1–2 (2022).

54. Brandon Wiggins & Erica Sanchez, *Mexico City's Ban on Plastic Bags Officially Takes Effect*, GLOBAL CITIZEN (Jan. 2, 2020), https://www.globalcitizen.org/en/content/mexico-city-plastic-bag-ban/.

55. *See, e.g.*, Yong-Chul Jang et al., *Recycling and Management Practices of Plastic Packaging Waste Towards a Circular Economy in South Korea*, 158 RES., CONSERVATION & RECYCLING, Mar. 2020, at 1, 2.

address plastic pollution, which focus on recycling and waste management.[56] However, the rapid industrialization and urbanization in the region have also led to increased plastic consumption and waste generation. Southeast Asian nations, grappling with challenges such as poverty and lack of infrastructure, face unique obstacles in managing plastic waste, including airborne microplastics.[57]

Africa, with its diverse environmental and socioeconomic conditions, offers a different perspective. Many African countries are still developing their waste management systems and plastic pollution. While some efforts are underway to address plastic waste, the continent contends with significant challenges regarding resources, infrastructure, and capacity building.[58]

While the UK has made strides in addressing plastic pollution, the specific legal framework for airborne microplastics has not been developed.[59] Relatable regulations and policies remain outdated and underdeveloped. The primary focus of existing legislation has been on managing plastic waste and reducing plastic consumption.[60] Key legislative frameworks include the Environmental Protection Act of 1990, which provides a broad environmental protection framework but lacks specific provisions for airborne microplastics.[61] The Waste Management Regulations cover waste collection, treatment, and disposal, including plastic waste, but primarily address land-based and aquatic pollution.[62]

Although common law principles like nuisance and negligence could potentially be applied to address airborne microplastics-related harm, their effectiveness remains untested and uncertain. Regulatory bodies such as the Environment Agency play a big part in environmental protection but may lack specific mandates for airborne microplastics.[63] The challenges associated with monitoring, measuring, and regulating these tiny particles

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56. Huijuan Hao & Chenfan Jiang, *The Path of Transboundary Marine Plastic Waste Management in China, Japan, and South Korea from the Perspective of the Blue Economy*, 9 FRONTIERS MARINE. SCI., Jan. 24, 2023, at 1, 3.

57. Bhumika Das et al., *Plastic Pollution in South and Southeast Asia: Challenges and Sustainable Solutions*, 36 LAND DEGRADATION & DEV., June 2025, at 1, 2.

58. Issahaku Adam et al., *Policies to Reduce Single-use Plastic Marine Pollution in West Africa*, 116 MARINE POL'Y, Mar. 2020, at 1, 1–2.

59. Imperial College London, *Understanding UK Airborne Microplastic Pollution*, UK RSCH. & INNOVATION, https://gtr.ukri.org/projects?ref=NE%2FT007605%2F1 (last visited Apr. 9, 2026).

60. LOUISE SMITH, PLASTIC WASTE 23–30 (House of Commons Library 2024).

61. Esther Kentin & Heidi Kaarto, *An EU Ban on Microplastics in Cosmetic Products and the Right to Regulate*, 27 REV. EUR., COMPAR. & INT'L ENV'T L. 254, 257 (2018).

62. David Shiers et al., *Implementing New EU Environmental Law: The Short Life of the UK Site Waste Management Plan Regulations*, 57 J. ENV'T PLAN. & MGMT., 2014, at 1, 2.

63. ENV'T AGENCY, REVIEW OF ACTIVITIES REGULATED BY THE ENVIRONMENT AGENCY, 2022, at 41 (2024).

further complicates the development of a robust legal framework.[64] The UK's legal framework for airborne microplastics will be examined in greater detail in subsequent Parts of this Article.

II. LEGAL FRAMEWORK IN THE UNITED KINGDOM

The legal framework in the United Kingdom (UK) plays a pivotal role in addressing the complex challenges of plastic pollution and waste management. Operating at the national level, the UK has proactively implemented diverse legislative measures and regulatory initiatives explicitly designed to mitigate the environmental impact of plastics. This somewhat underscores the UK's commitment to fostering sustainable practices and ensuring the responsible management of plastic waste throughout its life cycle. The UK retained much of its waste legislation from the European Union (EU) after it departed (Brexit).[65]

One key aspect of the UK's legal framework is its regulations targeting single-use plastics.[66] These regulations reflect a concerted effort to curb the pervasive use of disposable plastic items, a significant contributor to environmental pollution.[67] Concurrently, the legal framework addresses waste management practices, emphasizing the need for efficient collection, recycling, and disposal mechanisms.[68] This method recognizes the interconnectedness of plastic production, consumption, and disposal, and seeks to holistically address each stage of the plastic life cycle.[69] Some key legal instruments applicable in the UK in plastic pollution are discussed below.

A. Plastic Packaging Tax

The UK-wide Plastic Packaging Tax (PPT), implemented on April 1, 2022, offers an intervention approach targeted towards addressing plastic pollution by promoting the adoption of recycled plastic materials.[70] This tax,

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64. Jesus Gago et al., *Microplastics Pollution and Regulation*, *in* HANDBOOK OF MICROPLASTICS IN THE ENVIRONMENT 1, 11, 17 (T. Rocha-Santos et al. eds., 2020).

65. The EU (Withdrawal) Act 2018 allowed the UK to convert existing EU laws into domestic laws and maintain consistency until the UK government decides to amend or repeal them. European Union (Withdrawal) Act 2018, cl. 16, § 2 (UK).

66. Riley Schnurr et al., *Reducing Marine Pollution from Single-Use Plastics (SUPs): A Review*, 137 MARINE POLLUTION BULL. 157, 162 (2018).

67. *Id.*

68. Tobias D. Nielsen et al., *Politics and the Plastic Crisis: A Review Throughout the Plastic Life Cycle*, 9 WIREs ENERGY & ENV'T, Aug. 8, 2019, at 1, 4.

69. *Id.*

70. Ramasubramanian, *supra* note 20; *see* Finance Act 2021, SS 47 (UK).

which is governed under the Finance Act of 2021, imposes a financial charge on businesses producing or importing components of plastic packaging that have less than 30% recycled content.[71] The rate, as of 2024, stands at £217.85 per metric tonne, which shows the annual increases aimed at maintaining the effects of the deterrent policy.[72] In theory, the tax encourages a shift toward a more sustainable practice that aligns with circular economy principles just by excluding packaging with higher recycled content. Though tax creates a direct economic incentive that helps in the reduction of virgin plastic use, its effectiveness is highly dependent on its implementation and compliance. Businesses are mandated to keep a detailed record of the weight and composition of plastic packaging, which leads to extra administrative burdens.[73] Due to the dependency on self-reporting, there is a large risk of underreporting or noncompliance.[74] Furthermore, the focus of the tax on packaging and composition may fail to look at the broader systemic challenges.[75] Additionally, unintended loopholes may be created if, in the classification criteria, the tax status in a composite component is determined by the heaviest material in it.[76] Although the policy is a positive step, it falls short in addressing the adverse environmental consequences inherent in the lifetime of plastic packaging, as well as the upstream factors that drive plastic production.

The PPT (Descriptions of Products) Regulations 2021 refine the criteria for packaging components to enhance the precision in tax and feedback of

71. SMITH, *supra* note 60, at 30.

72. HM Revenue and Customs, *Plastic Packaging Tax: Steps to Take*, GOV.UK (Jan. 2, 2024), https://www.gov.uk/guidance/check-if-you-need-to-register-for-plastic-packaging-tax.

73. The exemption for businesses manufacturing or importing less than ten tonnes of plastic packaging in a 12-month period acknowledges the potential burden on small enterprises, promoting fairness and practicality. *Id.*

74. Celia Somlai et al., *Plastic Packaging Waste in Europe: Addressing Methodological Challenges in Recording and Reporting*, 41 WASTE MGMT. & RSCH. 1188, 1196–1198 (2023). The article notes that producer reporting systems are vulnerable to "freeriding, non-compliance and de minimis" practices and that producers may have financial incentives for under-reporting. *Id.*

75. Exemptions for packaging used as immediate packaging for licensed human medicines and for transport packaging for imports and exports recognize specific needs and necessities, avoiding unintended consequences on critical sectors. *See Plastic Packaging Tax – What You Need to Know*, HERBERT SMITH FREEHILLS LLP (Feb. 14, 2022), https://www.herbertsmithfreehills.com/insights/2022-02/plastic-packaging-tax-%E2%80%93-what-you-need-to-know. However, a narrow focus on tax-based composition requirements may overlook broader systemic challenges such as the lack of integrated recycling infrastructure and the risk of *material switching* to alternatives with higher lifecycle carbon costs. *Cf.* Bhumika Das et al., *Plastic Pollution in South and Southeast Asia: Challenges and Sustainable Solutions*, 36 LAND DEGRADATION & DEV., 2025, at 1, 12 (emphasizing that sustainable solutions require holistic waste management frameworks beyond mere fiscal intervention).

76. HM TREASURY PLASTIC POLLUTION TAX: CONSULTATION, cl. 3 ¶ 3.17 (OGL 2019) (UK).

the address industry.[77] The regulations target items that have a higher environmental impact by excluding products such as storage-functional packaging, integral components of goods, and reusable packaging.[78] However, the regulation tries to recognize the limited pollution contribution of certain excluded items.[79] The inclusion of single-use products which serves the function of packaging at the consumer level expands how the tax is applied, thereby showing the intention to reduce sources of plastic waste that are hardly paid attention to.[80]

The aim of the PPT is to reduce plastic waste and promote recycling, but it also indirectly contributes to the mitigation of airborne plastics. The policy encourages the adoption of a sustainable practice that includes the increased use of recycled materials through its tax imposition on plastic packaging that has less than 30% recycled content.[81] When the demand for virgin plastic production reduces, there is a likelihood it may lower the overall plastic consumption, which also reduces how much microplastic is generated.[82] However, the PPT does not specifically address airborne microplastic sources or target the broader lifecycle processes that aid in microplastic release into the environment.

The PPT has led to a measurable increase in the use of recycled plastic in packaging, thereby fulfilling some of its environmental objectives.[83] However, its economic and operational implications are important. Businesses have redefined their supply chains, which has led to less reliance on UK-based operations.[84] The PPT has also impacted the domestic industry

77. Enacted by the Treasury, in the exercise of the powers conferred by sections 48(5), 63(1) and 84(3) of the Finance Act 2021. 2021 c. 26. Part 2 was commenced by the Finance Act 2021, Part 2 etc. (Plastic Packaging Tax) (Appointed Day) Regulations 2021 (S.I. 2021/1409 (C. 79)) for the purpose of making any regulations under that Part with effect from December 10, 2021. *See* The Plastic Packaging Tax (Descriptions of Products) Regulations 2021, SI 2021/1417 reg. 4(1) (UK); Henna Jylhä et al., *A Novel Method of Accounting for Plastic Packaging Waste*, 196 WASTE MGMT. 42, 43 (2025).

78. The Plastic Packaging Tax (Descriptions of Products) Regulations 2021, SI 2021/1417, reg. 3–4 (UK).

79. *See* The Plastic Packaging Tax (Descriptions of Products) Regulations 2021, SI 2021/1417, reg. 4(2) (UK).

80. The Plastic Packaging Tax (Descriptions of Products) Regulations 2021, SI 2021/1417, reg. 5(2)(a) (UK).

81. Finance Act 2021, Ss 47(1)(a) (UK).

82. Joakim Larsson, Automated Central Sorting of Plastic Packaging Waste – A Qualitative Study of Drivers, Barriers and Possible Solutions for Implementing Automated Central Sorting of Plastic Packaging Waste in Sweden 10 (2020) (Master thesis, Uppsala University) (on file with Department of Earth Sciences).

83. Andrew Dove et al., *Promoting the Use of Recycled Plastics: A Taxing Issue*, 27 ENV'T L. REV. 42, 45 (2025).

84. *Id*.

by way of lowering demand for storage and haulage services.[85] There are inefficiencies in the implementation of PPT which is shown by the decline in its revenue despite an increased tax rate and a rise in the number of registered businesses. While the intensified efforts of His Majesty's Revenue and Customs (HMRC) have improved registration rates, the total number of registered businesses remains below projections, which indicates a persistent issue of compliance.[86] These dynamics show the need for better regulatory oversight and enforcement mechanisms to achieve the dual environmental and economic goals of the tax.

The UK's PPT has undergone a notable evolution in its enforcement strategy.[87] Initially, HMRC adopted a 'soft-landing' approach, providing support and guidance to taxpayers as they adjusted to the new tax regime. This cooperative stance facilitated a smoother transition and encouraged voluntary compliance. However, the landscape has shifted with the introduction of a more stringent penalty regime. Standard penalties for common tax offences, such as late payment and inaccurate returns, have been extended to cover the PPT.[88] Moreover, the tax authority has introduced specific penalties tailored to the unique challenges of administering the PPT, such as those for failure to maintain adequate records.[89]

Businesses that fail to register for the PPT, or register late, face financial penalties calculated as a percentage of the potential lost revenue.[90] Factors such as the reason for noncompliance and the level of cooperation with HMRC will influence the penalty amount. In severe cases, criminal charges may apply. Penalties for criminal offences include imprisonment of up to 12 months (6 months in Northern Ireland) and financial penalties of up to £20,000 or triple the amount of unpaid tax.[91] Submitting returns late or failing to submit them altogether results in financial penalties.[92] The penalty amount

85. Abigail McGregor, *UK Plastic Packaging Tax Data Shows Environmental and Economic Impact*, PINSENT MASONS (Aug. 16, 2024), https://www.pinsentmasons.com/out-law/news/plastic-packaging-tax-data-environmental-economic-impact.

86. The revenue collected from the Plastic Packaging Tax decreased from £285 million in 2022–2023 to £268 million in 2023–2024, representing a 6% decline. *Id.*

87. Richard O'Doherty et al., *Regulatory Failure via Market Evolution: The Case of UK Packaging Recycling*, 21 ENV'T & PLAN. C: GOV'T & POL'Y 579, 579 (2003).

88. Ian Bailey, *Principles, Policies and Practice: Evaluating the Environmental Sustainability of Britain's Packaging Regulations*, 8 SUST. DEV. 51, 56 (2000).

89. *Plastic Packaging Tax: Detailed HMRC Guidance on Penalties*, ICAEW (Apr. 18, 2023), https://www.icaew.com/insights/tax-news/2023/apr-2023/plastic-packaging-tax-detailed-hmrc-guidance-on-penalties (discussing fixed penalties and daily default penalties for non-compliance with record-keeping obligations under the PPT regime).

90. Finance Act 2021, c. 26, § 61, Sch. 10, pt. 1 at 1–3; pt. 2 at 4–5 (UK).

91. HM Revenue & Customs, *Plastic Packaging Tax Penalties*, GOV.UK (Sept. 21, 2023), https://www.gov.uk/guidance/plastic-packaging-tax-penalties.

92. *Id*.

increases with each subsequent late return, with a maximum penalty of £400 for repeated offences within 12 months.[93] Additional penalties may apply if returns remain outstanding for extended periods.

Paying the PPT late incurs a 5% penalty on the outstanding amount.[94] Further penalties apply if the payment remains overdue after 5 or 11 months.[95] Submitting incorrect information on a PPT return can lead to financial penalties based on the amount of tax underpaid or overclaimed. The severity of the penalty depends on the nature of the inaccuracy, whether it was deliberate, and the level of cooperation with HMRC. Failing to meet other PPT obligations, such as record-keeping or providing information to HMRC, can result in a fixed penalty of £500 and an additional daily penalty of £40 until compliance is achieved.[96]

Businesses that disagree with a penalty decision can request a review or appeal to a tax tribunal.[97] There may be grounds for reducing or cancelling a penalty if the business can demonstrate a reasonable excuse for noncompliance.[98] This graduated penalty structure, escalating in severity for repeated offences, is a common feature of tax administration designed to incentivize timely compliance.[99] Yet, the inclusion of criminal sanctions for the most egregious cases of noncompliance underscores the government's determination to deter tax evasion and protect public revenue.

For the PPT to be effective, it will have to strike a balance between enforcing stringent measures and having accessible compliance support.[100] Penalties can be a strong deterrent, but an effective enforcement mechanism must be paired with comprehensive guidance to ensure clarity and prevent unintentional noncompliance. HMRC requires adequate resources and specialized expertise to effectively identify, investigate, and address noncompliance. Also, accessible support systems are needed to help taxpayers in navigating the rigours of the PPT framework. This approach is critical in optimizing the impact of PPT on reducing plastic waste and generating revenue, in addition to minimizing administrative burdens for compliant organizations.

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93. *Id*.

94. Finance Act 2021, c. 26, § 61, Sch. 10 (UK); *Plastic Packaging Tax Penalties*, *supra* note 92.

95. *Plastic Packaging Tax Penalties*, *supra* note 92.

96. *Id.*

97. *Id.*

98. *Id.*

99. Ken Devos, *Penalties and Sanctions for Taxation Offences in Selected Anglo-Saxon Countries: Implications for Taxpayer Compliance and Tax Policy*, 14 REV. L.J. 32, 43 (2004).

100. Ahmad Raza et al., *Impact of Plastic Packaging on Waste Accumulation and Global Tax Regimes to Mitigate the Plastic Pollution: Multifaceted Crisis and Sustainable*, *in* PLASTIC AND THE COVID-19 PANDEMIC 83, 90 (O.A. Anani et al. eds., 2025).

Spain and Italy have taken additional steps to fight plastic pollution, which suggests a broader European trend toward sustainable conduct.[101] Spain's 2023 Plastic Tax focuses on the production, import, and sale of non-reusable plastic packaging with insufficient recycled content.[102] Businesses are required to pay €0.45 per kilogram of non-recycled plastic, with a minor monthly exemption to accommodate small-scale usage.[103] While this structure contributes to the use of recycled materials, it raises concerns about enforcement consistency and its economic effect on small businesses. In contrast, Italy has delayed its Plastic Tax, which was supposed to go into effect from 2020 to 2027.[104] This delay shows the difficulties of balancing environmental goals with economic and political interests. The fee will apply to single-use plastic products, which shows the country's commitment to waste reduction. However, the extended deadline raises worries over whether such delays weaken the importance of addressing plastic pollution and reduce the drive for systemic change across Europe.[105]

B. Extended Producer Responsibility

The UK has embraced the concept of Extended Producer Responsibility (EPR), a crucial component of its legal framework. The recent amendments to the Packaging Waste (Data Reporting) (England) Regulations 2023 and the announcements on the Extended Producer Responsibility for Packaging Scheme (EPR Packaging Scheme) by the UK government, along with potential changes in the EU under the EU Packaging and Packaging Waste Directive, signify a significant shift in the regulatory landscape for packaging and its environmental impact.[106] The UK packaging regulatory landscape has transitioned from simple data collection to a full EPR framework. While the 2023 Data Reporting Regulations initially required producers to report the type and volume of packaging introduced to the market, these obligations

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101. M.A. Martín-Lara et al., *Environmental Status of Marine Plastic Pollution in Spain*, 170 MARINE POLLUTION BULL., Sept. 2021, at 1, 16.

102. *Plastic Packaging Tax*, PWC, https://www.pwc.co.uk/services/tax/plastic-packaging-tax.html (last visited Apr. 9, 2026).

103. Salvatore Antonello Parente, *Environmental Taxation and the Circular Economy: What Are the Prospects in the European Context?*, 29 BIAŁOSTOCKIE STUDIA PRAWNICZE 91, 99 (2024).

104. Michelle Ann Joseph, *Italy Delays Plastic Tax to 2027*, ARGUS MEDIA (Oct. 16, 2025), https://www.argusmedia.com/en/news-and-insights/latest-market-news/2742946-italy-delays-plastic-tax-to-2027.

105. *Id.*

106. Giulia Barbone et al., *New UK and EU Extended Producer Responsibility for Packaging Requirements*, NORTON ROSE FULBRIGHT (Aug. 2023), https://www.nortonrosefulbright.com/en/knowledge/publications/e60a6d97/new-uk-and-eu-extended-producer-responsibility-for-packaging-requirements.

have since been integrated into a comprehensive liability system.[107] Under the current regime, producers face stricter reporting for reusable packaging and new offences for noncompliance.[108] Notably, although the collection of household waste disposal fees was deferred to 2025 to mitigate economic pressures, as of 2026, producers are now liable for these costs, which are increasingly determined by the recyclability of their materials.[109]

This approach places responsibility on producers to manage the entire life cycle of their products, including the post-consumer phase. The EPR concept encourages producers to take greater responsibility for the environmental impact of their products throughout their lifecycle.[110] This can result in packaging designs that minimize the risk of fragmentation and the release of microplastics during production, use, and disposal. This incentivizes producers to design products and packaging that are less likely to contribute to airborne microplastic pollution during their use and disposal phases.[111] By extending responsibility beyond the point of sale, EPR compels producers to consider the end-of-life phase of their products, including how they might contribute to airborne microplastic pollution. This can lead to innovations in product design, material selection, and waste management practices. The Environment Act 1995, in England, Wales, and Scotland, and the Producer Responsibility (Northern Ireland) Order 1998, establish the legal basis for the EPR scheme for packaging.[112] In addition, other regulations run parallel.[113] The Producer Responsibility Obligations[114] cover the recycling and recovery of packaging waste.[115] They outline the obligations that businesses must fulfil in terms of recovering and recycling a specified proportion of the packaging they place on the market.[116] The UK's

107. Packaging Waste (Data Reporting) (England) Regulations 2023, SI 2023/176, reg. 8 (UK).

108. Packaging Waste (Data Reporting) (England) (Amendment) Regulations 2023, SI 2023/720, reg. 4, 10 (UK) (simplifying reporting for reusable packaging and establishing new offences for non-compliance).

109. *See* PackUK, *Year 1 Extended Producer Responsibility for Packaging Fees Update*, GOV.UK (Feb. 24, 2026), https://www.gov.uk/government/news/year-1-extended-producer-responsibility-for-packaging-fees-update.

110. Candice Stevens, *Extended Producer Responsibility and Innovation*, *in* ECONOMIC ASPECTS OF EXTENDED PRODUCER RESPONSIBILITY 199, 199 (2004).

111. Emily Cowan et al., *Single-Use Plastic Bans: Exploring Stakeholder Perspectives on Best Practices for Reducing Plastic Pollution*, 8 ENV'T, Aug. 16, 2021, at 1, 2–3.

112. SMITH, *supra* note 60, at 25.

113. *Cf.* Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 2007, SI 2007/198 (NI 3), which contain substantially similar provisions applicable in Northern Ireland.

114. Producer Responsibility Obligations (Packaging Waste) Regulations 2007, SI 2007/871 (as amended).

115. *Id.* reg. 7, reg. 12, reg. 13 (UK).

116. The Packaging Waste (Data Reporting) (England) Regulations 2023, SI 2023/219, reg. 16, reg. 23 (UK).

2015 Packaging Regulations cover the single market and design and manufacturing aspects of packaging, ensuring that packaging meets essential requirements.[117] Additionally, the EPR cannot be suited to regulate the peculiar characteristics of airborne plastics which have been dismissed as being of *de minimis* impact without reference to its health and social implications.[118]

Obligated packaging producers, defined as entities handling over 50 tonnes of packaging annually or with an annual turnover exceeding £2 million, must register with the appropriate environmental regulator.[119] Key responsibilities now include data reporting, meeting recycling targets, obtaining evidence of recycling through electronic packaging recycling notes, and submitting a Certificate of Compliance annually.[120] To ensure compliance, the UK has also established a regulatory framework with clear obligations and penalties. Producers must register, meet the specified recycling targets, and submit annual reports. Noncompliance will result in financial penalties or, in severe cases, criminal charges.[121]

The effective implementation of producer responsibility principles necessitates a robust regulatory framework and enforcement mechanisms. In the UK, a multi-agency approach oversees the management of waste and the obligations of producers. The Environment Agency, serving England and its counterparts in Wales,[122] Scotland,[123] and Northern Ireland,[124] are the primary regulatory bodies responsible for overseeing producer compliance schemes and waste treatment facilities. These agencies ensure that producers fulfil their obligations to manage the environmental impact of their products throughout their lifecycle. Beyond these general environmental regulators, specialized agencies address specific product categories. The Department for

117. Packaging (Essential Requirements) Regulations 2015, SI 2015/1640, reg. 2, reg. 4, reg. 5 (UK).

118. Rose Heppner, *Crimes of the Past, Present, and Future: Considering the Global Problem of Microplastic Pollution and the Potential for Success within the Public Trust Doctrine*, 40 EMORY INT'L L. REV. 111, 124–128 (2025).

119. *Extended Producer Responsibility: All You Need to Know*, ECOVERITAS, https://www.ecoveritas.com/compliance/uk-extended-producer-responsibility-epr (last visited Apr. 9, 2026).

120. *Packaging Waste: Producer Responsibilities*, GOV.UK (Jan. 1, 2024) updated 1 January 2024), https://www.gov.uk/guidance/packaging-producer-responsibilities (under the heading 'Check if you are an obligated packaging producer', stating that obligated producers must 'submit a certificate of compliance (CoC) by 31 January the following year).

121. *Id.*

122. NATURAL RESOURCES WALES, PERFORMANCE REPORT 2022–23: CHIEF EXECUTIVE'S STATEMENT (2023).

123. SCOTTISH ENV'T PROT. AGENCY (SEPA), 2026 MONITORING PLAN FOR PRODUCER RESPONSIBILITY PACKING AND PACKAGING WASTE REGULATIONS 1 (2025).

124. N. IR. ENV'T AGENCY (NIEA), 2026 COMPLIANCE MONITORING PLAN (2026).

Business and Trade is responsible for regulations related to End-of-Life Vehicles, while the Office for Product Safety and Standards oversees regulations for Waste Electrical and Electronic Equipment, batteries, and related restrictions.[125]

While EPRs have primarily focused on managing post-consumer packaging waste, its potential to mitigate airborne microplastics is increasingly recognized but has yet to be utilized. By placing responsibility for the entire lifecycle of a product on the producer, EPR can incentivize a shift towards more sustainable packaging practices.[126] To effectively tackle airborne microplastics, a more holistic approach is necessary. This would involve not only addressing the management of plastic waste, but also preventing the generation of microplastics at its source.

A critical aspect of addressing airborne microplastics through EPR lies in the design phase. Producers can be encouraged to adopt design principles that minimize the generation of microplastics. This includes the selection of materials less prone to fragmentation, the optimization of packaging size and weight, and the incorporation of features that facilitate recycling or recovery.[127] Moreover, EPR can stimulate innovation in packaging materials and technologies by incentivizing research and development into alternatives to conventional plastics.

The relationship between packaging design and airborne microplastics is complex. While reducing the total volume of plastic waste through effective packaging design can indirectly contribute to a reduction in airborne microplastics, a direct causal link is challenging to establish.[128] Furthermore, the impact of packaging design on microplastic formation during the use and disposal phases requires further investigation.

Implementing and enforcing EPR regulations presents its challenges, particularly in data accuracy and reporting.[129] Since EPR aims to improve waste management and environmental outcomes, its success hinges on the

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125. Dep't for Env't et al., *Producer Responsibility Regulations,* GOV.UK, https://www.gov.uk/government/collections/producer-responsibility-regulations (last updated Dec. 22, 2025).

126. *Reducing Plastic Pollution through Extended Producer Responsibility*, U.N. ENV'T PROGRAMME (June 11, 2025), https://www.unep.org/reducing-plastic-pollution-through-extended-producer-responsibility.

127. *A Call for the Implementation of Extended Producer Responsibility Schemes for Packaging*, ELLEN MACARTHUR FOUND. (Oct. 21, 2022), https://www.ellenmacarthurfoundation.org/extended-producer-responsibility/epr-statement.

128. Van-Giang Le et al., *A Comprehensive Review of Micro- and Nano-Plastics in the Atmosphere: Occurrence, Fate, Toxicity, and Strategies for Risk Reduction*, 904 SCI. TOTAL ENV'T, Dec. 15, 2023, at 1, 3, 11, 12.

129. Dipti Gupta & Satya Dash, *Challenges of Implementing Extended Producer Responsibility for Plastic-Waste Management: Lessons from India*, 19 SOC. RESP. J. 1595, 1596, 1599, 1608 (2023).

accurate collection and analysis of data. Data accuracy is key in determining producer obligations, calculating recycling targets, and assessing the overall effectiveness of the scheme. Inconsistencies or inaccuracies in reported data can undermine the integrity of the EPR system and hinder efforts to address environmental challenges like airborne microplastics.[130] Factors such as complex supply chains, varying data collection methods, and the potential for deliberate misreporting can contribute to data quality issues.[131]

Ensuring compliance with EPR regulations is another major challenge. Monitoring producers' activities, verifying data accuracy, and detecting noncompliance require substantial resources and expertise.[132] Moreover, the evolving nature of the packaging industry and the emergence of new packaging materials can create difficulties in keeping up with regulatory requirements. Stronger enforcement mechanisms are essential to address these challenges. This includes regular audits, inspections, and penalties for noncompliance.[133] Additionally, clear and accessible guidelines for data reporting and record-keeping can help to improve data quality. Collaboration between regulators, industry, and other stakeholders is also crucial for developing effective enforcement strategies.

Compliance schemes play a role in aiding EPR implementation for packaging.[134] These schemes act as intermediaries or third parties between producers and regulators and streamline the process of meeting regulatory obligations. Compliance schemes offer a range of services to producers, including paying registration fees on behalf of organisations, reporting packaging data, and getting packaging waste recycling notes or packaging waste export recycling notes.[135] By pooling resources and expertise, these schemes can achieve economies of scale and provide cost-effective solutions

130. Ludovic F. Dumée, *Circular Materials and Circular Design—Review on Challenges Towards Sustainable Manufacturing and Recycling*, 2 CIRCULAR ECON. & SUSTAINABILITY 9, 13, 16 (2021).

131. *Id.*

132. Barbara Siuta-Tokarska et al., *The Concept of Extended Producer Responsibility in the Field of Packaging Industry and the Energy Sector in the Light of the Circular Economy—The Example of Poland*, 15 ENERGIES, Nov. 30, 2022, at 1, 3–4.

133. *Id.*

134. However, the third party must appear in the Compliance Scheme public register. *National Packaging Waste Database*, ENV'T AGENCY, https://npwd.environment-agency.gov.uk/PublicRegisterSchemes.aspx (last visited Apr. 9, 2026). There are currently 40 registered Compliance Schemes in the UK Public Register of Compliance Schemes under the National Packaging Waste Database. *Id*.

135. Dep't for Env't et al., *Extended Producer Responsibility for Packaging: Who is Affected and What to Do*, GOV.UK, https://www.gov.uk/guidance/extended-producer-responsibility-for-packaging-who-is-affected-and-what-to-do (last updated Feb. 10, 2026).

for producer organisations. Additionally, compliance schemes contribute by promoting best practices and knowledge sharing among producers.[136]

However, the effectiveness of compliance schemes depends on several factors. The design and operation of the scheme, the fees charged to producers, and the transparency of its activities are all critical elements. Furthermore, the relationship between compliance schemes and regulators is essential for ensuring effective oversight and enforcement. To maximize the impact of EPR, compliance schemes should focus on changing producers' behaviour.[137] This includes promoting the use of recycled materials, reducing packaging waste, and improving packaging design beyond just assisting organisations with regulatory requirements.

EPR for packaging can be a powerful tool for addressing environmental challenges, but its efficiency is enhanced when aligned with other relevant policies. For instance, by integrating EPR with broader environmental goals like Sustainable Development Goals, the UK and other countries can create a more coherent regulatory framework. One important connection is between EPR and air quality. Reducing plastic packaging waste through EPR can contribute to improved air quality by reducing emissions associated with poor plastic waste management and pollution.[138] The cascading effect of plastic waste is the introduction of airborne microplastics which affect air quality.

EPR is also linked to climate change mitigation efforts; this is the case since EPR supports circularity which is essential for the growth of the circular economy.[139] The circular economy principles underlying EPR align with the broader goals of a low-carbon economy. EPR policies encourage producers to design products that are easier to recycle, reuse, and repair; thus promoting a circular economy.[140] The challenge at this point is that even though traditional EPR systems often focus on material recycling, a true circular economy requires a broader focus on product design, reuse, and

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136. Some provide useful knowledge bases. *See, e.g.*, *Be Compliant*, ECOSURETY, https://www.ecosurety.com/how-we-can-help/be-compliant (last visited Apr. 9, 2026). For example, the Ecosurety Hub, which assists with essential resources to get to grips with EPR, PPT, DRS and the circular economy. *Id.*

137. Flávio de Miranda Ribeiro & Isak Kruglianskas, *Critical Factors for Environmental Regulation Change Management: Evidences from an Extended Producer Responsibility Case Study*, 246 J. CLEANER PROD., Feb. 10, 2020, at 1, 9.

138. Saroj Kumar Pani & Atul Arun Pathak, *Managing Plastic Packaging Waste in Emerging Economies: The Case of EPR in India*, 288 J. ENV'T MGMT., Mar. 27, 2021, at 1, 2.

139. Kieran Campbell-Johnston et al., *How Circular Is Your Tyre: Experiences with Extended Producer Responsibility from a Circular Economy Perspective*, 270 J. CLEANER PROD., May 11, 2020, at 1, 3.

140. Xin Tong et al., *Extended Producer Responsibility to Reconstruct the Circular Value Chain*, 3 CIRCULAR ECONOMY, Feb. 6, 2024, at 1, 3.

repair.[141] There are also economic impacts of implementing EPR on producers and consumers, requiring careful consideration of cost-benefit trade-offs.[142] Also, for products with global supply chains, international cooperation is necessary to ensure the effective implementation of EPR across borders.

C. Deposit Return Scheme

The UK government also worked on draft regulations for a Deposit Return Scheme (DRS)[143] for in-scope drink containers, anticipated to be published by the end of 2023 and to become operational by Autumn 2027. The introduction of DRS for in-scope drink containers aims to increase recycling rates.[144] By incentivizing the return of containers, it may reduce littering and the breakdown of larger plastic items that could contribute to airborne microplastics.

Furthermore, Section 33 of the Environmental Protection Act 1990, includes provisions related to waste management, such as unauthorized or harmful deposit, treatment, or disposal of waste.[145] The Act further imposes a duty of care on those responsible for producing, importing, carrying, keeping, treating, or disposing of controlled waste.[146] They are obligated to take certain measures. These measures include preventing contraventions of environmental regulations, avoiding the escape of waste from their control, and ensuring that waste transfers occur only to authorized persons or for authorized transport purposes.[147] The Environmental Permitting Regulations (England and Wales) 2016, on the other hand, establish environmental permitting requirements related to waste management.[148] Also, the Waste Management Licensing Regulations 2011 govern waste management in Scotland and include licensing requirements.[149] And the Environment Act 2021 (Part 3) empowers the UK government to establish EPR schemes and

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141. *Id.* at 2.

142. WORLD BANK, THE ROLE OF EXTENDED PRODUCER RESPONSIBILITY SCHEMES FOR PACKAGING TOWARDS CIRCULAR ECONOMIES IN APEC 15 (2022).

143. DEP'T FOR ENV'T, FOOD & RURAL AFFS., INTRODUCING A DEPOSIT RETURN SCHEME FOR DRINKS CONTAINERS IN ENGLAND, WALES AND NORTHERN IRELAND 29 (2023).

144. *Id.* at 5.

145. RICHARD G.P. HAWKINS & HEIDI S. SHAW, THE PRACTICAL GUIDE TO WASTE MANAGEMENT LAW 175 (Thomas Telford 2004).

146. Environmental Protection Act 1990, c. 43, § 34(1) (Eng. & Wales).

147. *Id.* § 34(1A)–(2A).

148. The Environmental Permitting (England and Wales) Regulations 2016, SI 2016/1154, reg. 12 (UK).

149. Environment Act 2021, c. 30, § 50, sch. 4 (UK); Environment Act 2021, c. 30, § 54, sch. 8 (U.K).

DRS.[150] It aims to improve recycling system consistency, reform controls on plastic waste exports, and implement charges for single-use plastics.[151] Logically, reducing the amount of plastic waste will, in turn, decrease the potential sources of airborne microplastics. However, there is still the need for specific policies and laws that will target the production, distribution, and usage of plastics that can easily degrade into airborne plastics.[152]

This need stems from the fact that the scope of DRS is limited to specific types of containers such as polyethylene terephthalate bottles and aluminium cans.[153] This restricted focus entails that other sources of airborne plastics such as synthetic textiles and smaller plastic items will not be addressed. Though DRS may reduce the littering of in-scope containers, it does not address the many ways through which a microplastic becomes airborne. On a similar end, the Environmental Protection Act 1990, along with subsequent regulations, like the Environmental Permitting (England & Wales) Regulations 2016 and the Waste Management Licensing (Scotland) Regulations 2011, did not address the problems that are associated with airborne microplastic in its provision. These measures did not cover the dynamic nature of airborne microplastic, which can emanate from different sources like domestic activities, industrial emissions, or tyre wear. On another end, the Environmental Act of 2021 did not provide provisions that would help mitigate the emission of microplastics into the air. It did not provide for any monitoring mechanism that would help in reducing the concentration of airborne microplastics. This shows its limitations and gaps regarding airborne microplastics.

The correlation between litter prevention and the reduction of airborne microplastics is a complex issue requiring careful consideration. While a direct causal link is challenging to establish definitively, it is reasonable to hypothesize that reducing litter can contribute to a decrease in airborne microplastics. Litter, particularly plastic waste, is a significant source of microplastics in the environment.[154] Wind, rain, and other environmental factors can break down plastic litter into smaller particles, which can later

150. Olivia Jamison et al., *Plastics and Packaging Laws in the United Kingdom*, CMS LEGAL, https://cms.law/en/int/expert-guides/plastics-and-packaging-laws/united-kingdom (last updated Mar. 5, 2024).

151. Environment Act 2021, c. 30, §§ 57, 62 (UK).

152. Spyridoula Gerassimidou et al., *Unpacking the Complexity of the UK Plastic Packaging Value Chain: A Stakeholder Perspective*, 30 SUSTAINABLE PROD. & CONSUMPTION 657, 668 (2022).

153. *Deposit Return Scheme*, CITIZENS INFO., https://www.citizensinformation.ie/en/environment/waste-and-recycling/deposit-return-scheme/ (last updated Jan. 24, 2025).

154. Nematollah Jaafarzadeh et al., *Study of the Litter in the Urban Environment as Primary and Secondary Microplastics Sources*, 14 SCI. REPS., Dec. 30, 2024, at 1, 3.

become airborne.[155] Preventing litter reduces the potential for these microplastics to enter the atmosphere.[156] Moreover, litter can act as a transport mechanism for microplastics, carrying them to new locations where they eventually become airborne.[157] Reducing litter can potentially contribute to a decrease in the total concentration of airborne microplastics.[158] It is therefore essential to acknowledge that this relationship is influenced by various factors, including the type of plastic, the size of litter items, and local environmental conditions. Less litter means fewer plastic items entering ecosystems, potentially harming wildlife and contaminating water sources.[159] A DRS is anticipated to significantly reduce littering of in-scope containers, such as small plastic bottles and non-alcoholic cans. The UK DRS provides a financial incentive to consumers to return containers, encouraging proper disposal, and reducing littering.[160] Addressing litter can contribute to the UK government's Levelling Up agenda, which aims to reduce regional inequalities.[161]

The cleaning and processing of returned containers can also introduce microplastics into the environment if not managed carefully. Abrasion from cleaning equipment, the use of cleaning chemicals, and the breakdown of plastic during recycling processes all contribute to microplastic formation.[162] To mitigate these risks, stringent guidelines and regulations must be in place for the operation of DRS facilities. Further, the transportation of collected containers to recycling centres presents another potential source of microplastics.[163] Tyre wear, brake dust, and road debris contribute to microplastic pollution, even during the collection process.[164] Research shows that tyre wear particles are an important source of microplastics and indicates that large amounts of them are transported from the road surface into the

155. Frederic Gallo et al., *Marine Litter Plastics and Microplastics and Their Toxic Chemicals Components: The Need for Urgent Preventive Measures*, 30 ENV'T SCI. EUR., Apr. 18, 2018, at 1, 1–3.

156. *Id.*

157. Yanfang Li et al., *A Review of Possible Pathways of Marine Microplastics Transport in the Ocean*, 3 ANTHROPOCENE COASTS 6, 7–8 (Jan. 24, 2020).

158. *Id*.

159. Rakesh Kumar et al., *Impacts of Plastic Pollution on Ecosystem Services, Sustainable Development Goals, and Need to Focus on Circular Economy and Policy Interventions*, 13 SUSTAINABILITY, Sept. 6, 2021, at 1, 2.

160. Environment Act 2021, c. 30, SS 54, sch. 8 (UK).

161. Mark Fransham et al., *Level Best? The Levelling Up Agenda and UK Regional Inequality*, 57 REG'L STUD. 2339, 2339–40 (2023) (defining the UK's 'levelling up' agenda as a policy programme focused on reducing regional inequalities).

162. Yet Yin Hee et al., *The Effect of Storage Conditions and Washing on Microplastic Release from Food and Drink Containers*, 32 FOOD PACKAGING & SHELF LIFE, June 2022, at 1, 4.

163. Marie Enfrin et al., *Paving Roads with Recycled Plastics: Microplastic Pollution or Eco-Friendly Solution?*, 437 J. HAZARDOUS MATERIALS 129, 334 (2022).

164. *Id.*

stormwater and air.[165] A combination of vehicle emission standards, tyre regulations, road infrastructure improvements, and the transition to electric vehicles can contribute to a more sustainable and environmentally friendly transportation sector.[166]

Synergies between DRS and other policies can amplify their impact. For example, stricter regulations on plastic production and usage can complement DRS by reducing the amount of plastic entering the waste stream.[167] Additionally, investments in waste management infrastructure and research into microplastic capture technologies can enhance the effectiveness of DRS in mitigating airborne microplastics. However, potential conflicts may also arise. For instance, if DRS leads to increased transportation of plastic materials, it could inadvertently contribute to air pollution and greenhouse gas emissions. Such negative consequences could be avoided with careful planning.

Now, effective enforcement and monitoring are important if DRS is going to be successful in reducing airborne microplastics.[168] This is possible with robust compliance mechanisms to ensure that producers, retailers, and consumers fulfil their obligations under the scheme. Regular inspections of DRS facilities, including collection points and recycling centres, will help to identify potential sources of microplastic pollution and ensure adherence to environmental regulations. Additionally, monitoring the quality of recycled materials can prevent the introduction of microplastics back into the supply chain. In this regard, data collection and analysis are essential for tracking the environmental impact of DRS so that the scheme's effectiveness can be monitored to identify areas for improvement. There's also another factor at play: public awareness. Education campaigns and encouragement can influence consumer sentiment towards DRS participation. Such awareness can be effective since the plastic problem is a serious health issue and proper disposal acts as a solution.

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165. Hee et al., *supra* note 162, at 2.

166. *See* INGVILD SKUMLIEN FURUSETH & ELISABETH STØHLE RØDLAND, REDUCING THE RELEASE OF MICROPLASTIC FROM TIRE WEAR: NORDIC EFFORTS 10 (2020); Ilka Gehrke et al., *Review: Mitigation Measures to Reduce Tire and Road Wear Particles*, 904 SCI. TOTAL ENV'T, Aug. 2023, at 1, 19–20.

167. Caterina Picuno et al., *The Potential of Deposit Refund Systems in Closing the Plastic Beverage Bottle Loop: A Review*, 212 RES., CONSERVATION & RECYCLING, Jan. 2025, at 1, 9.

168. Graham Butler, *Deposit Return Schemes of EU Member States and the EU's Internal Market*, 34 REV. EUR. COMPAR. & INT'L ENV'T L. 101, 103 (2025).

D. Single-Use Plastics Directive

The Single-Use Plastics Directive (SUPD) has limited applicability in the UK. The UK, having left the EU, is generally not obligated to transplant EU directives, including the SUPD, into domestic law.[169] Under the Northern Ireland Protocol—which governs the relationship between Great Britain and Northern Ireland to address issues related to the Irish border—certain provisions of EU law, including those from the SUPD, continue to apply to Northern Ireland.[170] Specific provisions of the SUPD had to be transposed into Northern Ireland law by January 1, 2022.[171] The transposition in Northern Ireland included measures to reduce the consumption of plastic cups and food containers.[172] There was a requirement to restrict the placing on the market (i.e., bans) of certain single-use plastic products.

On 1 June 2022, Scotland implemented a ban on several single-use plastic products, including plastic cutlery, plates, straws, beverage stirrers, and balloon sticks.[173] The Scottish Government estimated that approximately 700 million of these items were used annually in Scotland[174]

This legislation, introduced during COP26, includes exemptions for single-use plastic straws to ensure that individuals with medical or independent living needs have access to these items.[175] Before the enforcement of the ban, a six-month grace period was provided, alongside a business awareness campaign that was led by Zero Waste Scotland.[176] However, the Scottish government encountered challenges under the UK Internal Market Act that threatened the effectiveness of the ban.[177] Despite securing an exclusion from the Act, it came into force one month after June 1,

169. Jamison et al., *supra* note 150.

170. *Windsor Framework Explained*, EUR. COUNCIL, https://www.consilium.europa.eu/en/policies/windsor-framework-explained/ (last updated May 28, 2025).

171. Jamison et al., *supra* note 150.

172. *Id.*

173. *Single Use Plastics Ban*, SCOTTISH GOV'T (June 1, 2022), https://www.gov.scot/news/single-use-plastics-ban/ (stating that the ban covers "plastic cutlery, plates and stirrers" and that "[a]round 700 million of these single-use items are currently used in Scotland every year").

174. Scottish Government, Environmental Protection (Single-use Plastic Products) (Scotland) Regulations 2021: Guidance (2022) Section B, ¶ 3.

175. *Id.*

176. *Single-Use Plastic Products (Scotland) Regulations 2021*, ZERO WASTE SCOT. (Mar. 21, 2023), https://www.zerowastescotland.org.uk/resources/single-use-plastic-products-scotland-regulations-2021.

177. Damon Davies, *Scotland's Ban on Single-Use Plastics: A Case Study of the Impact of the UK Internal Market Act*, SPICE SPOTLIGHT (Oct. 27, 2022), https://spice-spotlight.scot/2022/10/27/scotlands-ban-on-single-use-plastics-a-case-study-of-the-impact-of-the-uk-internal-market-act/.

2022.[178] The objective is to encourage businesses to adopt reusable alternatives, reduce litter, and curb emissions, with enforcement entrusted to local authorities and a maximum fine of £5,000 for noncompliance.[179]

Minimum charges for single-use carrier bags have been in effect across the UK for several years, but the specific charges have varied by region. On October 1, 2011, Wales became the first UK country to introduce a charge for single-use carrier bags. The introduction of the 5 pence charge has had a real impact on their use in Wales.[180] In Scotland, the Scottish Parliament passed legislation on October 20, 2014 (amended April 1, 2021) that requires all retailers (food and non-food) to "charge a minimum of 10p for each new single-use carrier bag (including paper, those made from some plant-based materials and plastic)."[181] Starting from October 2015, businesses in the UK implemented a charge of 5 pence (equivalent to $0.15–0.20 USD) for each single-use plastic carrier bag.[182] To circumvent this fee, consumers have the option of using reusable bags for their purchases. The regulation applies to all enterprises with over 250 employees. As of May 21, 2021, the minimum charge for single-use plastic bags in England increased to ten pence.[183] These charges are part of efforts to reduce the use of single-use plastic bags and encourage the adoption of more sustainable alternatives.

In England, the ban on single-use products such as drinking straws, plastic-stemmed cotton buds, and plastic drink stirrers was implemented in stages. In October 2023, the ban was extended to include single-use plastic plates, trays, bowls, cutlery, balloon sticks, and expanded and extruded polystyrene foods and drink containers.[184] In Scotland, similar bans are in place.[185] While the Scottish government has considered banning oxo-degradable plastic products, a definitive ban on these items has not been

178. *Single-Use Plastic Products (Scotland) Regulations 2021*, supra note 176.

179. *Id.*

180. *Public Willingness to Pay for Carrier Bags in Wales (Summary)*, WELSH GOV'T (Nov. 4, 2021) https://www.gov.wales/public-willingness-pay-carrier-bags-wales-summary-html (The levy was first introduced in 2013 to help improve the environment by encouraging the reuse of carrier bags, and by preventing the unnecessary buying of bags).

181. *Single-Use Carrier Bags Charge (Scotland)*, ZERO WASTE SCOT. (Mar. 21, 2023), https://www.zerowastescotland.org.uk/resources/single-use-carrier-bags-charge-scotland.

182. Ndubuisi Nwafor & Tony R. Walker, *Plastic Bags Prohibition Bill: A Developing Story of Crass Legalism Aiming to Reduce Plastic Marine Pollution in Nigeria*, 120 MARINE POL'Y, Aug. 2, 2020, at 1, 6.

183. *Carrier Bag Charges: Retailers' Responsibilities*, DEP'T FOR ENV'T, FOOD & RURAL AFFS. (July 28, 2025), https://www.gov.uk/guidance/carrier-bag-charges-retailers-responsibilities.

184. *Single-Use Plastics Bans and Restrictions*, DEP'T FOR ENV'T, FOOD & RURAL AFFS. (Oct. 7, 2024), https://www.gov.uk/guidance/single-use-plastics-bans-and-restrictions.

185. SCOTTISH GOV'T, ENVIRONMENTAL PROTECTION (SINGLE-USE PLASTIC PRODUCTS) (SCOTLAND) REGULATIONS 2021 (2022).

confirmed.[186] Meanwhile, the Welsh government is introducing legislation to restrict the sale and supply of certain single-use plastics, including items banned in England and Scotland.[187]

Under the Environmental Act 2021, the UK introduced charges for any single-use plastic item, providing the potential for new charges in the future. The Act includes provisions enabling the government to modify rules within producer responsibility schemes.[188] It stipulates that individuals engaged in the manufacture, processing, distribution, or supply of products or materials may be obligated, through regulations, to financially support or contribute to the expenses associated with the disposal of such items. The objective is to create a compelling motivation for producers of packaging to carefully assess the consequences of their products after consumers discard them.[189] However, the commendable inroads made in single-use plastic regulations and policies cannot be effective in the governance of airborne plastic. Single-use plastics are less problematic, easily identifiable, and tailor-made for positive legislation. By contrast, airborne plastic is difficult to classify and elusive to remediate.[190] Single-use plastic legislation will be ineffective in tackling the myriad of sources and transboundary characteristics of airborne plastic.

III. LEGAL FRAMEWORK IN THE EUROPEAN UNION

Following Brexit, the United Kingdom (UK) is no longer part of the European Union (EU);[191] However, it is worth exploring the comparative legal frameworks for plastics governance to evaluate the position of airborne plastics governance in the region. Within the EU, a comprehensive legal framework has been established to address plastic pollution and enhance waste management practices. EU directives and regulations cover various aspects, including the reduction of single-use plastics, recycling targets, and

186. *See* SANDHYA DEVALLA, THE JAMES HUTTON INST., REVIEW OF EVIDENCE ON OXO-BIODEGRADABLE PLASTIC PRODUCTS 2 (2022) (discussing the EU ban on ox-degradable plastics and their impact on the environment).

187. The Environmental Protection (Single-use Plastic Products) Act 2023 (Wales).

188. Environment Act 2021, c. 30, § 50, sch. 4 (UK).

189. Memorandum from the Dep't for the Env't, Food and Rural Affairs to the Delegated Powers and Regul. Reform Comm. (Jan. 30, 2020), ¶ 57.

190. Hannah Tiernan et al., *Implementation of a Structured Decision-Making Framework to Evaluate and Advance Understanding of Airborne Microplastics*, 135 ENV'T SCI. & POL'Y 169, 170–72 (2022) (noting that airborne microplastics present significant knowledge gaps and obstacles to effective action and remediation).

191. Matthias Matthijs, *Europe After Brexit: A Less Perfect Union*, 96 FOREIGN AFF. 85, 85 (2017).

measures to promote a circular economy. Several extant EU policies and directives are discussed below.

First, the Packaging and Packaging Waste Directive[192] sets out measures to prevent or reduce the impact of packaging on the environment.[193] It includes targets for the recovery and recycling of packaging waste, as well as provisions for the use of environmentally friendly packaging materials. The EU Directive aligns with the goals of the UK Packaging Regulations, by holding businesses accountable for packaging reduction, recycling, and recovery. Member States are mandated to establish Extended Producer Responsibility (EPR) schemes for all packaging by the end of 2024.[194] The European Commission's proposal in November 2022 seeks to review and repeal the EU Directive, focusing on waste prevention, recyclability goals by 2030, and increased use of recycled plastics in packaging.[195] The proposal also mandates Member States to introduce Deposit Return Schemes (DRS) for single-use plastics and metal beverage containers by January 1, 2029.[196] This Directive cannot be used to tackle the menace of airborne plastics, which will need specific laws to confront the novel issues emanating from airborne plastics in the atmosphere.

Second, the Single-Use Plastics Directive aims to reduce the impact of certain plastic products on the environment,[197] particularly in the marine environment, by restricting the production and consumption of single-use plastics.[198] It includes measures such as bans on certain single-use plastic products and the promotion of EPR schemes. The EU's Circular Economy Action Plan likewise promotes a transition to a circular economy through sustainable use and recycling of materials, including plastics.[199] It sets targets for recycling and emphasizes the importance of reducing plastic waste. The

192. Council Directive 94/62/EC.

193. Council Directive 94/62/EC, 1994 O.J. (L 365) 10; Guillaume Ragonnaud, *Revision of the Packaging and Packaging Waste Directive*, EUR. PARL. RSCH. SERV., PE 745.707 at 2 (Apr. 2024).

194. Shari Lorang et al., *Achievements and Policy Trends of Extended Producer Responsibility for Plastic Packaging Waste in Europe*, 4 WASTE DISPOSAL & SUSTAINABLE ENERGY 91, 98 (2022).

195. Hazel O'Keeffe, *EU Proposal for a Regulation on Packaging and Packaging Waste - the Highlights*, LEXOLOGY (Oct. 10, 2023), https://www.lexology.com/library/detail.aspx?g=04c4ae2f-c5b8-4ab8-8cf4-cf1086b4e89a.

196. *Id.*

197. Directive 2019/904, of the European Parliament and of the Council of 5 June 2019 on the Reduction of the Impact of Certain Plastic Products on the Environment, 2019 O.J. (L 155) 1.

198. *Single-Use Plastics*, EUR. COMM'N, https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en (last visited Apr. 2, 2026).

199. *See Circular Economy*, EUR. COMM'N, https://environment.ec.europa.eu/strategy/circular-economy_en (last visited Apr. 2, 2026); *The EU's Circular Economy Action Plan*, ELLEN MACARTHUR FOUND. (Jan. 12, 2022), https://www.ellenmacarthurfoundation.org/circular-examples/the-eus-circular-economy-action-plan.

focus of this Directive is not on airborne plastics, and any such interpretation may result in stretching the regulation to absurdity.

Third, the Waste Framework Directive is a general directive without a specific category of waste target that establishes a legal framework for waste management in the EU.[200] It includes provisions on waste prevention, recycling, and the proper disposal of waste. Member States are required to develop waste management plans to achieve specific targets. Article 10(2) of the Waste Framework Directive sets out a general requirement for separate collection and obliges Member States to set up separate collection systems for at least paper, metal, plastic, and glass by 2015.[201] In addition, Article 11(1) sets out requirements for Member States to take measures to promote high-quality recycling through separate collection.[202] While this Directive can generally serve as a foundation for further regulatory action regarding control of sources of airborne plastics, microplastics, and nanoplastics—which are the main sources of airborne plastics—may not be subject to separate collection control.

Fourth, the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation is another interesting legal instrument in the EU. While not specific to plastics, the regulation addresses the foundational materials for plastic.[203] It plays a role in regulating the use of certain chemicals in plastic products to protect human health and the environment. This Regulation assigns the industry responsibility for risk management of chemicals and the provision of safety information on substances. Manufacturers and importers must collect data on the properties of their chemical substances and register this information in a central database at the European Chemicals Agency.[204] This regulation has no direct connection with airborne plastics but may be useful in tracking the chemicals that are used in the production of synthetic fibres—which are a major source of airborne pollution. Synthetics originated exclusively from synthetic

200. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and Repealing Certain Directives, 2008 O.J. (L 312) 3; *Waste Framework Directive*, EUR. COMM'N, https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en (last visited Apr. 2, 2026).

201. Nicole Seyring et al., *Assessment of Collection Schemes for Packaging and Other Recyclable Waste in European Union-28 Member States and Capital Cities,* 34 WASTE MGMT. & RSCH. 947, 947–56 (2016).

202. Council Directive 2008/98/EC, art. 11, 2008 O.J. (L 312) 3.

203. Regulation (EC) No 1907/2006; *REACH Regulation*, EUR. COMM'N, https://environment.ec.europa.eu/topics/chemicals/reach-regulation_en (last visited Apr. 2, 2026).

204. *REACH—Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals*, EUR. AGENCY FOR SAFETY & HEALTH AT WORK, https://osha.europa.eu/en/themes/dangerous-substances/reach (last visited Apr. 2, 2026).

resources like fossil fuels or petroleum products.[205] Synthetic fibres include nylon (polyamide), polyester, spandex, olefin, acrylic, and these types of materials are wrinkleless, stain-free, and pest-resistant.[206] They can be broken down to form microplastics.

In conclusion, the EU, just like the UK, is still struggling with how to respond to the emerging challenges of airborne plastic. Up-to-date legislation should be enacted to serve as a model legal instrument which will specifically regulate the intricate nuances and peculiar characteristics of airborne plastic.

IV. GLOBAL LEGAL INSTRUMENTS

The global legal landscape governing plastic pollution is shaped by international agreements and conventions. This Part examines key global legal instruments that address the transboundary nature of plastic pollution. Notably, no international treaty or agreement specifically targets airborne microplastics. Global environmental agreements, such as the Stockholm Convention on Persistent Organic Pollutants or the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, touch upon aspects of plastic pollution, but they do not specifically address airborne microplastics.

First, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal[207] has the objective of regulating the transboundary movement of hazardous waste, including plastic waste, to prevent and minimize its generation and ensure environmentally sound management.[208] In 2019, the Conference of the Parties to the Basel Convention adopted two important decisions in a bid to tackle plastic waste. These steps have strengthened the Basel Convention as "the only global legally binding instrument to specifically address plastic

205. John C. Ruth & Gregory Stephanopoulos, *Synthetic Fuels: What Are They and Where Do They Come From?*, 81 CURRENT OP. BIOTECH., June 2023, at 2.

206. Jamal Akhter Siddique & Ayaz Mohd, *Coir Fiber-Based Nanocomposites: Synthesis and Application*, *in* COIR FIBER AND ITS COMPOSITES: PROCESSING, PROPERTIES AND APPLICATIONS 273, 274 (Mohammad Jawaid ed., 2022).

207. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal annex II, VIII, IX, U.N. Doc. UNEP/BRS/2014/3 (2014) (Basel Convention 1992 (as amended), Annex II, VIII, IX categorised plastic wastes based on their hazard levels and ability to be recycled. Basel Convention 1992 (as amended), Annex II also required prior informed consent for the export of mixed or contaminated plastic waste, which helps ensure such waste is managed in an environmentally sound manner.).

208. Katharina Kummer Peiry, *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*, U.N. AUDIOVISUAL LIBR. OF INT'L L. 1, 4 (2010), https://legal.un.org/avl/pdf/ha/bcctmhwd/bcctmhwd_e.pdf.

waste."[209] Similarly, the Plastic Waste Amendments to the Basel Convention (effective January 1, 2021) aim to regulate the transboundary movement of certain categories of plastic waste to reduce the environmental impact of plastic pollution.[210] The amendments expand the scope of the Basel Convention to include specific plastic waste categories and enhance controls on their transboundary movements.[211] The amendments address specific categories of plastic waste, ensuring tighter controls and environmentally sound management, which can directly impact the generation of airborne microplastics.[212] The Basel Convention addresses the global trade in plastic waste and aims to minimize its impact on the environment and human health. However, the future of airborne plastics and its global implications cannot be subjected to a one-stop shop-like convention that cannot prevent sources of airborne plastics or troubleshoot its many complexities.

Second, the Stockholm Convention on Persistent Organic Pollutants (POPs) aims to control and eliminate the production, use, and release of POPs, including certain plastic additives and byproducts.[213] The Stockholm Convention contributes to reducing the environmental impact of specific plastic-related chemicals that can persist and bioaccumulate. POPs contribute to the environmental persistence and bioaccumulation of plastic-related chemicals.[214] The Convention's provisions may contribute to mitigating the impact of airborne microplastics by regulating specific chemicals associated with plastics. Nevertheless, the Convention is not designed to regulate

209. *Plastic Waste: Overview*, BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES & THEIR DISPOSAL, https://www.basel.int/Implementation/Plasticwaste/Overview/tabid/8347/Default.aspx (last visited Apr. 7, 2026).

210. *Basel Convention Plastic Waste Amendments*, BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES & THEIR DISPOSAL, https://www.basel.int/Implementation/Plasticwaste/Amendments/Overview/tabid/8426/Default.aspx (last visited Apr. 7, 2026); Emily Benson & Sarah Mortensen, *The Basel Convention: From Hazardous Waste to Plastic Pollution*, CTR. FOR STRATEGIC & INT'L STUD. (Oct. 7, 2021), https://www.csis.org/analysis/basel-convention-hazardous-waste-plastic-pollution.

211. Eva Romee van der Marel, *Trading Plastic Waste in a Global Economy: Soundly Regulated by the Basel Convention?*, 34 J. ENV'T L. 477, 481–482 (2022).

212. Priscilla Boccia et al., *Potential Effects of Environmental and Occupational Exposure to Microplastics: An Overview of Air Contamination*, 12 TOXICS, Apr. 2024, at 1, 2.

213. Stockholm Convention on Persistent Organic Pollutants (POPs) art. 9, U.N. Doc. UNEP/BRS/2025/7 (2025) (Article 3 aims to restrict the production and use, as well as the import and export, of the intentionally produced POPs that are listed in Annex B to the Convention. Article 5 aims to reduce or eliminate releases from unintentionally produced POPs that are listed in Annex C to the Convention. Article 6 aims to ensure that stockpiles and wastes consisting of, containing, or contaminated with POPs are managed safely and in an environmentally sound manner.)

214. Hongrui Zhao et al., *Organic Pollutants Associated with Plastic Debris in Marine Environment: A Systematic Review of Analytical Methods, Occurrence, and Characteristics*, INT'L J. ENV'T RES. PUB. HEALTH, Mar. 2023, at 1, 12–13.

airborne plastics and will be ineffective in tackling its health and environmental impacts.

Third, the United Nations Environment Programme (UNEP) Resolutions on Marine Litter and Microplastics aims to address marine litter, including plastics, through international cooperation and the development of strategies to prevent and reduce marine plastic pollution.[215] UNEP resolutions contribute to global efforts to combat marine plastic pollution, emphasizing prevention, cleanup, and sustainable management.[216] Strategies for preventing and reducing marine litter, as promoted by UNEP, inherently address sources that can contribute to airborne microplastics, especially in coastal and terrestrial environments.[217] Unfortunately, the main emphasis of this resolution is marine plastics and not airborne plastics. It can be of ancillary benefit, but it cannot be relied upon to govern airborne plastics.

Additionally, the Plastics Pollution Prevention Alliance (PPPA) aims to promote international cooperation and partnerships to address plastic pollution, focusing on prevention, cleanup, and sustainable management.[218] The PPPA is a voluntary initiative that seeks to mobilize action across sectors and stakeholders to address the global challenge of plastic pollution.[219] Prevention and sustainable management practices advocated by PPPA contribute to reducing the presence of plastics in the environment, thereby mitigating potential sources of airborne microplastics. Presently, the UNEA Resolution 5/14[220] mandated the Executive Director of the UNEP to convene an Intergovernmental Negotiating Committee (INC) dedicated to formulating an international legally binding instrument on plastic pollution, with a focus on the marine environment.[221]

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215. United Nations Environment Assembly, *Marine Plastic Litter and Microplastics*, U.N. DOC. UNEP/EA.2/Res.11 (Aug. 4, 2016).

216. Peter Stoett et al., *Global Plastic Pollution, Sustainable Development, and Plastic Justice*, 184 WORLD DEV., Aug. 2024, at 1, 2.

217. Jahanggir Alam & Mostafizur Rahman, *Various Conventional and Advanced Management Techniques and Policies Adopted at the Global Level for Microplastics*, *in* MICROPLASTICS 429, 435 (2025); Luis M. García-Marín & Miguel E. Rentería, *Fighting Plastic Pollution with a Circular Economy Roadmap and Strategy: Addressed to the United Nations Environment Programme*, J. SCI. POL'Y & GOVERNANCE, Apr. 2024, at 1, 2–3.

218. *UNDP and Rare Announce Partnership to Address Plastic Pollution*, U.N. DEV. PROGRAMME (May 10, 2023), https://www.undp.org/news/undp-and-rare-announce-partnership-address-plastic-pollution.

219. Sarah Maria Denta, *Public-Private Partnership for the Climate: From a Plastic Pollution Perspective*, 16 EUR. PROCUREMENT & PUB. PRIV. P'SHIP L. REV. 318 (2021).

220. United Nations Environment Assembly, *End Plastic Pollution: Towards an International Legally Binding Instrument*, U.N. Doc. UNEP/EA.5/Res.14, at 3 (Mar. 2, 2022).

221. *Intergovernmental Negotiating Committee on Plastic Pollution*, U.N. ENV'T PROGRAMME, https://www.unep.org/inc-plastic-pollution (last updated Mar. 17, 2026).

The INC is responsible for bringing together representatives from various countries to negotiate and draft the terms of the treaty. The negotiations focus on developing a comprehensive approach that covers the entire life cycle of plastic, including its production, design, use, and disposal.[222] The goal is to establish effective measures to reduce plastic pollution globally. As of April 2024, INC had its fourth session (INC-4), which took place in Ottawa, Canada, with a focus on refining the treaty's text.[223] The fifth session (INC-5) occurred in Busan, South Korea, in November 2024, when delegates were unable to reach a final agreement on the treaty. Key points covered in the session included the scope of the treaty, the balance between binding and voluntary measures, and the mechanisms for implementation and enforcement.[224] The reason for the delay in this treaty's implementation can be linked to the diverse national interests of the delegates of various countries. They hold different opinions on issues like production caps, waste management responsibilities, and financial commitment.[225] However, issues of airborne plastics have not been given priority in the ongoing negotiations, and this has deprived the UK of keying into any international legal instrument as a model law for its regulatory framework for airborne plastics.[226]

The draft treaty proposed setting reduction targets for the production and supply of primary plastic polymers.[227] This provision did not include any language addressing plastics that degrade into airborne particles during disposal, use, or incineration.[228] The draft treaty also provided for the elimination of emissions and releases from plastic polymers and products

222. News Wires, *Nations Agree to Draft Landmark UN Treaty Against Plastic Pollution by End of 2023*, FR. 24 (Mar. 6, 2023), https://www.france24.com/en/environment/20230603-un-agrees-to-draft-landmark-treaty-against-plastic-pollution-by-end-of-2023.

223. Press Release, U.N. Env't Programme, Pivotal Fourth Session of Negotiations on a Global Plastics Treaty Opens in Ottawa (Apr. 24, 2024), https://www.unep.org/news-and-stories/press-release/pivotal-fourth-session-negotiations-global-plastics-treaty-opens.

224. International Institute for Sustainable Development, *Summary of the First Session of the Fifth Session of the Intergovernmental Negotiating Committee to Develop an International Legally Binding Instrument on Plastic Pollution: 25 November – 2 December 2024*, 36 EARTH NEGOTS. BULL., Dec. 3, 2024, at 1, 1.

225. Joyce Lee & Valerie Volcovici, *Countries Fail to Reach Agreement in UN Plastic Talks*, REUTERS (Dec. 2, 2024), https://www.reuters.com/business/environment/over-100-countries-back-plastic-treaty-caps-talks-reach-fierce-finish-2024-11-30/.

226. Global Plastics Policy Centre, Researchers Warn the UK is Falling Behind International Efforts as Microplastics Infiltrate Food, Bodies and Ecosystems, Univ. of Portsmouth (May 6, 2025) https://www.port.ac.uk/news-events-and-blogs/news/researchers-warn-the-uk-is-falling-behind-international-efforts-as-microplastics-infiltrate-food-bodies-and-ecosystems.

227. United Nations Environment Programme, *Zero Draft Text of the International Legally Binding Instrument on Plastic Pollution, Including in the Marine Environment*, U.N. Doc. UNEP/PP/INC.3/4, at 7 (Sept. 4, 2023).

228. *Id.*

across their life cycle, but it did not address airborne plastics as a distinct category.[229] It failed to give explicit guidelines for reducing microplastics that are released into the atmosphere during activities like road traffic, industrial processes, or open burning. In addition, the section talked about tackling the issues surrounding trades in chemicals, polymers, and plastic products, which includes controls on exports to ensure environmental soundness and compliance.[230] Regrettably, the provision does not cover products that contribute to airborne microplastics such as certain consumer goods and industrial emissions. Also, the focus of the treaty is solely on land and water pollution. No strategies were carved for preventing microplastics from entering the air during the handling of waste, which may come in the way of improper disposal or incineration.

After the stalled talks during the INC-5 meeting in November 2024, a Revised Text Proposal (Revised Text) was introduced on August 15, 2025, by the INC Chair to help build consensus among States.[231] The new draft is a definite movement towards a comprehensive lifecycle approach. From the beginning, it sets out a clear objective of the agreement as being one of protecting the environment, as well as human health affected by plastic pollution with a full lifecycle approach.[232] This comprises periods from production, use, and discard through to its degradation into microplastics and release into the air.[233]

Following the revision, various parts of the Revised Text have become potentially relevant to airborne microplastics. With regard to plastic product design, the Revised Text sets out a requirement of improving design with a view to preventing leakages and emissions of microplastics.[234] Article 6—on releases and leakages—requires countries to make efforts to detect, prevent, reduce, and, if possible, eradicate release of plastics, including microplastics into the environment.[235] Although general, there is no provision on direct release detection and regulation of airborne microplastics. Article 7 specifically addresses open burning, dumping, and environmentally sound disposal of plastic wastes that are identified as sources of releases of

229. *Id.* at 14.

230. *Id.* at 16–17.

231. Intergovernmental Negotiating Comm. to Dev. an Int'l Legally Binding Instrument on Plastic Pollution, Including in the Marine Env't, *Chair's Revised Text Proposal* (Luis Vayas Valdivieso, Chair) art. 1 (Aug. 15, 2025) [hereinafter *Revised Text*].

232. *Id.*; *cf.* Nils Simon et al., *A Binding Global Agreement to Address the Life Cycle of Plastics*, 373 SCIENCE 43, 44 (2021).

233. Karen Raubenheimer et al., *Towards an Improved International Framework to Govern the Life Cycle of Plastics*, 27 REV. EUR., COMPAR. & INT'L ENV'T L. 210, 219 (2018).

234. *Revised Text*, *supra* note 231, at art. 5(1)(a)(ii).

235. *Id.* at art 6.

microplastics to the atmosphere, but not presented as an atmosphere pollution issue.[236]

The current Revised Text fails to specifically address airborne microplastics as a distinct priority. The lack of direct references to the atmospheric routes leaves major emissions sources, like road traffic abrasion, industrial, waste incineration, and burning, poorly defined.[237] Even the articles related to reducing production and phasing out of plastic products ignore the type of plastic that breaks down into airborne emissions throughout normal or end-of-life stages.[238]

Although the draft agreement has monitoring obligation provisions, it does not include an obligation to monitor air specifically for microplastics.[239] This might continue deregulation, especially until more evidence becomes available about the inhalational hazards of airborne microplastics. Additionally, while the Revised Text purports to impose binding obligations on member nations, it merely provides for reporting obligations without setting out sanctions for breach, the disciplinary body, and procedure for disciplinary actions against defaulters.[240] These omissions may render the Revised Text binding in name only.

Though a meaningful step toward a holistic global response to plastic pollution, the Revised Text stops short of establishing any firm legal basis for regulating the sources of airborne microplastics. The emerging treaty currently recognizes the atmosphere only as a secondary pathway for microplastic pollution. Instead of a direct, centralized focus on air, the treaty addresses atmospheric contamination through "indirect entry points," specifically within its full life-cycle approach and general provisions aimed at preventing releases and leakages into the environment at large.[241] The ramifications of such an omission are particularly serious for nations, such as the UK, that cannot readily look to the emerging treaty as a model framework

236. *Id.* at art 7(2)(d).

237. Ida Järlskog, Occurrence of Traffic-Derived Microplastics in Different Matrices in the Road Environment (2022) (Ph.D. dissertation, Chalmers University of Technology) (ProQuest).

238. *Revised Text, supra* note 231, at art. 4.

239. *Id.* at art.14, 15.

240. Reporting obligations under the draft Global Plastics Treaty (often referenced under Article 15) are designed to ensure transparency, accountability, and the effectiveness of measures taken to combat plastic pollution across its entire lifecycle. As of mid-2025, negotiations indicate that these obligations will be a core, mandatory component of the treaty, though the exact level of detail remains a contention among parties.

241. The draft global plastics treaty (Part II, Section 7) identifies indirect atmospheric contamination as unintentional emissions from the plastic lifecycle, specifically highlighting microplastics from tyre and textile wear, hazardous volatile organic compounds (VOCs), and the incineration of waste. These pathways are addressed under "Releases and leakages" by requiring national plans to control microplastics and hazardous chemical emissions throughout the full life cycle.

for regulating domestic sources of plastic pollution reaching the air. Until such time as airborne microplastics are explicitly and holistically dealt with in global legal instruments, they will continue to be under-regulated and a poorly-governed dimension of the plastic pollution crisis.[242]

V. AIRBORNE PLASTICS, TECHNOLOGY, INNOVATION, AND SUSTAINABLE DEVELOPMENT GOALS IN THE UK

The challenge of airborne microplastics is intricately linked to several Sustainable Development Goals (SDG). Addressing airborne microplastics requires a holistic approach that considers the interconnectedness of environmental, social, technological, and economic factors. The SDGs provide a blueprint for a sustainable future by addressing interconnected issues such as poverty, inequality, climate change, and social justice. SDGs 3 (Good Health and Well-being), 6 (Clean Water and Sanitation), 11 (Sustainable Cities and Communities), 13 (Climate Action), 14 (Life Below Water), and 15 (Life on Land) are particularly relevant to the challenge of airborne microplastics.[243] The United Kingdom's (UK) commitment to the SDGs is evident in its active participation in the global framework established by the 2030 Agenda.[244] Several major economies—including the UK—are investing in and implementing sustainable technological innovations to address the growing problem of airborne plastic pollution.[245] These initiatives aim to capture, filter, and reduce the generation of microplastics in the environment to aid its governance.[246] There are good examples of technological innovations that offer promising solutions to the present challenge. One example is air filtration systems. High-efficiency

242. Justine Ammendolia et al., *Atmospheric Microplastics Must Be Addressed in the Global Plastics Treaty*, 3 CAMBRIDGE PRISMS: PLASTICS, June 5, 2025, at 1, 3.

243. Nida Tabassum Khan, *Environmental Impact of Solid Waste Landfilling in Balochistan–A Risk Assessment for SDG 3 (Good Health and Well-Being), SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life Below Water) and SDG 15 (Life on Land)*, 2 GREEN BLDGS. & MATERIALS, Dec. 19, 2024, at 1, 1 (2024); Govindhasamay R. Varatharajan et al., *Emerging Contaminants: A Rising Threat to Urban Water and a Barrier to Achieving SDG-Aligned Planetary Protection*, 17 WATER 2367, 2368 (2025); Mariana Rodrigues et al., *Microplastics in Freshwater Systems: The Current Status to Achieve the Sustainable Development Goals Until 2030*, 18 INTEGRATED ENV'T ASSESSMENT & MGMT. 289, 290 (2022).

244. *See generally* Bandy X. Lee et al., *Transforming Our World: Implementing the 2030 Agenda Through Sustainable Development Goal Indicators*, 37 J. PUB. HEALTH POL'Y S13 (2016).

245. Mariana Rodrigues et al., *Microplastics in Freshwater Systems: The Current Status to Achieve the Sustainable Development Goals Until 2030*, 18 INTEGRATED ENV'T ASSESSMENT & MGMT. 289, 290 (2022).

246. Ben Williams et al., Embedding Citizens Within Airborne Microplastic and Microfibre Research, CAMBRIDGE PRISMS: PLASTICS, June 28, 2023, at 1, 2.

particulate air filters and specialized filters designed to capture microplastics are being installed in various settings, including public spaces, transportation systems, and industrial facilities.[247] Interestingly, there exists sensor technologies designed for microplastic detection. This can continuously monitor air quality and detect the presence of microplastics.[248] Another aspect of innovation is the design of sustainable materials.[249]

There is ongoing research on biodegradable and compostable alternatives to traditional plastics, reducing the root generation of microplastic waste.[250] If and where alternative materials are produced, the potential of the release of microplastics from plastic production, packaging, use, or even disposal will be greatly minimized, and the SDG cause would also be promoted. An example can be seen under SDG 11, Sustainable Cities and Communities.[251] The presence of airborne microplastics in urban environments pose significant risks to public health and quality of life.[252] Microplastics can accumulate in urban areas, contaminating air, water, and soil.[253] Addressing this issue requires sustainable urban planning, waste management strategies, and investments in air quality monitoring and improvement.

There are about ten targets for SDG 11.[254] Target 11.6, which aims to "reduce the adverse per capita environmental impact of cities," presents a significant legal challenge.[255] Addressing this target effectively requires a robust legal framework to guide urban development and environmental management. Existing environmental legislation, such as air quality

247. *Cf.* Chiu-Fan Chen et al., *Efficacy of HEPA Air Cleaner on Improving Indoor Particulate Matter 2.5 Concentration*, 19 INT'L J. ENV'T RSCH. & PUB. HEALTH 11517, 11525 (2022).

248. Ifeanyi Kingsley Egbuna et al., *Advancing Environmental Sustainability Through Emerging AI-Based Monitoring and Mitigation Strategies for Microplastic Pollution in Aquatic Ecosystems*, 22 WORLD J. BIOLOGY PHARMACY & HEALTH SCI. 91, 97 (2025).

249. *Id.*at 98.

250. Such as bioplastics, starch-based plastics, bamboo, and aliphatic polyesters. *See* "ZeroWaste," *The Contribution of Bioplastics to Environmental Sustainability*, GRAPHIC LEADER (Apr. 24, 2023) https://web.archive.org/web/20230424194535/https://www.thegraphicleader.com/opinion/columnists/the-contribution-of-bioplastics-to-environmental-sustainability.

251. G.A. Res. 70/1, ¶ 11.6 (Sept. 25, 2015) (establishing Target 11.6: "By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.").

252. *See* Wenjing Wu et al., *Characterization of Airborne Microplastics and Health Risks in High-Temperature Urban Streets: A Case Study of Nanjing City*, 496 J. HAZARDOUS MATERIALS, Sept. 15, 2025, at 1.

253. *Id.*

254. G.A. Res. 71/313, Work of the Statistical Commission Pertaining to the 2030 Agenda for Sustainable Development (July 6, 2017).

255. G.A. Res 70/1, Transforming Our World: The 2030 Agenda for Sustainable Development, (Sept. 25, 2015), Goal 11, Target 11.6.

standards and waste management regulations, provides the foundation for addressing urban environmental impacts. However, these laws may need to be strengthened to align with the specific goals of SDG 11.6. Furthermore, better urban-planning laws could promote sustainable development practices and reduce urban sprawl. Striking a balance between economic development and environmental protection is challenging. Legal frameworks must be designed to promote sustainable development that addresses both economic and environmental goals.[256] Investments in sustainable infrastructure—such as improved waste management systems and green spaces—can help mitigate the impact of airborne microplastics on urban environments.[257]

Also, central to addressing airborne microplastics is a robust research agenda aimed at understanding the behaviour, sources, and impacts of these particles. Investments in research and development are crucial for unravelling the complexities of microplastic formation, transportation, and deposition.[258] Technological advancements, particularly in the realms of air filtration, sensor technology, and materials science are promising for developing effective solutions.[259] Moreover, a transition to a circular economy focused on reducing, reusing, and recycling plastics is essential to curtailing the generation of microplastics. Together, these measures can promote SDG 15, Life on Land.[260] It is important to note that unrecycled plastics, which have degraded into airborne microplastics, can contaminate soil and impact terrestrial ecosystems, affecting plant growth, biodiversity, and soil health.[261] Under Target 15.1, protecting and restoring ecosystems mitigates the impacts of microplastic pollution. For example, healthy forests

256. Patricia Kameri-Mbote & Nkatha Kabira, *Engendering the Legal Framework for Environmentally Sustainable Development: Some Reflections*, 53 ENV'T POL'Y & L. 335, 336 (2023).

257. Tyler Irving, *Can Green Infrastructure Keep Microplastics Out of the Environment?*, WATER ONLINE, https://www.wateronline.com/doc/can-green-infrastructure-keep-microplastics-out-of-the-environment-0001 (last visited Apr. 8, 2026).

258. Xinran Zhao et al., *Airborne Microplastics: Occurrence, Sources, Fate, Risks and Mitigation*, 858 SCI. TOTAL ENV'T, Feb. 1, 2023, at 1.

259. Press Release, U.N. Env't Programme, Smart New Technologies Can Play a Vital Role in Addressing Plastic Pollution Crisis in Our Waters – New Study (Dec. 17, 2020), https://www.unep.org/news-and-stories/press-release/smart-new-technologies-can-play-vital-role-addressing-plastic; *cf.* Christine C. Gaylarde et al., *Indoor Airborne Microplastics: Human Health Importance and Effects of Air Filtration and Turbulence*, 3 MICROPLASTICS 653 (2024).

260. Kristian Syberg et al., *Circular Economy and Reduction of Micro(nano)plastics Contamination*, 5 J. HAZARDOUS MATERIALS ADVANCES, 2022, at 1, 3.

261. P.D. Dissanayake et al., *Effects of Microplastics on the Terrestrial Environment: A Critical Review*, 209 ENV'T RSCH., 2022, at 1, 8 (noting that while microplastics are known to alter soil physicochemical properties and rhizosphere interactions, the specific mechanisms of plant uptake and the long-term ecological impacts on terrestrial vegetation remain poorly understood and require more rigorous, multi-site field experimentation)

and wetlands can act as natural filters, removing pollutants (including airborne plastics) from the environment.[262]

Ultimately, fostering collaboration between academia, industry, and government is imperative for accelerating the translation of research findings into practical applications. Public-private partnerships can facilitate knowledge exchange, resource sharing, and the development of innovative solutions.[263] Additionally, supportive policy frameworks, including incentives for research and development, can stimulate investment in the creation and deployment of microplastic mitigation technologies.[264] The UK can position itself as a global leader in addressing the challenge of airborne microplastics by embracing SDGs in its innovation and investing in research and development.[265] Such efforts not only contribute to environmental sustainability but also create new economic opportunities and enhance the nation's reputation as a champion of technological advancement.

VI. GAPS AND REGULATORY CHALLENGES

Existing environmental regulations in the United Kingdom (UK) have primarily focused on managing plastic pollution in terrestrial and aquatic environments. Specific regulations addressing airborne plastics remain scarce, even though they represent a distinct category of microplastics.[266] Airborne plastics have the potential to travel long distances, making them a cross-boundary issue.[267] Existing regulations may not be fully equipped to address the complexities of airborne plastic pollution that transcends local and national boundaries.[268] The challenge for regulators also extends to

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262. Sunaga Natsu et al., *Accumulation of Airborne Microplastics on Forest Canopy Leaves: Insights from Trichomes and Epicuticular Waxes*, RSCH. SQUARE, Nov. 29, 2023, at 1, 2. Forest canopies capture billions of particles annually through adsorption onto leaf surfaces and epidermal waxes. Similarly, wetlands act as natural buffers, trapping atmospheric microplastics in their sediments and vegetation. *Id.*

263. Ahmad Luthfi & Muhammad Faqih Naufal, *Mapping the Public-Private Partnership Researches in Waste Management: A Bibliometric Analysis*, 1 J. TRANSFORMATIVE GOVERNANCE & SOC. JUST. 77, 81 (2023).

264. ORG. FOR ECON. COOP. & DEV., POLICIES TO REDUCE MICROPLASTICS POLLUTION IN WATER: FOCUS ON TEXTILES AND TYRES 1, 13 (2021).

265. *See* Dr. Stephanie Wright, *Understanding UK Airborne Microplastics Pollution: Sources, Pathways and Fate*, IMPERIAL COLL. LONDON, https://www.imperial.ac.uk/school-public-health/environmental-research-group/research/microplastics/understanding-uk-airborne-microplastics/ (last visited Apr. 3, 2026).

266. COMM. ON THE TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT, SUB-STATEMENT ON THE POTENTIAL RISK(S) FROM EXPOSURE TO MICROPLASTICS: INHALATION ROUTE 1, 26 (2024).

267. Yulan Zhang et al., *Atmospheric Microplastics: A Review on Current Status and Perspectives*, 203 EARTH SCI. REV., Feb. 2020, at 1, 2.

268. Ageel et al., *supra* note 24.

developing strategies and technologies capable of targeting and removing microplastics efficiently across various environments.

Many people may not be aware of the risks posed by airborne microplastics, limiting public support for regulatory measures and behavioural changes. Therefore, encouraging consumers to adopt sustainable practices and reduce their reliance on plastic products can be challenging.[269] There is also potential resistance from industries that rely on plastic products.

A primary challenge is international coordination. Where there is harmony in international regulations and standards for addressing airborne plastics, the UK could also benefit. This is particularly necessary due to the transboundary nature of airborne plastics. Even with such coordination, ensuring compliance becomes another hurdle.[270] Stricter and harsher penalty provisions in regulations can be compelling enough, but proper interpretation of such regulations for compliance is another aspect of the possible enforcement challenges.[271] Other regulatory challenges include monitoring and detection.[272] Developing accurate and affordable methods for monitoring and detecting airborne microplastics remains a challenge, not to mention the other related challenge of developing effective technologies for capturing and removing microplastics from the atmosphere.[273]

At a theoretical level, understanding the underlying drivers of microfibre fragmentation is paramount for devising comprehensive and targeted solutions. While existing legal regulations in the UK may not explicitly mention airborne plastics, they provide a foundation for managing plastic waste, which could indirectly contribute to addressing airborne plastic sources. Regulatory authorities can interpret and apply existing regulations to address novel challenges without the need for entirely new legislation. This perspective presents a challenge too; for instance, traditional cleanup methods designed for larger plastic items are likely ineffective for microplastics due to their small size.[274] Common methods such as manual removal or surface skimming may not adequately capture or address the vast

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269. *See* Laura Elizabeth Lansdowne, *Up in the Air: What Do We Know About Airborne Microplastics?*, TECH. NETWORKS (Dec. 9, 2024), https://www.technologynetworks.com/applied-sciences/articles/up-in-the-air-what-do-we-know-about-airborne-microplastics-393008.

270. *See generally International Cooperation on Plastic Pollution | Plastics and the Environment Series*, GENEVA ENV'T NETWORK, https://www.genevaenvironmentnetwork.org/resources/updates/international-cooperation-on-plastic-pollution/ (last updated Aug. 15, 2025).

271. *See id.*

272. Ageel et al., *supra* note 24.

273. Alexey Rednikin et al., Airborne Microplastics: challenges, Prospects, and Experimental Approaches, Atmosphere, Nov. 15, 2024, at 1, 21–22.

274. *Id.* at 22.

number of dispersed microplastic particles.[275] Implementing large-scale cleanup efforts may carry the risk of unintended ecological consequences. Furthermore, disturbing ecosystems during cleanup operations could potentially cause more harm than good, disrupting natural balance and biodiversity.[276] Policymakers may face difficulties in formulating effective regulations without comprehensive data on potential health risks.[277] Now, while the focus on health effects from ingestion and inhalation of airborne plastics emphasizes the importance of specific evidence in guiding policymaking, the lack of robust evidence-based data may hinder the ability to implement targeted measures to protect public health.[278]

The Microfibre Consortium's fibre-reduction roadmap highlights existing efforts within the industry to reduce microplastic releases, particularly from clothing.[279] Leveraging and expanding such initiatives can be seen as an easy win in the sense that they provide a foundation for addressing airborne plastics without starting from scratch. From a practical perspective, regulatory frameworks, waste management strategies, and sustainable production practices can be instrumental in curbing the release of microfibres into the environment.[280] Since microplastics often result from the fragmentation of larger plastic items over time, reducing the production and consumption of single-use plastics and other plastic products, including microfibre, will directly impact the primary source of airborne microplastics.[281]

Microbeads—tiny plastic particles used in personal care products—contribute to microplastic pollution when they enter bodies of water and later become airborne.[282] Phasing out and eliminating the use of microbeads directly reduces their contribution to airborne microplastics. Strengthening the current strategy for tackling microbeads is fundamental to controlling their dispersion in the environment.

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275. *Id.* at 21.

276. Keely Maxwell et al*., How Clean is Clean: A Review of the Social Science of Environmental Cleanups*, 13 ENV'T RSCH. LETTERS, 2018, at 1, 13.

277. *Id.*

278. *Id.*

279. R. Rathinamoorthy & S. Raja Balasaraswathi, *Microfiber Pollution Prevention—Mitigation Strategies and Challenges*, *in* MICROFIBER POLLUTION 205 (Subramanian Senthilkannan Muthu ed., 2022).

280. Irena Twardowska & William Lacy, *II.1 Regulatory Frameworks as an Instrument of Waste Management Strategies*, *in* SOLID WASTE: ASSESSMENT, MONITORING & REMEDIATION 91 (Irena Twardowska ed., 2004).

281. Kim Borg et al., *Curbing Plastic Consumption: A Review of Single-Use Plastic Behaviour Change Interventions,* 344 J. CLEANER PROD., 2022.

282. E.C. Emenike et al., *From Oceans to Dinner Plates: The Impact of Microplastics on Human Health*, 9 HELIYON, Sept. 2023, at 1, 2–3.

Despite the overwhelming implications of microfibres on ecosystems and human health, acknowledging the complexity of the issue is essential. Finding complete replacements for microplastics may be technically challenging or economically unfeasible in certain industries and applications. Addressing the issue of plastic pollution necessitates the provision of practical alternatives tailored to specific needs met by various plastic products.[283] This approach offers more promising outcomes compared to indiscriminate bans that overlook factors such as replaceability and affordability. Implementing effective pollution and waste management strategies acknowledges the existing use of microplastics and focuses on minimizing their environmental impact. This pragmatic approach, aligned with a multifaceted strategy based on the Theory of Planned Behaviour, addresses the immediate challenges while allowing for a transition toward more sustainable alternatives over time.[284] It also underscores the importance of regulatory/administrative instruments and Market-Based Instruments.[285]

VII. AIRBORNE PLASTICS AND THE CASE AGAINST SYNTHETIC FIBRES

A recent study conducted in London discovered that the vast majority (92%) of airborne microplastic fibres analysed were found to have come from the wear and tear of clothing, upholstery, and carpets, with only 8% coming from other sources, including the degradation of waste such as plastic bags and polystyrene foam.[286] The legal implication of this study is that bans, taxation, or any form of effective control of synthetic fibre will result in reducing airborne plastic pollution in the United Kingdom (UK) by 90% (using Birmingham as a baseline for other UK cities, towns, and villages).[287] This Part will therefore focus on the importance of regulating synthetic fibre as a panacea for tackling airborne plastics in the UK.

Synthetic fibres, such as polyester, nylon, and acrylic, have become common in the textile industry due to their durability, affordability, and performance properties.[288] However, the widespread use of these materials

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283. *See* Joana C. Prata et al., *Solutions and Integrated Strategies for the Control and Mitigation of Plastic and Microplastic Pollutio*n, 16 INT'L J. ENV'T RSCH. & PUB. HEALTH, July 7, 2019, at 3.

284. Cyprian Emeka Adibe et al., *Understanding the Psychology and Legal Perspective of Plastic Dependency in Nigeria*, 43 CURRENT PSYCH. 2630, 2631 (2023).

285. Daniel Slunge & Francisco Alpizar, *Market-Based Instruments for Managing Hazardous Chemicals: A Review of the Literature and Future Research Agenda*, SUSTAINABILITY, Aug. 2019, at 1, 13–15.

286. S.L. Wright et al., *Atmospheric Microplastic Deposition in an Urban Environment and an Evaluation of Transport*, 136 ENV'T INT'L, Dec. 2020, at 1, 5–6.

287. Ageel et al., *supra* note 24.

288. VEETRENDS, *What Is Synthetic Fabric: Understanding the Basics and Beyond*, https://www.veetrends.com/blog/what-is-synthetic-fabric (last visited Feb. 11, 2026).

has significant environmental implications, particularly in terms of microplastic pollution. The shedding of microfibres during the production, use, and laundering of these textiles releases a substantial quantity of microplastics into the environment, with a portion becoming airborne. Once released into the environment, microplastics can become airborne, contributing to the growing problem of microplastic pollution in the atmosphere. Research shows that macrofibres from clothes laundering are the main source of primary microplastics in oceans.[289]

Addressing this issue necessitates a multilayered approach that encompasses material innovation, improved textile production processes, and effective waste management. The Macrofibre Consortium contributes to addressing the challenge of airborne microplastics.[290] This can be seen in the roadmap to reduce microfiber waste. The development of sustainable alternatives to synthetic fibres, such as natural fibres like cotton, linen, and wool, or recycled polyester derived from plastic waste, can significantly reduce microplastic emissions.[291] However, it is essential to conduct thorough life cycle assessments to evaluate the environmental impacts of these alternatives, as some may have their associated challenges.

Advancements in textile manufacturing technologies are crucial for minimizing fibre shedding.[292] Closed-loop systems that capture microfibers during washing, as well as innovations in fabric design and treatment, can help to reduce microplastic release. Furthermore, promoting the repair and reuse of textiles can extend the lifespan of garments, thereby reducing the demand for new production and associated microplastic emissions. Consumer education and awareness are equally important. Elaborating on this idea, synthetic fibres from textiles, released during washing and wear, contribute significantly to microplastic pollution.[293] Reducing the use of synthetic materials in textiles and implementing filtration systems in washing machines can curtail the release of microfibers.[294] This is a foundational approach to addressing airborne microplastics. Moreover, it aligns with the broader strategy of changing human behaviour and reducing plastic waste, as

289. Christine Gaylarde et al., *Plastic Microfibre Pollution: How Important Is Clothes' Laundering?*, 7 HELIYON, May 2021, at 1, 1.

290. Centre for Ecology & Hydrology, *Understanding UK Airborne Microplastic Pollution: Sources, Pathways and Fate*, UK RSCH. & INNOVATION (last visited May 12, 2026).

291. Ageel et al., *supra* note 24.

292. T. Stanton et al., *Shedding off-the-Grid: The Role of Garment Manufacturing and Textile Care in Global Microfibre Pollution*, 428 J. CLEANER PROD., Oct 2023, at 1, 6.

293. S. Choi et al., *The Effect of the Physical and Chemical Properties of Synthetic Fabrics on the Release of Microplastics During Washing and Drying*, 14 POLYMERS, Aug. 2022, at 1, 2.

294. F.S. Cesa et al., *Synthetic Fibers as Microplastics in the Marine Environment: A Review from Textile Perspective with a Focus on Domestic Washings*, 598 SCI. TOTAL ENV'T 1116, 1126 (2017).

discussed by scholars.[295] In reality, a governance gap exists in this respect, since the use of synthetic fibres in the UK is still unregulated. By understanding the environmental impacts of synthetic fibres, consumers might be able to make better-informed choices and support the development of more sustainable textile products. Proper care and maintenance of textiles, such as washing at lower temperatures and using microfiber filters on washing machines, could also reduce microplastic release. An all-inclusive approach that addresses the entire lifecycle of textiles, from production to disposal, is essential for mitigating the impact of synthetic fibres on airborne microplastics.

From the foregoing, one promising approach is the implementation of a tax on synthetic fibre products. The UK Environmental Audit Committee has called on clothing manufacturers to take responsibility for the waste they create.[296] The Committee also proposed a tax on synthetic materials to incentivize the use of more sustainable alternatives.[297] This policy measure could incentivize the production and consumption of more sustainable alternatives, thereby reducing the release of microplastics into the atmosphere. A tax on synthetic fibres would create a financial disincentive for the production and consumption of these materials.[298] This could lead to a shift towards natural fibres, such as cotton, linen, and wool, which are less likely to shed microplastics. While implementing a tax on synthetic fibres may face challenges—such as potential impacts on industries and consumers—the potential benefits in terms of reducing airborne microplastic pollution and promoting a more sustainable future outweigh the drawbacks.

CONCLUSION

This Article explored the evolving legal frameworks addressing airborne plastics, with a focus on the United Kingdom (UK) and global initiatives. Recent legislative developments, including the Environment Act 2021, reflect a commitment to tackling plastic pollution broadly. The introduction of the Plastic Packaging Tax and the ban on single-use plastic items demonstrate a proactive approach toward reducing the environmental impact

295. A.L. Alison et al., *Reducing Plastic Waste: A Meta-Analysis of Influences on Behavior and Interventions*, 380 J. CLEANER PRODUCTION, OCT. 2022, at 1, 15; Adibe, *supra* note 284, at 2631.

296. Jessica Taylor, *Fast Fashion Tax on Synthetic Materials to be Considered as MPs Crack Down on Clothes Designers to Prevent Plastic Pollution*, THE STANDARD (Feb. 19, 2019), https://www.standard.co.uk/futurelondon/theplasticfreeproject/fast-fashion-plastic-tax-a4070241.html.

297. ENVIRONMENTAL AUDIT COMMITTEE, FIXING FASHION: CLOTHING CONSUMPTION AND SUSTAINABILITY, 2019, HC 1952, 39 (2019).

298. *See* Alexander Bismarck et al., *Green Composites as Panacea? Socio-Economic Aspects of Green Materials*, 8 ENV'T, DEV. & SUSTAINABILITY 445, 446 (2006).

of plastics but fall short of being the ultimate solution for the regulation of airborne plastics.[299] Globally, several key instruments play a crucial role. The Basel Convention regulates the transboundary movement of hazardous waste, including plastic, while the Stockholm Convention addresses persistent organic pollutants associated with plastics. The need for a global legal framework is underscored by the cross-boundary nature of airborne plastics, which can traverse large distances and impact ecosystems worldwide. This Article canvasses direct regulations and legislation in the UK that will take into consideration the unique and amorphous nature of airborne plastics and their negative implications for societal well-being.

Airborne microplastics pose a significant threat to human health and the environment. The presence of microplastics in the atmosphere is linked to a range of issues, including respiratory problems, ecosystem disruption, and climate change.[300] The production and use of synthetic fibres contribute substantially to airborne microplastic pollution.[301] The shedding of microfibers during the production and use of textiles is a primary source of microplastics in the environment. Hence, some remedies like the Extended Producer Responsibility (EPR)—which is a crucial tool for addressing packaging waste—would require further development to effectively tackle airborne microplastics.[302] While EPR incentivizes packaging reduction and recycling, its direct impact on airborne microplastics is limited. In the case of Deposit Return Schemes (DRS), a successful implementation not only increases recycling rates but potentially reduces the sources of plastic pollution. DRS are generally specific to certain types of containers, like beverage bottles.[303] Though it addresses littering and encourages recycling, its direct impact on airborne plastics may be limited, as it focuses on a subset of plastic waste.

In the UK, existing legislation primarily focuses on addressing plastic pollution in general, including measures related to marine litter and single-use plastics. While these regulations may indirectly contribute to addressing some forms of microplastic pollution, they may not specifically target airborne microplastics. The limitations of tools like EPR and DRS, though

299. Ana L. Patricio Silva et al., *Rethinking and Optimising Plastic Waste Management Under COVID-19 Pandemic: Policy Solutions Based on Redesign and Reduction of Single-Use Plastics and Personal Protective Equipment*, 742 SCI. TOTAL ENV'T, June 4, 2020, at 1, 2; Ryann Wong, *Reducing Single-Use Plastic Waste: A Better Alternative to the Reduce Act Tax Proposal*, 14 HASTINGS SCI. & TECH. L.J. 149, 160 (2023).

300. Prata, *supra* note 15, at 117.

301. Hassan Khalid Ageel et al., *Microplastics in Indoor Air from Birmingham, UK: Implications for Inhalation Exposure*, 362 ENV'T POLLUTION, 2024, at 1, 2.

302. United Nations Environment Programme, *supra* note 227.

303. AGNES BÜNEMANN ET AL., GIZ, DEPOSIT-REFUND SYSTEMS (DRS) FOR PACKAGING: GIVING PACKAGING WASTE AN ECONOMIC VALUE 1 (2018).

effective in packaging waste and litter management, show that there is a need for a more tailored approach that tries to address the issue of airborne microplastics.

To tackle this impending issue, the UK government should seriously consider implementing policies that would ban the production and use of synthetic fibres. Taking this step would easily eliminate the primary source of airborne microplastic pollution.[304] It is in line with the precautionary principle, which places more priority on the prevention of environmental harm rather than reducing it in the face of scientific uncertainty. In addition, policies that put a substantial tax on the production and use of synthetic fibres can be implemented in situations where banning it does not appear feasible. This market-based approach will likely push manufacturers into seeking more sustainable alternatives. Also, the UK should allocate funds for studying the health impact of inhaling airborne microplastics.[305] Understanding the impact it has on human health would greatly help when future regulations and strategies are being made. Most importantly, there is a need to educate the public on the implications and impact of airborne microplastics. Enlightening the public would help with their choice of natural fibre textiles over synthetic ones, thereby reducing the number of microfibers in the environment.[306] Implementing these measures would help in mitigating the environmental and health risks associated with airborne microplastics. It will also position the UK as a leading country in the fight against these emerging pollutants. For this reason, a comprehensive and effective legislative framework is important if the complexities of microplastic pollution are to be addressed effectively.

As scientific understanding advances, there will likely be a need to integrate measures specifically targeting airborne microplastics into future environmental policies. The issue of plastic pollution, including microplastics, is still gaining traction and there is a need for sensitization, both within the UK and globally, on the environmental implications of airborne plastics. International forums and collaborations are exploring ways to enhance regulations and coordinate efforts to address plastic pollution expansively; however, direct and specific regulations on airborne microplastics are still in the early stages of consideration. Future

304. Esther Kentin & Gaia Battaglia, *Policies and Perspectives on Regulating Microplastic Fibre Pollution*, 25 POLLUTING TEXTILES 265, 276 (1st ed. 2022).

305. Luís Fernando Amato-Lourenço et al., *An Emerging Class of Air Pollutants: Potential Effects of Microplastics to Respiratory Human Health?*, 749 SCI. TOTAL ENV'T, 2020, at 1, 5–6.

306. Joshua Khorsandi et al., *From Ocean to Table: How Public Awareness Shapes the Fight Against Microplastic Pollution*, 9 URBAN SCI., 2025, at 1, 16.

developments may see the integration of measures to address airborne microplastics into broader environmental policies and regulations.

CAN INJURIES FROM CLIMATE CHANGE AND ECOSYSTEM DESTRUCTION BE CIVIL RICO INJURIES?

Camille Bond*

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I. INTRODUCTION

The Racketeer Influenced and Corrupt Organizations Act (RICO) was intended to prevent organized crime from infiltrating legitimate businesses.[1] The statute, which includes both criminal and civil enforcement provisions, creates liability for persons who have, through a pattern of predicate acts, acquired or exercised influence over legitimate businesses through racketeering activity.[2] Predicate acts that can give rise to RICO violations include money laundering, extortion, and mail or wire fraud.[3] Today, it is not

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1. Wesley Kobylak, Annotation, *Civil Action for Damages Under 18 U.S.C.A. § 1964(c) of the Racketeer Influenced and Corrupt Organizations Act (RICO, 18 U.S.C.A. §§ 1961 et seq.) for Injuries Sustained by Reason of Racketeering Activity*, 70 A.L.R. Fed. 538 § 2[a] (1984).

2. The statute proscribes four forms of conduct: (1) using income derived from a pattern of racketeering activity to acquire any interest in an enterprise, (2) acquiring or maintaining interest or control in an enterprise through a pattern of racketeering activity, (3) conducting the affairs of an enterprise through a pattern of racketeering activity, and (4) conspiring to carry out any of the previous three forms of conduct. 18 U.S.C. § 1962 (2018).

3. 18 U.S.C. § 1961(1) (2018).

only conventional organized crime groups that fit this description,[4] but a potentially wide range of actors that acquire, control, or conduct the affairs of seemingly legitimate businesses using criminally actionable conduct ranging from fraud to money laundering.[5]

RICO has been used to seek damages from a wide variety of actors, from opioid companies to dumpers of hazardous waste.[6] Some commentators have argued that the statute could be used to hold corporations liable for injuries related to climate change and environmental damage.[7] In 2022, the first mobilization of RICO for climate purposes emerged when a group of Puerto Rican municipalities sued Exxon Mobil Corp. and other oil and gas industry majors under the statute.[8] The municipalities argued that the defendants had conducted a purposeful campaign to misrepresent the dangers of their products, which led the world to continue relying on fossil fuels. By facilitating this reliance, the municipalities argued, this campaign drove the destructive 2017 Atlantic hurricane season that caused devastating damage to the municipalities' infrastructure.[9] While the municipalities' claims were dismissed in September 2025,[10] the complaint still provides insight about climate-related injuries that could plausibly be actionable under RICO.

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4. Most federal courts, including the Seventh and Eighth Circuits, have rejected the idea that a civil RICO plaintiff must explicitly allege a connection to organized crime. Wilcox v. Ho-Wing Sit, 586 F. Supp. 561, 568 (N.D. Cal. 1984). However, some lower courts disagree on the issue. *Compare id*. (rejecting requirement that plaintiff must allege "nexus" to organized crime), *with* Hokama v. E.F. Hutton & Co., Inc., 566 F. Supp. 636, 643 (C.D. Cal. 1983) ("[P]laintiffs must allege some link to organized crime, however defined.").

5. In a 2025 case, the Supreme Court recognized that civil RICO has evolved to take on a much broader range of applications than Congress initially intended but concluded that it would be Congress' task to provide a correction "if the breadth of the statute 'leads to the undue proliferation of RICO suits.'" Med. Marijuana, Inc. v. Horn, 145 S. Ct. 931, 933 (2025) (quoting Bridge v. Phoenix Bond & Indem. Co., 553 U.S. 639, 660 (2008)).

6. *See*, *e.g.*, In re Nat'l Prescription Opiate Litig., 452 F. Supp. 3d 745, 762–63 (N.D. Ohio 2020); Town of Islip v. Datre, 245 F. Supp. 3d 397, 408 (E.D.N.Y. 2017).

7. *E.g.*, Daina Bray & Thomas M. Poston, *The Methane Majors: Climate Change and Animal Agriculture in U.S. Courts*, 49 COLUM. J. ENV'T L. 145, 237 (2024) (noting potential usefulness of RICO to litigants seeking to target animal agriculture firms that engage in climate-related greenwashing); Denis Binder, *The Potential Application of RICO in the Natural Resources/Environmental Law Context*, 63 DENVER UNIV. L. REV. 535, 558–62 (1986) (considering use of RICO in contexts of toxic waste dumping, corrupt land use planning, and real estate transactions with adverse environmental effects).

8. Bray & Poston, *supra* note 7; Complaint for Damages at 4–6, Muns. of P.R. v. Exxon Mobil Corp., No. 3:22-cv-01550 (D.P.R. Nov. 22, 2022).

9. Amended Complaint for Damages at 4–6, Muns. of P.R. v. Exxon Mobil Corp., No. 3:22-cv-01550 (D.P.R. Nov. 3, 2023).

10. Mun. of Bayamón v. Exxon Mobil Corp., No. CV 22-1550 (SCC), 2025 WL 2630671 (D.P.R. Sept. 11, 2025). The claims against some defendants were dismissed due to lack of personal jurisdiction, while the claims against other defendants (including Exxon Mobil Corp.) were barred by the statute of limitations. *Id*. at *22, *24. The district court reasoned that the municipalities should have known that the defendants' actions had a causal connection with their hurricane-related injuries around

More recently, law firm Hagens Berman, representing a group of homeowners, filed a civil RICO class action against a group of oil majors.[11] The complaint alleges that the oil majors' campaign of deception, fraudulent research, and obstruction of government action contributed to climate change, which caused severe weather events and in turn drove increases in the homeowners' insurance premiums.[12] Though the outcome of this case is uncertain, it represents another attempt to seek redress for climate-related injuries by demonstrating the causal relationship between those injuries and heavy-emitting corporations' conduct.

As these cases suggest, RICO may provide a tool for plaintiffs who have been injured due to climate change, ecosystem destruction, or biodiversity loss to recover from the companies that caused their injuries. Several unique features of the statute could make it particularly friendly to such plaintiffs. First, RICO plaintiffs may pursue treble damages for their injuries.[13] Second, RICO allows plaintiffs to sue not only over discrete, wrongful acts, but over a scheme of wrongful conduct that may include various, individual predicate acts;[14] thus, the statute allows plaintiffs to seek accountability for something more than the sum of the parts. Third, RICO allows a plaintiff to construct a claim that joins as defendants a potentially disparate group of "persons" who have participated in the overall scheme.[15] The latter two features may help plaintiffs to seek damages from certain industry groups by demonstrating the coordinated and deliberate nature of these actors' harmful practices.[16] Finally, RICO's civil provisions include a statutory standing requirement (the requirement for the plaintiff to have sustained a business or property injury *by reason of* the defendants' racketeering activity) that supplants the traditional, prudential standing analysis.[17]

While RICO's civil enforcement provisions offer advantages to potential plaintiffs, the statute also requires litigants to clear several legal hurdles. A

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the times of the hurricanes themselves because the connections between climate change and intensified storms were well-known. *Id*. at *25.

11. Class Action Complaint, Kennedy v. Exxon Mobil Corp., No. 2:25-cv-02378-JHC (W.D. Wash. Nov. 25, 2025).

12. *Id*. at 5–7.

13. Kobylak, *supra* note 1.

14. 18 U.S.C. § 1961(5) (2018).

15. Binder, *supra* note 7, at 536. By folding various defendants and predicate offenses into one "enterprise" and "pattern of racketeering activity," RICO also broadens the scope of evidence that may be introduced against any individual defendant. Because courts often refuse to sever trials where evidence could be used against any individual defendant, this feature of RICO helps to avoid severance. *Id*.

16. *See, e.g.*, G. Supran et al., *Assessing ExxonMobil's Global Warming Projections*, 379 SCIENCE 153, 153 (2023) ("[I]n private and academic circles since the late 1970s and early 1980s, ExxonMobil predicted global warming correctly and skillfully.").

17. Binder, *supra* note 7, at 551.

plaintiff must meet the basic elements of a RICO claim by showing that certain persons conducted the affairs of, or influenced, an enterprise through a pattern of racketeering activity that caused injury to business or property.[18] To show a pattern of racketeering activity, a plaintiff must demonstrate that the defendants committed at least two violations of predicate laws.[19] A plaintiff's claim must also fall within the federal four-year statute of limitations,[20] although the statutory period will begin at the time of the most recent predicate act and may be put on hold until the plaintiff learns of, or should have learned of, their injury.[21]

In order to have standing to bring a civil RICO claim before a court, a plaintiff must have suffered an injury to their business or property.[22] In addition, the defendants' activity must be both a "but-for" and proximate cause of the plaintiff's injury.[23] Focusing on RICO's civil enforcement provisions, this Article discusses the implications of these injury-related hurdles for prospective plaintiffs seeking to recover for injuries that arise from companies' contributions to climate change, ecosystem destruction, and biodiversity loss. Part II provides an overview of how companies' contributions to climate change and environmental degradation may be felt by individuals and companies as business-or-property injuries. Part III discusses the implications of the causation requirements for would-be climate and environmental plaintiffs. Part IV explores varieties of injuries that for-profit groups have pled in RICO cases and discusses their relevance for climate and environmental plaintiffs. Part V walks through RICO injuries that individuals and membership organizations have pled. Part VI concludes.

II. RICO BUSINESS-OR-PROPERTY INJURIES THAT FLOW FROM CLIMATE CHANGE, ECOSYSTEM DESTRUCTION, AND BIODIVERSITY COLLAPSE

RICO includes a civil right of action for plaintiffs who have suffered injuries to their business or property.[24] Courts have interpreted this language to require an injury that is tangible, immediate (as opposed to speculative), and financially quantifiable.[25] Despite these restrictions, courts have

18. Kobylak, *supra* note 1.

19. 18 U.S.C. § 1961(5) (2018).

20. 31A AM. JUR. 2D EXTORTION, BLACKMAIL, AND THREATS § 180 (2023); Agency Holding Corp. v. Malley-Duff & Assocs., Inc., 483 U.S. 143, 143 (1987).

21. BLACKMAIL AND THREATS, *supra* note 20.

22. Kobylak, *supra* note 1.

23. Holmes v. Sec. Inv. Prot. Corp., 503 U.S. 258, 265–68 (1992) (quoting Associated Gen. Contractors of Cal., Inc. v. Carpenters, 459 U.S. 519, 534 (1983)).

24. 18 U.S.C. § 1964(c) (2018).

25. BLACKMAIL AND THREATS, *supra* note 20, § 182.

recognized a wide range of injuries as cognizable under RICO. The diminution in value of a property owner's land, the loss of an individual's job, and the deprivation of access to abortion services have all been recognized as RICO injuries.[26] In contrast, injuries that are speculative or difficult to quantify cannot support RICO claims; nor, at least directly, can *personal* injuries such as pain, illness, and emotional distress.[27]

The business-or-property requirement bars prospective civil RICO plaintiffs from suing directly over personal injuries such as asthma or other medical conditions that may be exacerbated by climate change,[28] or for the emotional distress of living through climate disasters.[29] However, a Supreme Court opinion handed down in April 2025 suggests that such plaintiffs may be able to recover for certain economic injuries that arise as secondary consequences of these personal ailments. In *Medical Marijuana, Inc. v. Horn*, the plaintiff was a former commercial truck driver who had used a pain relief product whose label falsely stated that it did not contain tetrahydrocannabinol (THC).[30] The driver lost his job after testing positive for THC and sued the distributor under RICO.[31] The Court held that the truck driver's "antecedent personal injury" (his unwitting consumption of THC) did not bar him from suing over the secondary, economic injury (the loss of his job).[32] Thus, individuals with personal injuries induced by climate change may be able to recover under RICO for secondary, economic effects of those personal injuries.

The general bar on recovery for personal injuries also leaves open a wide range of business- and property-related injuries caused by climate change, deforestation, and biodiversity loss. This Part explores some of the broad-

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26. Safe Streets All. v. Hickenlooper, 859 F.3d 865, 885–88 (10th Cir. 2017); Horn v. Med. Marijuana, Inc., 80 F.4th 130, 136 (2d Cir. 2023) (quoting *id.*), *cert. granted*, 144 S. Ct. 1454 (2024), and *aff'd and remanded*, No. 23-365, 2025 WL 978102 (U.S. Apr. 2, 2025); Nat'l Org. for Women, Inc. v. Scheidler, 897 F. Supp. 1047, 1069 (N.D. Ill. 1995), *rev'd on other grounds*, 547 U.S. 9 (2006).

27. *Holmes*, 503 U.S. at 274; *Nat'l Org. for Women*, 897 F. Supp. at 1069; *see e.g.*, Van Schaick v. Church of Scientology of Cal., 535 F. Supp. 1125, 1137 (D. Mass. 1982) (holding that neither money former Scientology members spent on church services and literature, nor emotional distress of having to flee the United States, constituted a business-or-property injury).

28. Zorana Jovanovic Andersen et al., *Climate Change and Respiratory Disease: Clinical Guidance for Healthcare Professionals*, 19 BREATHE, July 11, 2025, at 1, 2–5.

29. Eamin Z. Heanoy & Norman R. Brown, *Impact of Natural Disasters on Mental Health: Evidence and Implications*, 12 HEALTHCARE, Sept. 10, 2024, at 1, 1–2.

30. 145 S. Ct. 931, 936–37 (2025).

31. *Id*.

32. *Id*. at 939 ("[T]he business or property requirement operates with respect to the *kinds* of harm for which the plaintiff can recover, not the *cause* of the harm for which he seeks relief. For example, a gas station owner beaten in a robbery cannot recover for his pain and suffering. But if injuries from the robbery force him to shut his doors, he can recover for the loss of his business. A plaintiff can seek damages for business or property loss, in other words, regardless of whether the loss resulted from a personal injury.").

level impacts of climate change, ecosystem destruction, and biodiversity collapse and discusses how these broad-scale impacts can translate to business and property injuries that may be cognizable under RICO.

A. Climate Change

Climate change has already caused widespread harm to humans, including through economic disruption.[33] The effects of climate change on the global economy are projected to increase as global average temperatures rise.[34] The *Municipalities of Puerto Rico* and *Kennedy* cases provide examples of the kinds of property injuries that plaintiffs may sustain due to climate change. The Puerto Rican municipalities' injuries included lost infrastructure such as water systems, energy systems, and roads; lost tax and tourism revenue; and the costs of restocking decimated species.[35] The homeowners' injuries in *Kennedy* consisted of higher insurance premiums.[36] Many businesses and individuals are already sustaining similar injuries, such as damages to homes or facilities and lost revenue,[37] due to the economy-wide impacts of climate change. For example, the agricultural sector has already sustained productivity losses due to climate-change-influenced weather events.[38] The future impacts of climate change upon the sector are likely to intensify as the ranges of pests and diseases that harm food crops and livestock expand, and as sea level rise threatens to contaminate irrigation water.[39]

These sector-wide impacts are felt by businesses as financial and property losses, giving rise to the kinds of injuries that are cognizable under

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33. IPCC, *Summary for Policymakers*, *in* CLIMATE CHANGE 2022: IMPACTS, ADAPTATION, AND VULNERABILITY: CONTRIBUTION OF WORKING GROUP II TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 9–15 (H. O. Pörtner et al. eds., 2022).

34. *Id.*

35. Amended Complaint for Damages, *supra* note 9, at 261–62.

36. Class Action Complaint, *supra* note 11, at 101–02.

37. *See* Jonathan Shaw, *Housing in the Climate Crosshairs*, HARV. MAG. (Apr. 2, 2025), https://www.harvardmagazine.com/2025/04/harvard-briefing-climate-insurance-housing-crisis; Gill Einhorn & Dominic King, *How Climate Hazards Are Reshaping Business Realities and Responses*, WORLD ECON. F. (Mar. 26, 2025), https://www.weforum.org/stories/2025/03/how-climate-hazards-are-reshaping-business-realities-and-responses.

38. IPCC, *supra* note 33, at 9 (noting that global agricultural productivity has likely slowed over the last half-century due to various effects of climate change, including increases in frequency and intensity of extreme weather events such as droughts and floods; and that food production from fisheries and aquaculture has declined in some regions due to ocean warming and acidification).

39. *Id*. at 14; *Climate Change Impacts on Agriculture and Food Supply*, U.S. ENV'T PROT. AGENCY (Feb. 6, 2025), https://www.epa.gov/climateimpacts/climate-change-impacts-agriculture-and-food-supply [https://web.archive.org/web/20250206060546/https://www.epa.gov/climateimpacts/climate-change-impacts-agriculture-and-food-supply].

RICO. These injuries may include lost productivity and sales due to drought and the destruction of harvests in extreme weather events. At least one federal district court has held that reduced agricultural productivity may constitute a RICO injury to business or property.[40] Similarly, the Tenth Circuit has held that allegations of "resource damage" and interference with operations at a cattle ranch gave rise to a cognizable RICO claim.[41]

B. Ecosystem Destruction and Biodiversity Collapse

The destruction of ecosystems and species is a significant threat to the global economy, with over half of global gross domestic product reliant on natural resources.[42] The benefits that ecosystems provide to human society are known as "ecosystem services."[43] Scientists have linked the loss and degradation of forests to the diminishment of ecosystem services, such as cooling local temperatures, soil nutrient cycling, and carbon storage.[44] Around the world, biodiversity and nature loss may diminish other ecosystem services, which include water filtration, protection from floods, and the prevention of erosion.[45] Individual species also contribute to the global economy in myriad ways, from preventing the spread of pathogens to inspiring new pharmaceuticals.[46]

As with climate change, the broad-scale harms that arise from biodiversity and nature loss may trickle down to businesses and individuals in ways that give rise to cognizable civil RICO claims. For example,

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40. Comm. to Protect our Agric. Water v. Occidental Oil & Gas Corp., 235 F. Supp. 3d 1132, 1171 (E.D. Cal. 2017) (dismissing complaint on other grounds).

41. Robbins v. Wilkie, 300 F.3d 1208, 1211 (10th Cir. 2002).

42. WORLD ECON. F., NATURE RISK RISING: WHY THE CRISIS ENGULFING NATURE MATTERS FOR BUSINESS AND THE ECONOMY 8 (2020).

43. G. Martínez Pastur et al., *Ecosystem Services from Forest Landscapes: An Overview*, *in* ECOSYSTEM SERVICES FROM FOREST LANDSCAPES 1, 1–2 (2018).

44. Yunuen Reygadas et al., *Effects of Deforestation and Forest Degradation on Ecosystem Service Indicators Across the Southwestern Amazon*, 147 ECOLOGICAL INDICATORS, Mar. 2023, at 1, 6; Xinjing Qu et al., *Deforestation Impacts Soil Biodiversity and Ecosystem Services Worldwide*, 121 PNAS, Mar. 11, 2024, at 1, 2.

45. Robert J. Johnston, *Ecosystem Services*, BRITANNICA, https://www.britannica.com/science/ecosystem-services (last visited Apr. 5, 2026); Pastur et al., *supra* note 43, at 5.

46. Isabella Gerretsen, *Why We Should Value Scavengers*, BBC (Dec. 8, 2022), https://www.bbc.com/future/article/20221206-why-we-should-value-scavengers; Richard Conniff, *What Are Species Worth? Putting a Price on Biodiversity*, YALE ENV'T 360 (Sept. 7, 2010), https://e360.yale.edu/features/what_are_species_worth_putting_a_price_on_biodiversity; Gina Kolata, *We Know Where New Weight Loss Drugs Came From, but Not Why They Work*, N.Y. TIMES (Aug. 17, 2023), https://www.nytimes.com/2023/08/17/health/weight-loss-drugs-obesity-ozempic-wegovy.html (discussing role that venomous Gila monster played in development of Ozempic and other weight-loss drugs).

ecotourism businesses are likely to suffer due to the destruction of natural ecosystems that draw tourists. In addition, the destruction of wetlands that formerly helped to absorb flood waters can cause significant losses for insurance companies.[47]

III. CAUSATION REQUIREMENTS FOR CIVIL RICO INJURIES

While climate change, ecosystem destruction, and biodiversity loss may give rise to business-or-property injuries, such injuries would also need to pass muster under two judicially imposed causation requirements in order to be cognizable RICO injuries. Courts require showings of but-for and proximate cause linking a civil RICO plaintiff's injury and a defendant's alleged pattern of racketeering activity.[48] In general, these causation requirements prevent plaintiffs from bringing claims over injuries that were not caused by the defendants' pattern of racketeering activity (composed of at least two predicate violations)[49] or are too indirect or attenuated from the racketeering activity.

The but-for cause requirement flows from the statutory language creating a cause of action for civil plaintiffs injured "by reason" of the alleged racketeering activity; this requirement is concerned with general, factual causation.[50] This causation requirement is generally easily met and not the focus of lengthy judicial discussion.[51] However, the but-for cause requirement has special relevance for civil RICO plaintiffs alleging racketeering activity based on fraud offenses. In this context, but-for cause could be construed to impose a reliance requirement.[52] However, the Supreme Court held in *Bridge v. Phoenix Bond & Indemnity Co.* that a plaintiff need not show reliance on the defendant's misrepresentation if the underlying predicate violation does not include a reliance requirement.[53] Thus, but-for cause may be found even if a third party relied on the

47. WORLD ECON. F., *supra* note 42, at 15.

48. Holmes v. Sec. Inv. Prot. Corp., 503 U.S. 258, 265–68 (1992).

49. 18 U.S.C. § 1961(5) (2018).

50. *Holmes*, 503 U.S. at 265.

51. *See id.* at 268–69 (skipping from acknowledgment of but-for cause requirement to proximate cause discussion without analysis of but-for cause).

52. The defendants in *Bridge* argued that the statutory requirement that a plaintiff be injured "by reason of" the defendants' conduct should impose a first-party reliance requirement in fraud cases—in other words, a requirement for the plaintiff to have relied on the defendants' misstatements. Bridge v. Phx. Bond & Indem. Co., 553 U.S. 639, 648–49 (2008).

53. *Id.* at 649–50.

defendants' misrepresentation, producing results that caused injury to the plaintiff.[54]

This absence of a first-party reliance requirement should help prospective climate plaintiffs alleging that corporations have engaged in patterns of racketeering activity based on acts of fraud that were directed at the general public. The plaintiffs in *Municipalities of Puerto Rico* were able to allege that they relied on the oil and gas majors' deceptive communications.[55] They further alleged that this reliance led them to "accept a substantial risk that they otherwise would not have taken, by purchasing the [d]efendants' carbon-based products."[56] Under *Bridge*, however, a different plaintiff making a similar claim—a business, for example—would likely not need to show that it purchased the defendants' carbon-based products in reliance on the defendants' communications. Instead, it might be able to state a RICO claim by alleging that *many* governments and companies promoted and purchased these products in reliance on the defendants' communications, driving climate change and causing climate-related injuries to the plaintiff.

The proximate cause constraint requires "some direct relation between the injury asserted and the injurious conduct alleged."[57] The proximate cause requirement is not met if the injury is remote or speculative, or if there is an intervening cause between the defendant's conduct and the plaintiff's injury.[58] A series of three foundational Supreme Court cases demonstrates

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54. *Id*. ("[S]uppose an enterprise that wants to get rid of rival businesses mails misrepresentations about them to their customers and suppliers, but not to the rivals themselves. If the rival businesses lose money as a result of the misrepresentations, it would certainly seem that they were injured in their business 'by reason of' a pattern of mail fraud, even though they never received, and therefore never relied on, the fraudulent mailings.").

55. Amended Complaint for Damages, *supra* note 9, at 262.

56. *Id.*

57. *Holmes*, 503 U.S. at 268–69; 31A AM. JUR. 2D EXTORTION, BLACKMAIL, AND THREATS § 181 (2023). While intent to cause the plaintiff's injury may help to establish proximate cause, the Supreme Court has held that it is not the central inquiry. James Cape & Sons Co. v. PCC Const. Co., 453 F.3d 396, 403 (7th Cir. 2006) ("[T]he relevant inquiry to determine proximate cause is 'whether the alleged violation led directly to the plaintiff's injuries.'") (quoting Anza v. Ideal Steel Supply Corp., 547 U.S. 451, 461 (2006)). Though courts generally refer to the directness or indirectness of an injury, the distinction could instead be framed as immediate versus attenuated. *E.g.*, *id.*; *Holmes*, 503 U.S. at 268–69.

58. BLACKMAIL AND THREATS, *supra* note 20; Pamela Bucy Pierson, *RICO Trends: From Gangsters to Class Actions*, 65 S.C. L. REV. 213, 242, 243 (2013). The Seventh Circuit has written that the proximate cause analysis is relevant when "too many unexpected things had to happen between the defendant's wrongdoing and the plaintiff's injury, in order for the injury to occur—so many unexpected things that the defendant couldn't have foreseen the effect of his wrongdoing and therefore couldn't have been influenced, in deciding how much care to employ in the activity that produced the wrongful act, by the prospect of inflicting such an injury as occurred." BCS Servs., Inc. v. Heartwood 88, LLC, 637 F.3d 750, 754 (7th Cir. 2011).

how the requirement may limit civil RICO liability. In *Holmes v. Securities Investor Protection Corp.*, the Securities Investor Protection Corporation (SIPC) alleged that Holmes had engaged in a securities fraud scheme that caused SIPC member broker-dealers to go bankrupt, which in turn triggered the SIPC's obligation to compensate the broker-dealers' customers for their losses.[59] The Court held that the link between the defendants' actions and SIPC's economic loss was too remote because the SIPC was not directly injured by Holmes' conduct.[60] Rather, the broker-dealers were directly injured, and the SIPC's injury was merely a secondary consequence of the broker-dealers' injuries.[61]

In *Anza v. Ideal Steel Supply Corp.*, the plaintiffs alleged that their competitor had defrauded the state tax authority and then used the resulting tax savings to lower its prices, causing the plaintiffs to lose business due to unfair competition.[62] Here, the Court held that there was no showing of proximate cause because the plaintiffs had failed to establish two things: first, a direct connection between the alleged fraud and the defendants' decision to lower their prices, and second, a connection between the defendants' lower prices and the plaintiffs' loss of business.[63] The Court also noted that it was the state tax authority, and not the plaintiffs, that had been directly defrauded and therefore injured.[64] Similarly, in *Hemi Group, LLC v. City of New York*, the Court dismissed New York City's RICO suit against online cigarette retailers for want of proximate cause, reasoning that the retailers had primarily injured New York State by evading their statutory obligation to report sales; the alleged injury to the city—based on its inability to access accurate sales reports from the state—was only secondary.[65]

In *Holmes*, the Supreme Court described three rationales for the proximate cause requirement. First, by barring plaintiffs with indirect injuries from bringing claims, the requirement ensures that courts will not have to perform the tricky, speculative work of deciding the extent to which a plaintiff's injury occurred as a result of the RICO violation as opposed to other, independent factors.[66] Second, it is not necessary to allow plaintiffs with indirect injuries to bring their claims in order to "vindicate the law";

59. *Holmes*, 503 U.S. at 261.
60. *Id*. at 271.
61. *Id*.
62. 547 U.S. 451, 451 (2006).
63. *Id*. at 458–59 (noting that "[the plaintiff's] lost sales could have resulted from factors other than [the defendants'] alleged acts of fraud").
64. *Id*. at 452.
65. Hemi Grp. v. City of N.Y., 559 U.S. 1, 9 (2010).
66. *Holmes*, 503 U.S. at 269.

directly injured parties will generally do so.[67] Third, allowing indirectly-injured plaintiffs to recover alongside directly-injured plaintiffs would force courts to "apportion[] damages among plaintiffs removed at different levels of injury . . . to obviate the risk of multiple recoveries."[68]

Courts often invoke these rationales to guide their own proximate cause analyses.[69] For example, in *Club One Casino, Inc. v. Perry*, a casino alleged that its profits and market share had suffered due to unfair competition from an unlicensed gambling facility.[70] Pointing to the first rationale from *Holmes*, the Ninth Circuit reasoned that in order to assess the casino's RICO claims, a court would have to perform a "speculative and complicated" analysis, teasing out the extent to which the defendant's activity—as opposed to other market factors such as "the local economy" and "shifting consumer preferences"—could be blamed for the injury.[71] The fact that hearing the claim would necessitate this kind of unwieldy calculation indicated that the plaintiff's injury was "too attenuated" from the defendant' activity.[72] Referencing the second rationale, the Ninth Circuit considered that the state had been more directly injured than the plaintiff by the defendant's failure to comply with licensing requirements, making the state the appropriate party to vindicate the law.[73] With regard to the third rationale, the court noted that the "risk of multiple recoveries appear[ed] low," but that a finding of high risk was "not a prerequisite for concluding that proximate cause is lacking."[74] The court therefore affirmed the dismissal of the plaintiff's complaint for want of proximate cause.[75]

It remains to be seen how courts may assess proximate cause with respect to climate-related civil RICO injuries like those in *Municipalities of Puerto Rico* and *Kennedy*. In these cases, the plaintiffs alleged that the defendant's activities had contributed to climate change, and that climate change in turn had contributed to the extreme weather events that gave rise to the plaintiffs' injuries.[76] This analysis is complex because no single emitter

67. *Id*.

68. *Id*.

69. *See, e.g.*, Club One Casino, Inc. v. Perry, 837 F. App'x 459, 460–61 (9th Cir. 2020) (quoting *Holmes*, 503 U.S. at 269–70); Walters v. McMahen, 684 F.3d 435, 444 (4th Cir. 2012).

70. 837 F. App'x at 461.

71. *Id*.

72. *Id*.

73. *Id*.

74. *Id*.

75. *Id*.

76. In February 2025, before the municipalities' claims were dismissed on other grounds, a magistrate judge recommended the presiding district judge in the case to hold that the plaintiffs had pled facts sufficient to survive a motion to dismiss their Section 1962(c) claim because they had "pled that they directly suffered the consequences of Plaintiffs' intentional misrepresentations." Magistrate Judge's

or group of emitters is the sole cause of climate change,[77] and because climate change is not the only driver of extreme weather events.[78] Plaintiffs suing over climate change-related injuries would almost certainly rely on attribution science, which seeks to quantify human activities' effects on the climate and environment.[79] Attribution science has long been central to climate change litigation, as it can help to quantify a corporation's or industry's climate change impacts.[80] The evolving field could help RICO plaintiffs to quantify greenhouse gas (GHG)-intensive companies' contributions to climate change.

Looking to the first rationale from *Holmes* for the proximate cause requirement, a court could find that the analysis required to attribute the defendant's activities to a certain portion of the plaintiff's injuries is too "speculative" and complicated to be workable in the climate change context.[81] However, attribution science itself deals directly with this issue: Attribution studies seek to determine the role that many variables, including climate variables such as temperature and humidity, play in causing an outcome.[82] The plaintiffs in *Municipalities of Puerto Rico* rely heavily on attribution science. Their complaint includes more than 50 pages of explanation regarding the defendants' GHG footprints and climate science, highlighting research that has connected incremental increases in global average temperatures to increases in the intensities of storms.[83] Perhaps

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Omnibus Report and Recommendation at 48, Mun. P.R. v. Exxon Mobil Corp., No. 3:22-cv-01550 (P.R. Feb. 20, 2025). The magistrate judge wrote that proximate cause did not require the plaintiffs themselves to have relied on these misrepresentations. *Id.* However, the magistrate judge did not directly address the defendants' argument that the proximate cause requirement is not met because "there are too many steps in the causal chain" between the defendants' activities and the plaintiffs' injuries. *Id.* at 46.

77. *See* Hannah Ritchie et al., *Breakdown of Carbon Dioxide, Methane and Nitrous Oxide Emissions by Sector*, OUR WORLD IN DATA (Jan. 2024), https://ourworldindata.org/emissions-by-sector (illustrating various global sectors' contributions to overall, anthropogenic GHG emissions).

78. Michael Burger et al., *The Law and Science of Climate Change Attribution*, 45 COLUM. J. ENV'T L. 57, 67, 90 (2020).

79. *Id*. at 66.

80. *Id*. at 62–63.

81. Chief Justice Roberts' dissent in *Massachusetts v. EPA* provides an example of this sort of reasoning, though his discussion pertains to typical standing requirements rather than RICO injury causation. 549 U.S. 497, 544–45 (2007) (Roberts, C.J., dissenting) ("Petitioners are never able to trace their alleged injuries back through this complex web to the fractional amount of global emissions that might have been limited with EPA standards. In light of the bit-part domestic new motor vehicle GHG emissions have played in what petitioners describe as a 150-year old phenomenon, and the myriad additional factors bearing on petitioners' alleged injury—the loss of Massachusetts coastal land—the connection is far too speculative to establish causation.").

82. Burger et al., *supra* note 78, at 74.

83. Amended Complaint for Damages, *supra* note 9, at 32–76. The *Kennedy* plaintiffs take a different tack: Rather than alleging a causal connection between the defendants' activities and specific weather events, the homeowners asserted that the defendants' conduct has raised the *overall risk* of

courts in similar climate change cases will decide that attribution science provides a reasoned basis for determining the impact of the defendants' activities, and therefore that the first *Holmes* rationale does not justify barring plaintiffs' claims.

At first blush, the second rationale from *Holmes* seems unlikely to justify barring plaintiffs from bringing civil RICO claims over certain climate-related injuries, such as those stemming from extreme weather events, because those events often directly cause property damage. However, this rationale could provide grounds for barring a potential RICO plaintiff whose injury is contingent upon a third party's property damage. To illustrate this point, contrast a municipality whose energy infrastructure has been damaged by hurricane winds and floods (a property injury) against a business that has lost productive working hours (an economic injury) due to power outages after the hurricane. While the municipality's property injury was caused directly by the hurricane, the business' economic injury was contingent upon the damage to the municipality's property. A court might also consider the general, global impacts of climate change to be the primary harm and an individual plaintiff's injuries to be contingent upon and secondary to those global impacts. However, this approach would seem to cut against the second *Holmes* rationale, as it would prevent any party from vindicating the law.

The third *Holmes* rationale concerns potential problems with apportioning damages should multiple plaintiffs seek to recover for indirect injuries. Therefore, it should only bar plaintiffs with indirect injuries, such as the hypothetical business that lost productive working hours due to a power outage.

IV. INJURIES TO FOR-PROFIT GROUPS

Due to the global nature of climate change and the reliance of many sectors on both raw materials and ecosystem services,[84] heavy-emitting companies' harms to the climate and ecosystems can manifest as injuries to businesses in various ways. In many cases, these harms could be framed as competitive injuries that arise due to deceptive or otherwise competition-stifling activities.[85] However, not all firms harmed by companies' activities

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extreme weather events, and that those higher risks have driven insurance companies to raise premiums. Class Action Complaint, *supra* note 11, at 81.

84. KAPPEN ET AL., THE STAGGERING VALUE OF FORESTS—AND HOW TO SAVE THEM, BOS. CONSULTING GRP. 1, 9–10 (2020); TASKFORCE ON NATURE-RELATED FIN. DISCLOSURES, GUIDANCE ON THE IDENTIFICATION AND ASSESSMENT OF NATURE-RELATED ISSUES: THE LEAP APPROACH 9–13, 66 (Version 1.1, Oct. 2023).

85. The Lanham Act allows a false advertising plaintiff to "establish an injury by creating a chain of inference showing how defendant's false advertising could harm plaintiff's business." Chaverri v.

directly compete with them: Non-competitor businesses may sustain harm due to the physical impacts of climate change, ecosystem destruction, and biodiversity loss. Moreover, in order to be cognizable under RICO, a party's injury must be concrete and quantifiable.[86] As discussed in Part IV.B., this requirement can bar a plaintiff that has suffered lost sales but is unable to quantify the volume of the loss.[87]

This Part discusses federal courts' treatment of four types of injuries that businesses may sustain due to anthropogenic climate change, ecosystem destruction, and biodiversity loss: loss of goodwill and reputational damage, loss of sales, increased operational costs, and loss of contract or business relationships. The Part also discusses different approaches to evaluating each type of injury and explores how hypothetical plaintiffs may fare under these different approaches.

A. Lost Goodwill and Reputational Damage

Goodwill is "the probability that old customers will return and that the business 'will continue in the future as in the past.'"[88] When seeking remedies for injuries to goodwill, civil RICO plaintiffs often allege that they have lost customer goodwill or that their reputations have been injured because they sourced products from the defendants, and the defendants had made false claims about these products, which in turn caused the plaintiffs to unintentionally mislead their own end consumers about the products.[89] For

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Platinum LED Lights, LLC, No. CV-21-01700-PHX-SPL, 2022 WL 2275664, at *6 (D. Ariz. June 22, 2022) (quoting TrafficSchool.com, Inc. v. Edriver Inc., 653 F.3d 820, 825 (9th Cir. 2011)). RICO, however, does not allow plaintiffs to rely on the "inferences of competitive injury." *Id.* at *9.

86. Steele v. Hosp. Corp. Am., 36 F.3d 69, 70 (9th Cir. 1994) (requiring "proof of concrete financial loss"); Denney v. Deutsche Bank AG, 443 F.3d 253, 266 (2d Cir. 2006) ("A RICO plaintiff 'only has standing if, and can only recover to the extent that, he has been injured in his business or property by the conduct constituting the [RICO] violation[,]' and only when his or her 'actual loss becomes clear and definite.'") (quoting First Nationwide Bank v. Gelt Funding Corp., 27 F.3d 763, 768–69 (2d Cir. 1994)); Price v. Pinnacle Brands, Inc., 138 F.3d 602, 607 (5th Cir. 1998) ("Injury to mere expectancy interests or to an 'intangible property interest' is not sufficient to confer RICO standing.").

87. *See infra* Part IV.B.

88. In re Volkswagen "Clean Diesel" Mktg., Sales Pracs., & Prods. Liab. Litig., No. 3:16-CV-02086-CRB, 2019 WL 6749534, at *4 (N.D. Cal. Dec. 6, 2019) (quoting Rise Basketball Skill Dev., LLC v. K Mart Corp., No. 16-CV-04895-WHO, 2017 WL 2775030, at *5 (N.D. Cal. June 27, 2017)), *aff'd*, 842 F. App'x 112 (9th Cir. 2021).

89. *E.g.*, In re Volkswagen "Clean Diesel" Mktg., Sales Pracs., & Prods. Liab. Litig., No. MDL 2672 CRB (JSC), 2017 WL 4890594, at *6 (N.D. Cal. Oct. 30, 2017) (considering car dealers' allegations that Volkswagen's "clean diesels" emission fraud had harmed dealers' reputations); Knit With v. Knitting Fever, Inc., No. CIV.A. 08-4221, 2012 WL 2938992, at *10 (E.D. Pa. July 19, 2012) (considering knitting yarn shop's allegations that yarn supplier falsely claimed products contained certain percentage of cashmere, causing yarn shop to unintentionally mislabel products it sold to consumers and thus sustain

example, a furniture company that sources products from a lumber supplier in reliance on the supplier's claims about ethics and sustainability may sustain goodwill injuries if it comes to light that the supplier's products—and, therefore, the furniture company's products—are associated with illegal deforestation.

Under the rule that a RICO injury must be concrete and quantifiable, courts are unlikely to consider bare allegations of lost goodwill to be cognizable injuries unless they are accompanied by "proof of concrete financial loss."[90] However, an injury to goodwill or reputation may be cognizable under RICO if it "result[s] in concrete economic, contractual, or business losses."[91] In *Cement-Lock v. Gas Technology Institute*, members of an enterprise that set out to commercialize a cement additive were able to successfully support their claim of reputational harm. The plaintiffs alleged that the defendants' theft of funds from the enterprise had caused reputational damage, which in turn caused the plaintiffs to lose out on "profits [the enterprise] could otherwise have obtained through royalties and license agreements."[92]

A civil RICO plaintiff seeking redress for an injury to goodwill or reputation—such as the furniture manufacturer in the example above—must connect its injury to more quantifiable effects, such as losses of grants or contracts that it would have secured if not for the injury.[93] Parts IV.B. and IV.D. discuss challenges that the proximate cause requirement creates for plaintiffs whose injuries are based on lost sales and contracts.

B. Lost Sales

An injury premised on the loss of sales neatly fits the basic requirements for a business-or-property injury under RICO, as it is more easily quantifiable than reputational damage or loss of goodwill. If the hypothetical furniture manufacturer in Part IV.A had lost sales due to consumers' objections over

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reputational damage), *aff'd sub nom.* The Knit With v. Knitting Fever, Inc., 625 F. App'x 27 (3d Cir. 2015).

90. *In re Volkswagen*, 2019 WL 6749534, at *4; *Knit With*, 2012 WL 2938992, at *10 ("Claimed losses to goodwill and reputation are not only speculative, but are simply not the types of injuries compensable under RICO.").

91. Cement-Lock v. Gas Tech. Inst., No. 05-C-0018, 2005 WL 2420374, at *13 (N.D. Ill. Sept. 30, 2005).

92. *Id*. at *14.

93. In one case, the Southern District of New York appeared to find that a soybean supplier's reputational injury was cognizable where the supplier alleged that damage to its reputation had caused it to lose contracts with suppliers and had forced it to reduce its production rate and fire employees. Dandong Old N.E. Agric. & Animal Husbandry Co. v. Hu, No.15 CIV. 10015 (KPF), 2017 WL 3328239, at *3 (S.D.N.Y. Aug. 3, 2017) (dismissing plaintiff's civil RICO claim on other grounds).

unethically sourced wood products, it would have a cognizable business-or-property injury.

The main obstacle to successful claims premised on lost sales injuries arises during the proximate cause analysis. In the wake of *Holmes*, *Hemi*, and *Anza* (the three Supreme Court decisions that set out a framework for evaluating proximate cause in the RICO context), courts are generally unsympathetic to conclusory allegations that a defendant's conduct caused a plaintiff's lost sales without specific details alleging *how* the defendant's conduct influenced the loss.[94] Thus, plaintiffs alleging lost sales need to carefully explain how the defendants' conduct caused their injuries.[95] If a defendant's conduct was not the only factor that caused a plaintiff's injury, the plaintiff should provide a rational basis for attributing a certain portion of its harm to the defendant's conduct.[96] The hypothetical furniture company would need to consider these wrinkles in building a civil RICO case. Perhaps the company could support its claims by showing sudden decreases in sales coupled with surveys demonstrating that consumers decided not to purchase the company's furniture due to environmental concerns.

C. Increased Costs

Businesses may also be injured when their expenses or operational costs increase due to a defendant's conduct. Some businesses may experience these types of injuries due to heavy emitters' activities. For example, a produce distributor may incur increased costs due to climate change if it is forced to shift its supply chains to new regions and to find new suppliers. A hospital's operational costs may increase as it struggles to address human

94. *See, e.g.*, Chaverri v. Platinum LED Lights LLC, No. CV-21-01700-PHX-SPL, 2022 WL 2275664, at *9 (D. Ariz. June 22, 2022) ("[Plaintiff] is claiming an injurious loss of sales caused by [Defendants] allegedly defrauding third-party consumers, but Defendants have given no concrete factual basis for this Court to draw a reasonable inference that there is a direct relation between these two claims. Defendants do not address whether their alleged economic injury might have been caused by other factors . . . ."); Fortunet, Inc. v. Gametech Ariz. Corp., No. 206-CV-00393-PMP-PAL, 2008 WL 5083812, at *21 (D. Nev. Nov. 26, 2008) (noting that even if plaintiff could establish causal connection between defendant's conduct and injury, plaintiff provided no evidence about how many sales were lost due to the conduct).

95. Holmes v. Sec. Inv. Prot. Corp., 503 U.S. 258, 268–69 (1992); *Anza*, 547 U.S. at 460–61; Hemi Group, LLC v. City of New York, 559 U.S. 1, 9 (2010).

96. *Holmes*, 503 U.S. at 269 (discussing difficulty "ascertain[ing] the amount of a plaintiff's damages attributable to the violation, as distinct from other, independent, factors"); *Club One Casino*, 837 F. App'x 459, 460–61 (9th Cir. 2020) (dismissing plaintiff's injury as too attenuated from defendant's conduct partly due to difficulty of parsing effects of defendant's conduct versus other factors contributing to injury).

health issues associated with climate change.[97] However, such injuries tend to be relatively indirect and are therefore likely to run up against the proximate cause requirement.

Knit With v. Knitting Fever demonstrates some causality issues that may arise for civil RICO plaintiffs whose injuries are premised on increased costs. In *Knit With*, a yarn shop alleged that a supplier's fraudulent marketing of its products had caused the plaintiff to incur several thousands of dollars in costs in order to restock its shelves.[98] In a decision affirmed by the Third Circuit, the district court held that these injuries were not caused by the defendants' conduct for two reasons. First, the plaintiff did not explain why the need to purchase new yarns arose from the defendants' conduct rather than a routine need to restock its inventory.[99] Second, the plaintiff had terminated its relationship with the defendant years before ordering the replacement yarns, and thus "would have had to find another supplier regardless of whether any racketeering scheme existed."[100] Moreover, because the plaintiff had ultimately sold the replacement yarns at a profit, the district court held the purchase of these yarns was not an injury at all.[101]

A hypothetical civil RICO plaintiff with a similar injury, such as the produce distributor introduced above, may be able to distinguish its injury from the *Knit With* plaintiff's. As that case demonstrates, in order to have an injury at all, such a plaintiff would likely need to show that it was not able to recoup its losses by selling an alternative product. Additionally, the plaintiff would likely need to show increased costs beyond the normal cost of restocking its product, which it would have had to do regardless of whether the defendant's conduct had occurred. If increasing temperatures or drought conditions due to climate change made it impossible for the produce distributor to source a product from a particular region, perhaps the distributor could show that it was forced to spend money shifting its supply chain to another region.

Courts have also rejected for want of proximate cause hospitals' and healthcare companies' claims that defendants' activities have increased their expenses. For example, in one case against a drug manufacturer that had illegally promoted one of its products for non-approved uses, the Seventh

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97. *See* SANDRA AGUILAR-GOMEZ ET AL., NAT'L BUREAU ECON. RSCH., KILLER CONGESTION: TEMPERATURE, HEALTHCARE UTILIZATION & PATIENT OUTCOMES 1, 27 (2025) (discussing potential need for hospitals to increase investments in labor and capital, including surge management tools, in response to surges of patients during climate change-induced heatwaves).

98. Knit With v. Knitting Fever, Inc., No. CIV.A. 08-4221, 2012 WL 2938992, at *9 (E.D. Pa. July 19, 2012).

99. *Id.*

100. *Id.*

101. *Id.*

Circuit held that welfare-benefit plans that had paid for some of these off-label uses did not have cognizable RICO injuries.[102] The court considered the chain of events that caused the payors' expenses: Patients bore the initial costs of filling prescriptions, and payors like the plaintiffs only became involved afterward to cover leftover expenses.[103] Thus, the Seventh Circuit reasoned, the payors were not "the initial losers from the promotional scheme."[104] Appearing to refer to the third proximate cause rationale from *Holmes*, the court also wrote that even if the payors were the *principally* injured parties, teasing out the payors' health costs from the patients' costs would be too complicated.[105]

The Third Circuit held similarly in a case brought by a group of union health and welfare funds against several tobacco companies and affiliates.[106] The health funds had sought to recover their expenditures on treatments for participants with smoking-related illnesses.[107] Looking to *Holmes*, the Third Circuit held that the defendants' wrongful conduct—their suppression of information regarding the health risks of smoking—had not proximately caused the plaintiffs' injuries.[108] The court wrote that the individuals with smoking-related illnesses, rather than the health funds, were directly injured by the wrongful conduct.[109] Moreover, in order to assess the health funds' damages, a court would have needed to parse "the extent to which [the funds'] increased costs for smoking-related illnesses resulted from the tobacco companies' conspiracy to suppress health and safety information, as opposed to smokers' other health problems, smokers' independent . . . decisions to smoke, smokers' ignoring of health and safety warnings, etc."[110]

In re National Prescription Opiate Litigation provides one example of an increased-costs injury that satisfied judicial proximate cause requirements. The plaintiff in the case, a hospital, alleged that a group of opioid manufacturers and affiliates had disseminated misinformation about the risks and benefits of opioid painkillers, fueling the opioid crisis and thereby increasing the hospital's operational costs in several ways, including by forcing the hospital to spend more on routine procedures that had become

102. Sidney Hillman Health Ctr. of Rochester v. Abbott Lab'ys, 873 F.3d 574, 576 (7th Cir. 2017).

103. *Id.*

104. *Id.*

105. *Id.*

106. Steamfitters Loc. Union No. 420 Welfare Fund v. Philip Morris, Inc., 171 F.3d 912, 918 (3d Cir. 1999).

107. *Id.*

108. *Id.* at 932–33.

109. *Id.*

110. *Id.* at 933.

more complicated due to patients' opioid use.[111] A district court held that the causal link between the hospital's injuries and the opioid manufacturers' conduct was direct enough to meet the proximate cause requirement.

In a magazine article, a lawyer for the hospital discussed his team's process for quantifying the hospital's damages: The team relied on forensic modeling to isolate the patients who had legal prescriptions for the defendants' products and to separate the hospital's routine expenses on these patients from the expenses generated by opioid-related health issues.[112] By isolating expenses related to patients who had prescriptions for the defendants' products and by teasing out which increased expenses arose due to opioid-related health complications, this model seems to have helped to address the first *Holmes* rationale—the risk that assessing attenuated injuries will force a court to perform a "speculative and complicated" analysis to attribute a certain percentage of the injury to the defendant's conduct.[113]

Nonetheless, given the challenge of establishing proximate cause, a hospital launching a civil RICO claim over increased operational costs due to the impacts of climate change would likely face an uphill battle. Perhaps such plaintiff could take an approach similar to the hospital's in *In re National Prescription Opiate Litigation* by using modeling to establish a dollar amount for its increased operational costs due to health complications associated with extreme heat. Or perhaps the hypothetical hospital would be able to demonstrate increased costs associated with hiring additional staff or developing procedures to deal with patient surges during heatwaves. In either case, the hypothetical hospital would face the additional hurdle of connecting the defendants' activities with a certain amount of global average warming, and with increasing the likelihood of extreme weather events like heatwaves by a certain amount.

D. Lost Relationships and Contracts

Another form of business or economic injury is the loss of a contract or an economically fruitful relationship. Such injuries may occur as a result of heavy-emitting companies' activities. For example, a construction company could lose out on a contract due to a lower bid from a company whose use of building products associated with deforestation allows it to undercut others' prices; or the produce distributor introduced in Part IV.C could lose out on a

111. In re Nat'l Prescription Opiate Litig., 452 F. Supp. 3d 745, 763 (N.D. Ohio 2020).

112. Don Barrett, *Hospital Opioids Case Moves Forward in MDL*, ATT'Y L. MAG. (Apr. 23, 2020), https://attorneyatlawmagazine.com/legal/legal-news/hospital-opioids-case-moves-forward-in-mdl. This approach resembles climate change attribution science insofar as it aims to sort out the extent to which the hospital's injuries were caused by the plaintiff's specific products.

113. Holmes v. Sec. Inv. Prot. Corp., 503 U.S. 258, 269–70 (1992).

contract as it scrambles to find new suppliers. The Second Circuit has directly held that an unawarded contract may be a business injury.[114] However, plaintiffs with lost-contract injuries need to establish a direct, causal connection to the defendant's conduct to satisfy the proximate cause requirement.

Proximate cause may be relatively easy to establish where the plaintiff and defendant have bid against each other or otherwise directly competed for a contract. In *Commercial Cleaning Services, L.L.C. v. Colin Service Systems*, *Inc.*, a class of janitorial service providers alleged that their competitor had hired undocumented workers, allowing it to lower its costs and therefore underbid the plaintiffs, who lost contracts and customers as a result.[115] The Second Circuit held that the plaintiffs had established proximate cause between their injuries and the defendants' conduct. The court noted that the plaintiffs and defendant were directly competing against each other, so opportunities that had not gone to the defendant would necessarily have gone to the plaintiffs.[116] The court also emphasized that unlike the plaintiffs' injuries in *Holmes*, the janitorial service companies' injuries were not "derivative of injury to others."[117] In other words, these were not secondary injuries, contingent on the primary injury of a third party. The hypothetical construction company's directly competitive relationship with the defendant company resembles the relationship between the plaintiffs and defendant competing for contracts in *Commercial Cleaning Services*. If this hypothetical plaintiff could show that it was next in line to win the contract, and that the defendant received the contract due to its lower bid, then it would likely have a cognizable RICO injury.

The proximate cause requirement may be more difficult to meet when plaintiffs and defendants are not directly in competition with each other. The requirement may not be satisfied if the plaintiffs cannot establish that the

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114. Terminate Control Corp. v. Horowitz, 28 F.3d 1335, 1343 (2d Cir. 1994) (holding that while the plaintiff did not have a property right in the unawarded contracts, recovery of damages for lost-contract injuries "is not premised upon any conception of a property right in" such contracts).

115. Com. Cleaning Servs., L.L.C. v. Colin Serv. Sys., Inc., 271 F.3d 374, 378 (2d Cir. 2001). The Seventh Circuit took a similar approach in *BCS Services v. Heartwood 88*, where the plaintiffs had lost bids on property tax liens, rather than contracts, due to the defendants' wrongful conduct. 637 F.3d 750, 756–57 (7th Cir. 2011) (emphasizing that plaintiffs were the only parties injured by defendants' conduct).

116. *Com. Cleaning Servs.*, 271 F.3d at 381–82. Similarly, in *Corcel Corp. v. Ferguson Enterprises*, the Eleventh Circuit held that the proximate cause requirement was satisfied because the plaintiff was next in line for the contract that the defendant had procured through fraudulent activity. 551 F. App'x 571 (11th Cir. 2014). The Supreme Court used similar reasoning in *Bridge*, although the parties in that case had bid against each other on tax liens rather than contracts. Bridge v. Phx. Bond & Indem. Co., 553 U.S. 539, 642–44 (2008).

117. *Com. Cleaning Servs.*, 271 F.3d at 385.

allegedly lost contracts were "imminent, or even reasonably certain to be entered."[118] It may also be unmet if the plaintiffs cannot set out facts "plausibly identifying" the defendant's activities as the "direct cause" of the lost relationships or opportunities.[119] The produce distributor might struggle to pass the proximate cause test because this hypothetical plaintiff's injury would derive from the injury to its former suppliers: The suppliers' livelihoods were directly destroyed by the defendants' activities, and that destruction resulted in the secondary injury to the distributor.

V. INJURIES TO INDIVIDUALS AND MEMBERSHIP ORGANIZATIONS

A coastal home lost to sea level rise. Money spent purchasing airline tickets for flights that were falsely advertised as carbon neutral. An ecotourism job lost because a once-pristine ecosystem is now degraded. A diverse range of injuries may befall individuals due to heavy-emitting sectors' impacts on climate, ecosystems, and species. This Part explores four categories of relevant injuries: damage to real property, financial losses, lost opportunities to enter commercial relationships, and lost jobs. For each type of injury, this Part provides example cases using hypothetical plaintiffs and tests these plaintiffs' injuries against case law.

In some cases, membership organizations may have standing to bring cases on behalf of groups of injured individuals. There are three requirements for this form of "associational" standing: (1) the organization's members must have standing to sue individually, (2) the interests that the organization seeks to protect through the lawsuit must be relevant to its purpose, and (3) there must not be a need for the individual members to participate in the lawsuit in order for a court to hear the organization's claim or assess its request for relief.[120] This third requirement may prevent membership organizations from suing on behalf of their members for certain injuries that would require an analysis of causation or damages on an individual level. As a blanket rule, the third requirement bars membership organizations from seeking monetary damages on behalf of their individual members.[121]

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118. *E.g.*, Prime Partners IPA of Temecula, Inc. v. Chaudhuri, No. 5:11-CV-01860-ODW, 2012 WL 1669726, at *2, 9 (C.D. Cal. May 14, 2012).

119. *Id.*

120. Hunt v. Wash. State Apple Advert. Comm'n, 432 U.S. 333, 343 (1977).

121. Comm. to Protect Our Agric. Water v. Occidental Oil & Gas Corp., 235 F. Supp. 3d 1132, 1169 (E.D. Cal. 2017) ("No federal court has held that an association has standing to seek monetary relief on behalf of its members . . . .") (citing United Union of Roofers, Waterproofers, & Allied Trades No. 40 v. Insurance Corp. Am., 919 F.2d 1398, 1400 (9th Cir. 1990); Air Transport Ass'n Am. v. Reno, 80 F.3d 477, 484–85 (D.C. Cir. 1996)).

However, organizations may seek injunctive relief that would redress all members' injuries without the need for individualized consideration.[122]

A. Damage to Real Property

Individual plaintiffs may suffer harm when the effects of climate change—like extreme weather events and sea level rise—physically damage their properties. Physical damage to real property demonstrable through a diminishment in property value falls squarely within the range of harms that may constitute injuries to "business or property." However, federal circuits disagree about whether a plaintiff who has lost the use and enjoyment of their property has suffered a RICO property injury or a personal injury. In *Safe Streets Alliance v. Hickenlooper*, the Tenth Circuit held that both the diminishment of the plaintiffs' land value and the plaintiffs' lost use and enjoyment of their land due to emissions of "foul odors" from a neighboring marijuana farm were cognizable RICO injuries.[123] In contrast, the Ninth Circuit held in *Oscar v. University Students Co-operative Association* that lost use and enjoyment is "not a tangible injury to property" and therefore does not satisfy RICO's business-or-property requirement.[124] However, in light of the Supreme Court's recent holding in *Medical Marijuana*,[125] secondary economic consequences of a plaintiff's loss of the use and enjoyment of their property may create grounds for recovery under RICO.

Even if a plaintiff's property damage is considered a business-or-property injury, the plaintiff may struggle to satisfy the proximate cause requirement. As discussed in Part II.A., it is unclear whether courts will view the chain of causation between major GHG emitters' activities and damage due to the 'symptoms' of climate change as sufficiently direct to give rise to liability. Though attribution science has become robust,[126] it is more difficult to attribute individual, extreme events such as storms or wildfires to climate change than it is to attribute *average* changes like average surface temperatures or sea level rise.[127] Thus, a plaintiff whose property has been damaged due to sea level rise may satisfy the proximate cause requirement

122. Nat'l Org. for Women, Inc. v. Scheidler, 897 F. Supp. 1047, 1069–70 (N.D. Ill. 1995), *rev'd on other grounds* 547 U.S. 9 (2006) (holding that the women's organization had associational standing in civil RICO suit because it sought injunction rather than monetary damages for members).

123. 859 F.3d 865, 885–88 (10th Cir. 2017).

124. Oscar v. Univ. Students Co-op. Ass'n, 965 F.2d 783, 787 (9th Cir. 1992). The Ninth Circuit appeared to agree that reduced property values would give rise to a cognizable RICO injury, however. *Id.* at 786.

125. Med. Marijuana, Inc. v. Horn, 145 S. Ct. 931, 936 (2025).

126. Burger et al., *supra* note 78, at 65.

127. *Id*. at 90. Extreme precipitation events, for example, are "characterized by large variability and difficult to model." *Id*. at 107.

more easily than a plaintiff whose property has been damaged in a hurricane.[128]

A membership organization would not have associational standing to sue over individual members' real property damages. These members' injuries would need to be quantified on an individual basis, which would necessitate their individual participation in the case. As discussed above, the need for individual members' participation to analyze claims or damages precludes associational standing.[129]

B. Financial Loss

Individual injuries may also be purely financial. For instance, an individual may suffer an injury when they purchase a seafood product in reliance on a manufacturer's false representation that it was sustainably caught. The Supreme Court has stated in the context of antitrust law that "[a] person whose property is diminished by a payment of money wrongfully induced is injured in his property."[130] Lower courts have followed this statement in civil RICO cases, holding that financial injury to an individual is a cognizable injury to property.[131] Thus, consumer injuries that arise when individuals purchase products in reliance on misrepresentations or omissions may fall within the scope of RICO.

In one case, the Ninth Circuit held that individuals who had paid out-of-pocket expenses for a prescription drug which, unbeknownst to them, increased their risk of developing bladder cancer satisfied the proximate cause requirement.[132] The court noted that the defendants had not even disputed that the injury was a business-or-property injury.[133] The Ninth Circuit found that the proximate cause requirement was met because the plaintiffs were the parties most directly injured by the defendants' actions.[134] The court observed that other federal circuits have analyzed proximate cause

128. The complaint in *Municipalities of Puerto Rico* takes an "intensification" approach to showing causation, arguing not that the defendants' activities caused the relevant hurricanes single-handedly, but rather that the defendants' activities increased the hurricanes' intensity and destructiveness. Amended Complaint for Damages, *supra* note 9, at 77 ("The extremely warm water around Puerto Rico caused by climate change, as accelerated by the Defendants' products and conduct, intensified Maria by 65%.").

129. 432 U.S. 333, 343 (1977).

130. Chattanooga Foundry & Pipe Works v. City of Atlanta, 203 U.S. 390, 396 (1906).

131. *E.g.*, Smith v. FirstEnergy Corp., 518 F. Supp. 3d 1118, 1125 (S.D. Ohio 2021) (holding that ratepayer surcharges to bail out nuclear power plants could constitute injury to property).

132. Painters & Allied Trades Dist. Council 82 Health Care Fund v. Takeda Pharms. Co., 943 F.3d 1243, 1247 (9th Cir. 2019).

133. *Id.* at 1248.

134. *Id.* at 1250–51.

differently in cases involving consumer injuries due to misrepresentations regarding prescription drugs.[135] For example, the Second Circuit has held that patients' injuries are too attenuated from the defendants' conduct to satisfy proximate cause because doctors may rely on other sources of information besides the manufacturers' marketing plans in making prescription decisions.[136]

At first glance, an injury to a seafood consumer appears less complex than an injury to a prescription drug consumer because a seafood consumer's decision to purchase a product is not contingent upon receiving a prescription from a doctor. Instead, the choice may be contingent upon a retailer's decision to stock the offending product, in which case a court might hold that the injury to the consumer was too far attenuated from the manufacturers' conduct. Wielding RICO, however, a consumer might be able seek redress from the retailer *and* the manufacturer if both had participated in the pattern of racketeering activity. If both the retailer and manufacturer could be sued as "persons" contributing to the racketeering enterprise, the retailer's decision to stock the manufacturer's product could likely be a part of the wrongful conduct subject to the lawsuit, rather than an intervening action that destroys proximate cause.

While individuals may have cognizable RICO injuries based on financial losses, a membership organization would be unlikely to have associational standing to represent members with purely financial damages because a court would need to individually assess each member's damages to consider the claim.[137]

C. Loss of Opportunity to Form Commercial Relationships

Another form of injury that may befall individual plaintiffs due to climate change, ecosystem destruction, and biodiversity loss is the loss of opportunity to form commercial relationships and transact business with distinct entities or individuals. The Ninth Circuit recognized in *National Organization for Women v. Scheidler* that such a loss of opportunity may constitute a business injury to an individual. In *National Organization for Women*, a nonprofit representing a group of patients who had sought abortions and healthcare centers that performed abortions sued a group of anti-abortion organizations and activists under RICO.[138] The plaintiffs

135. *Id.* at 1253.

136. *Id.* at 1254.

137. Hunt v. Wash. St. Apple Advert. Comm'n, 432 U.S. 333, 344 (1977).

138. Nat'l Org. for Women, Inc. v. Schiedler, 897 F. Supp. 1047, 1055 (N.D. Ill. 1995), *rev'd on other grounds*, 547 U.S. 9 (2006).

claimed that the defendants' activities—which included extortion and threats of violence—had damaged the healthcare plaintiffs' business and interfered with the patients' ability to have abortions.[139] The Supreme Court held that the healthcare clinics had sustained business-or-property injuries partly because the defendants had "use[d] force to induce clinic staff and patients to stop working and obtain medical services elsewhere."[140] Guided by this Supreme Court holding, the Ninth Circuit decided on remand that the women's organization had standing because its members had been deprived of opportunities to "avail themselves of a commercial relationship; the ability to transact business with the clinics."[141]

It is unclear how broadly the Ninth Circuit (or, potentially, a court in another federal circuit) might define the kind of "commercial relationship" that can become the subject of a RICO injury. Under a broad definition, perhaps the inability of consumers to purchase products from vineyards or fisheries damaged by climate change could be considered the loss of opportunities to form commercial relationships. However, these consumers would be unlikely to meet the proximate cause requirement because their injuries would be premised on injuries to the vineyards or fisheries. In other words, these businesses' more direct injuries from the defendants' conduct would give rise to the consumers' secondary injuries.

The Ninth Circuit also addressed the issue of associational standing for a loss-of-opportunity-to-transact injury in *National Organization for Women*. The defendants argued that the women's organization could not have associational standing because its individual members would need to participate in the suit to show their damages.[142] In response, the court pointed out that the organization was seeking an injunction only, so there would be no need to establish pecuniary losses for each individual plaintiff.[143] Although some members would likely still need to testify about their injuries, that did not destroy the organization's associational standing.[144]

D. Lost Employment

Individuals may also lose employment due to the harmful impacts of heavy-emitting companies. For example, a job arranging ecotourism visits to a once-pristine locale might be lost due to the degradation of the area by deforestation and fires. A seasonal farm job that involves outdoor labor might

139. *Id*. at 1066–67.
140. Nat'l Org. for Women, Inc. v. Scheidler, 510 U.S. 249, 256 (1994).
141. *Nat'l Org. for Women*, 897 F. Supp. at 1069.
142. *Id.*
143. *Id.*
144. *Id.* at 1070.

be lost as rising temperatures make it too dangerous to perform strenuous work outdoors during the summer.[145]

Some federal courts have directly held that loss of employment can be a RICO business injury. In *Diaz v. Gates*, the Ninth Circuit held that a plaintiff who had been wrongfully imprisoned by the Los Angeles Police Department and thus had been prevented from "fulfill[ing] his employment contract or pursu[ing] valuable employment opportunities" had sustained a business injury.[146] Both the Ninth and Second Circuits also take a broad view of the types of employment that satisfy the business injury requirement.[147]

Before 2025, some courts held otherwise, reasoning that lost employment injuries were "inseparable from . . . personal injury claims."[148] The Supreme Court rejected this underlying logic in *Medical Marijuana*, a case brought by a commercial truck driver who used a pain relief product that was falsely advertised as THC-free.[149] The driver lost his job after testing positive for THC and sued the distributor under RICO. The Supreme Court held that the driver had a cognizable RICO injury: Although the loss of his job could be said to stem from an injury to the plaintiff's body, "[t]he phrase 'injured in his business or property does not preclude recovery for all economic harms that result from personal injuries."[150] Though the Court rejected an underlying reason for considering employment injuries non-cognizable under RICO, it did not directly touch on question of whether an employment injury is a business injury.[151] Thus, it is unclear whether lower courts that previously rejected employment injuries as bases for civil RICO lawsuits will change course in light of *Medical Marijuana*.

As with any RICO injury, a plaintiff alleging loss of employment as an injury would need to show a direct causal relationship between that loss and the defendants' conduct. The proximate cause requirement would likely be easier to meet for the first hypothetical plaintiff above (who has lost an

145. *See* U.S. ENV'T PROT. AGENCY, CLIMATE CHANGE IN THE UNITED STATES: BENEFITS OF GLOBAL ACTION 28–29 (2015) (projecting over 1.8 billion lost labor hours by 2100 due to extreme heat in business-as-usual GHG emissions scenario).

146. Diaz v. Gates, 420 F.3d 897, 900 (9th Cir. 2005) ("Diaz . . . has alleged both the property interest and the financial loss. The harms he alleges amount to intentional interference with contract and interference with prospective business relations, both of which are established torts under California law.").

147. *Id.* at 905 ("A person does not have to wear a suit and tie to be engaged in 'business.'"); Horn v. Med. Marijuana, Inc., 80 F.4th 130, 136 (2d Cir. 2023) (quoting *id.*).

148. Spadaro v. City of Miramar, 855 F. Supp. 2d 1317, 1353 (S.D. Fla. 2012) (quoting Townsend v. City of Miami*,* Case No. 03–21072–CIV–JORDAN (S.D. Fla. Nov. 7, 2007)).

149. Med. Marijuana, Inc. v. Horn, 145 S. Ct. 931, 936–37 (2025).

150*. Id*. at 946.

151. *Id*. at 938 ("[W]e do not decide whether the Second Circuit correctly interpreted 'business' to encompass 'employment' for purposes of § 1964(c). This interpretation may or may not be right.").

ecotourism job because it is no longer desirable to visit a certain area) than for the second (who has lost an agricultural job because extreme heat has made it infeasible to perform physical labor outdoors). While the first plaintiff would have to connect the defendants' activities with harm to the tourism destination, the second would likely face the trickier task of attributing extreme heat events or overall higher temperatures to the defendants' share of global GHG emissions. Associational standing over a loss-of-employment injury would likely depend on whether the plaintiffs were seeking monetary damages for jobs already lost or an injunction to prevent an imminent threat of lost employment.

VI. CONCLUSION

Companies that contribute to climate change and drive nature and biodiversity loss inflict widespread harms on businesses and individuals. These harms manifest both locally and globally and may often take the form of business-or-property injuries. RICO's civil enforcement provisions may provide a pathway for some of these businesses and individuals to seek damages from the companies that have caused their injuries. However, it is uncertain how courts will analyze standing for claims that arise from these harms, given the proximate cause requirement discussed in Part III. The pending *Kennedy* case may serve as an important testing ground for this new application of the statute and may open new doors for plaintiffs seeking redress for injuries induced by corporate climate and environmental malfeasance.

One development in RICO jurisprudence that would help plaintiffs to seek redress for the kinds of injuries discussed throughout this Article would be the recognition of intensification as a kind of causation. RICO creates a right of action for plaintiffs who have sustained business-or-property injuries "by reason of" the defendants' racketeering activity.[152] Courts have generally interpreted this language to impose causation requirements, preventing plaintiffs from recovering for injuries when the defendants' conduct may only have been a negligible cause, or when there are so many potential causes that it would be impossible for a court to decide how much the defendants' conduct contributed to the injury. The plaintiffs in *Municipalities of Puerto Rico* provided a reasoned basis for assessing the oil and gas industry's responsibility for the plaintiff's damages: calculations of the industry's contributions to climate change and of the extent to which climate change intensified Hurricane Maria, causing the plaintiffs' injuries.[153] By

152. 18 U.S.C. § 1964(c) (2018).

153. Amended Complaint for Damages, *supra* note 9, at 26, 77.

recognizing intensification as a basis for apportioning responsibility, courts would help to ensure that plaintiffs who have foreseeable injuries due to defendants' greenhouse gas emissions could seek relief.

THE ENDANGERED SPECIES ACT AND THE PROTECTION OF INTRASTATE ANIMALS

Duncan Glover*

ABSTRACT

In 1973, Congress passed the Endangered Species Act (ESA) using its Commerce Clause power. An issue arises when the ESA attempts to regulate purely intrastate animals: animals who do not travel outside of state lines nor do they have any substantial effect on interstate commerce. Since these intrastate animals do not travel interstate, regulating these creatures could be outside the scope of Congress's authority. The current make-up of the Supreme Court, coupled with unsettled law concerning Congress's use of its Commerce Clause power with respect to the ESA, make this the opportune time to limit the Act. To bolster the ESA, Congress should instead rely on its spending power to condition the receipt of federal funds, from programs like the Cooperative Endangered Species Conservation Fund, to protect intrastate species.

"Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed."

-President Nixon, upon signing the Endangered Species Act[1]

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1. *Laws and Policies: Endangered Species Act*, NOAA, https://www.fisheries.noaa.gov/topic/laws-policies/endangered-species-act (last visited Jan. 22, 2026).

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INTRODUCTION

When it was passed, the Endangered Species Act ("ESA" or the "Act") was described as the "most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[2] Congress's express purpose for passing such a comprehensive act was to conserve those species that were deemed threatened or endangered.[3] To achieve that end, the ESA endows certain federal agencies with ample authority, as Congress specifically tasked federal agencies to use all methods and procedures necessary for the conservation and protection of that species.[4] Congressional intent is clear within the statute: federal agencies and their secretaries are to take all possible and necessary measures to protect and conserve those species that are listed as threatened or endangered.[5]

In order to pass the ESA, Congress had to rely on one of its enumerated powers found in the Constitution, its Commerce Clause power. This allows Congress to "regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes."[6] Congress's use of its Commerce Clause power is sound when it is applied to mobile animals, whose range is interstate in the ordinary sense of the word.[7] However, with recent Supreme Court cases, the scope of Congress's Commerce Clause power has been narrowed.[8] The Court's decision in cases such as *Morrison* and *Lopez* require that a regulated entity under Congress's Commerce Clause power must have a substantial relationship to interstate commerce, or be an economic activity

2. Tenn. Valley Auth. v. Hill, 437 U.S. 153, 180 (1978).
3. *Id.*
4. *Id.*
5. *Id.*
6. U.S. CONST. art. I. § 8, cl. 3.
7. Kevin Simpson, *The Proper Meaning of "Proper": Why the Regulation of Intrastate, Non-Commercial Species Under the Endangered Species Act Is an Invalid Exercise of the Commerce Clause*, 91 WASH. U.L. REV. 169, 170 (2013).
8. *See* United States v. Lopez, 514 U.S. 549, 567 (1995); United States v. Morrison, 529 U.S. 598, 613 (2000).

that has an impact on interstate commerce.[9] It is in this regard that the ESA faces a new danger. More than 1,200 species listed as threatened or endangered are confined to a single state.[10] Thus, these intrastate animals who have little to no economic value have given rise to new claims that Congress has exceeded its authority when attempting to regulate these animals and is therefore an invalid exercise of its Commerce Clause power.[11]

The Supreme Court has yet to rule on the ESA's reach to intrastate animals, leaving a handful of appellate courts to weigh in on the issue.[12] Thus, with renewed attempts to invalidate the ESA's protection over endangered or threatened animals, Congress should find a new regulatory mechanism to conserve and protect these intrastate, non-commercial animals.[13] This Note argues that new changes to the scope of Congress's Commerce Clause power willmake its regulation of these intrastate animals an overreach of its regulatory authority under the Commerce Clause. So, Congress should rely on its spending power to protect these intrastate animals, conditioning the receipt of certain federal funds to states who house such intrastate animals on the stipulation that those species be protected. Furthermore, this Note will argue that Congress's spending power is a better mechanism for the regulation of these animals given the narrowing of its Commerce Clause authority and will supplement existing protections to these important animals. Congress could do this through conditioning the receipts of federal funds through programs such as the Cooperative Endangered Species Conservation Fund or the Land and Water Conservation Fund.[14]

Section I discusses the background of the ESA.Section II provides the background for Congress's Commerce Clause and spending

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9. *Morrison*, 529 U.S. at 613; *Lopez*, 514 U.S. at 560.

10. Defenders of Wildlife, *Intrastate Species and the Endangered Species Act*, MEDIUM (Nov. 2, 2017) https://medium.com/wild-without-end/intrastate-species-and-the-endangered-species-act-94f4eb2b5c90.

11. *Id.*

12. Simpson, *supra* note 7, at 171; San Luis & Delta-Mendota Water Auth. v. Salazar, 638 F.3d 1163, 1163 (9th Cir. 2011), *cert. denied*, 574 U.S. 1074 (2015); Ala.-Tombigbee Rivers Coal. v. Kempthorne, 477 F.3d 1250, 1271–72 (11th Cir. 2007), *cert. denied*, 552 U.S. 1097 (2008); GDF Realty lnvs., Ltd. v. Norton, 326 F.3d 622, 624 (5th Cir. 2003), *cert. denied*, 545 U.S. 1114 (2005); Rancho Viejo, LLC. v. Norton, 323 F.3d 1062, 1062 (D.C. Cir. 2003), *cert. denied*, 541 U.S. 1006 (2004); Gibbs v. Babbitt, 214 F.3d 483, 486 (4th Cir. 2000), *cert. denied*, 531 U.S. 1145 (2001).

13. Defenders of Wildlife, *supra* note 10.

14. *State and Local Grant Funding*, NAT'L PARK SERV.: LAND & WATER CONSERVATION FUND (July 24, 2025), https://www.nps.gov/subjects/lwcf/stateside.htm#:~:text=Through%20federal%20grants%20to%20states,to%20state%20and%20local%20governments; *Cooperative Endangered Species Conservation Fund*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/program/cooperative-endangered-species-conservation-fund#:~:text=Our%20Services,species%20and%20habitat%20conservation%20annually (last visited Jan. 23, 2026).

power.Section III analyzes the current state of the ESA, as challenged in federal courts, and demonstrates that the ESA may be in danger of being curtailed. Finally, Section IV proposes the best solution to this problem is for Congress to condition the receipt of federal funds on the protection of intrastate animals.

I. BACKGROUND ON THE ESA

The Endangered Species Act (ESA) was passed in 1973 in response to the increasing public concern for protecting endangered wildlife.[15] Congress passed the ESA with the purpose of conserving and protecting endangered and threatened species.[16] The ESA achieves this by creating a program for the conservation of such endangered and threatened species and provides for certain steps to be taken to achieve these goals.[17]

The central substantive and procedural provisions are largely found in five sections of the ESA.[18] Section 4 establishes the procedures for listing a species as threatened or endangered, designating critical habitat, and creating a recovery plan for those listed species.[19] Section 7 requires that federal agencies consult with the appropriate federal agencies and to ensure that actions by the federal government do not "jeopardize the continued existence" of the species.[20] Section 9 prohibits any person from taking or engaging in commerce with any endangered or threatened species.[21] Section 10 establishes specific exemptions, permits, and exceptions to Section 9.[22] Finally, Section 11 lays out civil and criminal penalties for those who violate Section 9.[23] Ultimately, Congress intended for these sections to act as an affirmative duty to conserve these animals, with the ultimate goal being recovery.[24]

Congress's "take" provision in Section 9 of the ESA arms agencies with the ability to prosecute individuals who seek to engage in prohibited conduct.[25] The "take" provision prohibits fishing, hunting, or harming any

15. DALE D. GOBLE, ET AL., WILDLIFE LAW CASES AND MATERIALS 915–20 (Robert C Clark et al. eds., 3d. ed. 2017).
16. Tenn. Valley Auth. v. Hill, 437 U.S. 153, 180 (1978).
17. 16 U.S.C. § 1531 (2024).
18. §§ 1533, 1536, 1538, 1539, 1540 (2024).
19. GOBLE, *supra* note 15, at 915–20.
20. *Id.*
21. *Id.*
22. *Id.*
23. *Id.*
24. *Id.*
25. Simpson, *supra* note 7, at 169.

species listed in the ESA.[26] Additionally, the provision prohibits individuals from harassing, harming, shooting, pursuing, hunting, capturing, killing, collecting, or attempting to engage in any such conduct.[27]

To enforce these provisions, Congress tasked the Fish and Wildlife Service (FWS) to designate critical habitats for these species.[28] FWS may also purchase land that is crucial for the survival of these species and/or prohibit any adverse modification.[29] Congress designated the FWS as the enforcement arm of the ESA. This allows the agency to develop plans and procedures for how private parties and government entities should behave to conserve these animals and their critical habitats.[30] Moreover, Congress granted the ESA federal preemption over state laws, preempting states' authority over certain fish and wildlife.[31] Animals may be delisted when FWS is satisfied with a species recovery based on a five-factor analysis.[32]

II. BACKGROUND ON CONGRESS'S COMMERCE CLAUSE POWER AND SPENDING POWER

A. Commerce Clause

Congress's Commerce Clause power has enjoyed a series of expansions through the 18th, 19th, and 20th centuries.[33] Starting with *Gibbons v. Ogden*, the Court held that Congress's use of its Commerce Clause power preempted any state law that may inhibit the exercise of that power.[34] In the following years, the Court expanded the scope of this power in cases such as *United States v. Darby*. There, the Court held that the federal regulation of working conditions was a proper use of Congress's Commerce Clause as it had a significant effect on interstate commerce.[35] It was not until *Wickard v. Filburn* that Congress saw a major expansion to its Commerce Clause power.[36] In that case, the Court held that Congress may regulate wholly intrastate activities if that activity, when viewed in the aggregate, would have

26. *Id*. at 169–70.
27. GOBLE, *supra* note 15, at 915–20.
28. *Id.*
29. *Id.*
30. *Id.*
31. *Id.*
32. U.S. FISH & WILDLIFE SERV., DELISTING A SPECIES 1 (2011).
33. *See generally* ERWIN CHEMERINSKY, CONSTITUTIONAL LAW PRINCIPLES AND POLICIES 238–60 (2d. ed. 2002) (discussing general principles of constitutional law and chronicles the expansion and contraction of Congress' Commerce Clause power).
34. Gibbons v. Ogden, 22 U.S. 1, 67 (1824).
35. 312 U.S. 100, 117 (1941).
36. 317 U.S. 111, 127–28 (1942).

a substantial effect on interstate commerce, even if the individual effect is trivial.[37] It is under this basis that some appellate courts have upheld the ESA's regulation of intrastate species, holding that while the extinction of an intrastate species may be trivial, in the aggregate, the extinction of every intrastate species would have a substantial effect on interstate commerce.[38]

Toward the end of the of the 21st century, the Supreme Court curtailed Congress's Commerce Clause power with *United States v. Lopez*.[39] It was in this case that the Court held that a regulatory scheme prohibiting guns in school zones as not an economic activity that substantially affected interstate commerce, nor could it in the aggregate have an effect.[40] The Court held that Congress could only regulate the channels of interstate commerce, an instrumentality of interstate commerce, or an activity that has a substantial effect on interstate commerce.[41] The Court emphasized thatfor Congress to regulate under its Commerce Clause power, it must be an economic activity that substantially affects interstate commerce.[42] Here, the regulation of firearms in school zones was not an economic activity, as there was nothing economic being regulated nor could the regulation be construed as an economic enterprise.[43]

At the turn of the 21st century, the Court reinforced its *Lopez* curtailment of the scope of Congress's Commerce Clause power with *United States v. Morrison*.[44] The Court held that a statute passed under the Commerce Clause was invalid as it was not sufficiently related to an economic activity and more broadly, interstate commerce.[45] The Court found that there was no economic activity that existed with the regulation of gender-based crimes, nor did the statute have a jurisdictional hook.[46] Gender-based crimes are not economic in nature.[47] Only cases upheld by the Court that regulate intrastate activity using Congress's Commerce Clause power have been economic in nature.[48] The Court went on to hold that it has only upheld regulation under the

37. *Id.*

38. *See* Gibbs v Babbitt, 214 F.3d 483, 493 (4th Cir. 2000); GDF Realty Invs., Ltd. v. Norton, 326 F.3d 622, 640–41 (5th Cir. 2003).

39. *See* United States v. Lopez, 514 U.S. 549, 551 (1995).

40. *Id.* at 561.

41. *Id.* at 558–59.

42. *Id.* at 560.

43. *Id.* at 561.

44. *See* United States v. Morrison, 529 U.S. 598, 617–18 (2000).

45. *Id*. at 613.

46. *Id.* (A jurisdictional hook is language that Congress addes into an act that provides a jurisdicitional element establishing that a federal cause of action is pursuant to Congress's Commerce Clause Power and is therefore tied to Congress's interstate commerce power.)

47. *Id.*

48. *Id.*

Commerce Clause for intrastate activity when that activity is economic in nature.[49]

The Court's move toward the curtailment of Congress's Commerce Clause authority limits Congress'sability to regulate intrastate, noneconomic activity. As seen in *Lopez*, aggregating purely intrastate activities is limited to those activities which are economic in nature.[50] Thus, single-state, non-commercial activities, even taken in the aggregate may no longer be a basis for which Congress may regulate under its Commerce Clause authority.

B. Spending Power

Article I, Section 8, Clause I of the Constitution prescribes Congress's spending power, stating: "The Congress shall have Power To lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defense and general Welfare of the United States."[51] Alexander Hamilton took a broad view of this clause, stating that general welfare was as "comprehensive as any that could have been used."[52] The view embodied by Hamilton is that the general welfare of the United States comprised all things which may be advantageous to the general welfare of the country; it is not limited by the enumerated powers found in Article I, Section 8 of the Constitution.[53] In the brief for the Government in *United States v. Butler*, it argued that "Congress may tax (and appropriate) in order to promote the national welfare by means which may not be within the scope of the other Congressional powers."[54]

Even under a broad interpretation of Congress's spending power, it is still subject to certain limitations. In *Butler*, the Court adopted this broad construction of the Spending Clause, going insofar as to hold that "the power of Congress to authorize expenditure of public moneys for public purposes is not limited by the direct grants of legislative power found in the Constitution."[55] The Court found that while Congress had broad power under its Spending Clause, it was still subject to limitation.[56] The Spending Clause is still subject to the ordinary limits of the Constitution, namely that powers

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49. *Id.*

50. *Id.*; *see* United States v. Lopez, 514 U.S. 549, 561 (1995).

51. U.S. CONST. art. I. § 8, cl. 1.

52. Alexander Hamilton, *Alexander Hamilton's Final Version of the Report on the Subject of Manufactures , [5 December 1791]*, NAT'L ARCHIVES, https://founders.archives.gov/documents/Hamilton/01-10-02-0001-0007 (last visited Apr. 16, 2026).

53. United States v. Butler, 297 U.S. 1, 16 (1936).

54. *Id.*

55. *Id.* at 66.

56. *Id.* at 66–67.

granted to the federal government are specific and enumerated including powers derived from the exercise of its enumerated powers.[57] Congress cannot use its spending power in a manner that would be unlimited and general.[58]

Thus, when exercising its spending power, the purpose of such regulations should be for specific reasons, and Congress should not invade nor try to address local issues.[59] In *Butler*, the Court held that the Agricultural Act that was enacted by Congress invaded a right reserved for states. The power to regulate and control agricultural production is traditionally left to the states.[60] However, the Court does not go on to describe what is or is not general welfare, only stating that in exercising its Spending Clause power, Congress cannot use "general welfare" as a means to destroy state or local sovereignty.[61]

A part of Congress's spending power is its ability to condition the receipt of federal funds to the several states.[62] In *South Dakota v. Dole*, South Dakota sued the federal government for conditioning the receipt of federal funds contingent upon the state raising its drinking age to 21 years of age.[63] The Supreme Court held that conditioning the receipt of funds was constitutional, but had limits.[64] If Congress wants to condition funds, it must do so unambiguously, allowing states to understand the terms and the choice that is before them.[65] The conditions also must be of national concern and something Congress would have purview over.[66] Additionally, Congress cannot create conditions that would force the states to partake in activities that are unconstitutional.[67] Congress may use its spending power to broaden policy objectives that are not within Article I's enumerated fields. This allows Congress to pursue objectives that are not necessarily explicit within the Constitution.[68] Moreover, Congress may only spend money for the general welfare of the United States, although, the Court mentions that substantial deference should be given to the judgment of Congress.[69]

57. *Id.*
58. *Id.* at 67.
59. *Id.*
60. *Id.* at 68.
61. *Id.* at 77.
62. South Dakota v. Dole, 483 U.S. 203, 206–07 (1987).
63. *Id.* at 203.
64. *Id.*
65. *Id.*
66. *Id.*
67. *Id.* at 204.
68. *Id.* at 206–07.
69. *Id.* at 207.

Furthermore, Congress cannot create a scenario in which the conditions placed upon the subjected funds are so coercive that states have no choice but to accept Congress's terms.[70] In *Dole*, this was measured by looking at the percentage of funds that were being conditioned as compared to the state's overall budget.[71] Here, funds that had conditions placed upon them represented less than 5% of the state's overall budget and were found to not be coercive.[72] Even if Congress lacked the power to create a national drinking age, Congress's use of its spending power to induce state action was constitutional.[73]

In *National Federation of Independent Businesses v. Sebelius*, the federal government conditioned the receipt of federal funds on the condition that states implement the Medicaid expansion provisions and the individual mandate of the Affordable Care Act.[74] The federal government also stipulated that if states did not accept this proposal, they would have all of their Medicaid funds withheld.[75] The Court reaffirmed the federal government's ability to induce states to adopt policies that it could not impose itself.[76] The Court likened Congress's spending power and its ability to condition those funds to that of a contract; one in which states voluntarily and knowingly accept the terms of the contract.[77] Thus, when pressure turns into compulsion Congress has exceeded its power under the Constitution.[78] States cannot be required to regulate in the manner Congress prescribes if they do not want to accept the funds offered to them.[79] Spending Clause conditions do not pose a danger to states when they have the "legitimate" choice to accept the conditions in exchange for federal funds.[80]

Here, if states did not accept the conditions imposed by the federal government under the Affordable Care Act, they would lose over 10% of the state's overall budget.[81] This was found to be coercive and did not present states with a legitimate choice when it came to accepting or rejecting the conditions set forth by the federal government.[82] The federal government cannot surprise states with post-acceptance or retroactive conditions to the

70. *Id.* at 211.
71. *Id.*
72. *Id.*
73. *Id.* at 212.
74. Nat'l Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 519, 519 (2012).
75. *Id.* at 519–20.
76. *Id.* at 537.
77. *Id.* at 577.
78. *Id.* at 577–78.
79. *Id.*
80. *Id.* at 578.
81. *Id.* at 582.
82. *Id.* at 584.

receipt of federal aid.[83] Thus, if states have been enjoying the money given to them for an existing program, Congress cannot create new conditions of funds for an already existing program.[84] Here, the federal government was found to be penalizing states that chose not to participate in the Affordable Care Act by taking away their existing Medicaid funding.[85] However, the Court did not define at what point conditions became coercive, only that in this case, the conditions were beyond that point.[86]

III. CURRENT STATE OF THE ESA

As mentioned above, the issue as to whether or not Congress has exceeded its enumerated powers via the Commerce Clause when passing the Endangered Species Act (ESA) has not been litigated in the Supreme Court.[87] However, that issue has been litigated in a number of lowercourts throughout the United States.[88]

A. The Ninth Circuit Upholds the ESA

One such case is *San Luis & Delta-Mendota Water Authority v. Salazar*.[89] In this case, a number of farmers banded together to sue the Fish and Wildlife Service due to water flows being reduced to protect the endangered Delta Smelt Fish.[90] The farmers argued that they received reduced water deliveries to grow their crops due to water being diverted to protect the critical habitat of the endangered fish.[91] The farmers argued that the fish were a purely intrastate species with no commercial value; ergo, Sections 7 and 9 of the ESA are an invalid exercise of Congress's Commerce Clause power.[92] The Court held that the ESA did bear a substantial relation to commerce.[93] The ESA is allowed to regulate purely local activities that are

83. *Id.*
84. *Id.*
85. *Id.* at 585.
86. *Id.*
87. Simpson, *supra* note 7, at 171; San Luis & Delta-Mendota Water Auth. v. Salazar, 638 F.3d 1163, 1163 (9th Cir. 2011), *cert. denied*, 574 U.S. 1074 (2015); Ala.-Tombigbee Rivers Coal. v. Kempthorne, 477 F.3d 1250, 1271–72 (11th Cir. 2007), *cert. denied*, 552 U.S. 1097 (2008); GDF Realty lnvs., Ltd. v. Norton, 326 F.3d 622, 624 (5th Cir. 2003), *cert. denied*, 545 U.S. 1114 (2005); Rancho Viejo, LLC. v. Norton, 323 F.3d 1062, 1062 (D.C. Cir. 2003), *cert. denied*, 541 U.S. 1006 (2004); Gibbs v. Babbitt, 214 F.3d 483, 486 (4th Cir. 2000), *cert. denied*, 531 U.S. 1145 (2001).
88. *E.g.*, *Salazar*, 638 F.3d at 1163; *Kempthorne*, 477 F.3d at 1271.
89. *Salazar*, 638 F.3d at 1163.
90. *Id.* at 1168.
91. *Id.*
92. *Id.*
93. *Id.* at 1174.

a part of an economic class of activities that have a substantial effect on interstate commerce.[94] Thus, *de minimis* individual instances that may arise under a statute are of no consequence to its constitutionality.[95] Even when species are of no commercial value, Congress may regulate under its Commerce Clause authority to prevent the destruction of biodiversity and protect current interstate commerce that relies on it.[96] Interstate travelers can stimulate interstate commerce by observing or studying purely instrastate endangered or threatened species. Regeneration of an endangered or threatened species may allow future commerce use of those species.[97] Here, the ESA, as a comprehensive regulatory scheme, is only required to have a substantial relation to commerce, rather than the scheme itself be an economic regulatory scheme.[98] Under these arguments, the Ninth Circuit upheld Congress's Commerce Clause power as applied to the ESA.[99]

B. The Eleventh Circuit Upholds the ESA

Another case would be *Alabama-Tombigbee Rivers Coalition v. Kempthorne*.[100] Here, a coalition sued the Fish and Wildlife Service's designation of the Alabama Sturgeon as endangered and argued that this purely intrastate animal violated Congress's use of its Commerce Clause power.[101] They argued that the fish was of little to no commercial value because there had been no reported commercial harvests of the fish for over a century.[102] Since the fish cannot and has not been harvested, protecting the fish was a noneconomic activity that could not be regulated, similar to those in cases like *Lopez* and *Morrison*.[103] In *Alabama-Tombigbee*, the Court upheld the ESA and Congress's use of its Commerce Clause power to enact it by holding that its total economic impact bared a substantial relation to interstate commerce.[104] The Court honed in on the argument that the ESA prohibited the trafficking of endangered species, and such a market generated up to eight billion dollars annually.[105] Thus, the ESA has a substantial relation to interstate commerce and, as such, the listing process contained

94. *Id.*
95. *Id.* at 1175.
96. *Id.* at 1176.
97. *Id.*
98. *Id.* at 1177.
99. *Id.*
100. Ala.-Tombigbee Rivers Coal. v. Kempthorne, 477 F.3d 1250, 1271 (11th Cir. 2007).
101. *Id*. at 1253.
102. *Id*. at 1271.
103. *Id*.
104. *Id*. at 1273.
105. *Id*.

within it was an essential part of a larger regulation of an economic activity.[106] The Court also held that Congress could have rationally concluded that the regulation of intrastate species was an essential part of the larger regulatory scheme as a whole.[107] Even if there was no commercial nexus here, the Court held that it could not "excise individual applications of a concededly valid statutory scheme."[108] Overall, the Court stated that the ESA was a valid application of Congress's Commerce Clause power by protecting all endangered species notwithstanding their geographic range.[109]

C. The Fifth Circuit Upholds the ESA

In the Fifth Circuit came the case *GDF Reality Investments, Ltd. v. Norton*.[110] In this case, GDF Reality Investments purchased a property and wanted to develop it commercially.[111] However, there existed six cave species of invertebrates that lived in and under the property that were classified as endangered by the Fish and Wildlife Service.[112] These cave species are only found in these few areas of Texas and there is no commercial value, nor market for them.[113] Once again, the plaintiffs argued that Congress had exceeded its power under the Commerce Clause when passing the ESA as applied to intrastate animals.[114] The Court held that "taking" these species under the ESA can be aggregated with all other endangered species under the ESA.[115] There can be two ways that an intrastate activity can affect interstate commerce. First, an activity that itself, based on the nature and scope of that activity, can affect interstate commerce. Second, the activity can be aggregated with similar activities, so that the sum of those activities have a substantial effect on interstate commerce.[116] In this situation, the cave species fall under the latter.[117] Any interstate impact generated by the cave species due to travel or publication are negligible.[118] However, this species, when aggregated with others, creates an important part of an economic regulatory

106. *Id*. at 1275.
107. *Id*.
108. *Id*. at 1276.
109. *Id*. at 1277.
110. GDF Reality Invs., Ltd. v. Norton, 326 F.3d 622, 622 (5th Cir. 2003).
111. *Id*. at 624.
112. *Id*. at 625.
113. *Id*.
114. *Id*. at 624.
115. *Id*.
116. *Id*. at 636.
117. *Id*. at 640.
118. *Id*. at 637.

scheme.[119] The regulation of interstate takes of these cave species is an integral part of the ESA economic regulatory scheme.[120]

D. The D.C. Circuit Court Upholds the ESA

Rancho Viejo, LLC. v. Norton, is a notable case not because the Court upheld the ESA, but because future Chief Justice John Roberts wrote a dissent.[121] In this case, a real-estate company sued the Fish and Wildlife Service's designation of an endangered toad as an improper use of Congress's Commerce Clause power.[122] The appellate court once again agreed that the ESA fell within the *Lopez* framework as a regulated activity that substantially affects interstate commerce.[123] The court held that the loss of biodiversity has a substantial effect on interstate commerce as well as the regulation of commercial development, which the court held was plainly interstate.[124] While Section 9 of the ESA has no jurisdictional hook, one is not required, nor has the absence of this hook resulted in any other appellate courts finding that the ESA was an invalid use of Congress's Commerce Clause power.[125] The absence of this jurisdictional element leaves courts to independently determine whether or not the regulated activity is substantially connected to and affects interstate commerce.[126] The court held that the ESA should not be struck down on a "noneconomic purpose test" because the ESA is a multipurpose statute, even though the economic concerns may not be the Act's true purpose.[127] Once again, the court held that Congress may act under its Commerce Clause authority to achieve a noneconomic objective.[128] The ESA is a statute of national concern and it has been the historical purview of the federal government to preserve resources for future Americans.[129]

Judge John Roberts, while at the D.C. Circuit Court of Appeals, offers a dissent against upholding the ESA under Congress's Commerce Clause authority.[130] Here, Judge Roberts argues that the court should be asking whether the activity being regulated actually affects interstate commerce rather than if the challenged regulation substantially affects interstate

119. *Id*. at 638–39.
120. *Id*. at 640.
121. Rancho Viejo, LLC v. Norton, 334 F.3d 1158, 1160 (D.C. Cir. 2003).
122. Rancho Viejo, LLC. v. Norton, 323 F.3d 1062, 1064 (D.C. Cir. 2003).
123. *Id.* at 1067.
124. *Id.*
125. *Id.* at 1068.
126. *Id.*
127. *Id.* at 1073.
128. *Id.* at 1074.
129. *Id.* at 1079–80.
130. Rancho Viejo, LLC v. Norton, 334 F.3d 1158, 1160 (D.C. Cir. 2003).

commerce.[131] Moreover, he argued that in ruling the way it did, the court is inconsistent with *Lopez* and *Morrison*, as those cases held that the regulated activity must substantially affect interstate commerce.[132] Judge Roberts asks at the end of his dissent how "regulating the taking of a hapless toad, that for reasons of its own, lives its entire life in California constitutes regulating 'Commerce . . . among the several States.'"[133]

E. The Fourth Circuit Court Upholds the ESA

In *Gibbs v. Babbitt*, the appellants challenged the constitutionality of a Fish and Wildlife Service designation that prohibited the taking of red wolves under the ESA.[134] Here, the court held that to be upheld under *Lopez*, the economic or commercial activity must play a central role when determining if the statute will be upheld under the Commerce Clause.[135] However, that economic activity can be understood in broad terms.[136] The court held that the primary reason for protecting red wolves was based on commercial and economic concerns.[137] Here, the court applied a *Wickard*-like analysis, arguing that while taking one red wolf on private land may not be substantial, taking red wolves in the aggregate does have a sufficient impact on interstate commerce.[138] The specific regulation of a purely intrastate species is part of a broader scheme of endangered species regulation and protection.[139] Nor does the statute impinge upon an area that is traditionally an area of state concern.[140] As such, this is another indication of the proper use of Congress's Commerce Clause power.[141] While states may argue that the regulation of private land use is inherent in a state's police power, the court noted that this does not preclude Congress from regulating activities that take place on private land.[142] Overall, this court, like others, held that the conservation of natural resources is both an economic and commercial concern.[143]

131. *Id.*
132. *Id.*
133. *Id.* (quoting U.S. CONST. art. I. § 8, cl. 3).
134. Gibbs v. Babbitt, 214 F.3d 483, 486 (4th Cir. 2000).
135. *Id*. at 491.
136. *Id*.
137. *Id*. at 492.
138. *Id*. at 493.
139. *Id*.
140. *Id*. at 499.
141. *Id*.
142. *Id*. at 500.
143. *Id*. at 506.

However, this case had a notable dissent that argued against Congress's use of its Commerce Clause power to regulate intrastate species.[144] Here, the dissent notes that there are only 41 red wolves located on private property and only 75 in total. [145] Thus, the majority based their opinion on the premise that a taking of only 41 red wolves would substantially affect interstate commerce.[146] With such few numbers, it is unlikely that the killing of every red wolf on private property would constitute the type of economic activity that is sustainable under *Lopez* or *Morrison*.[147] Here, the regulation pertains to an intrastate activity that is noneconomic in nature and uses an inferential analysis to show that this activity would have a substantial effect on interstate commerce, more than *Lopez*, *Morrison*, and even *Wickard*.[148] The activity that is being regulated here cannot be said to have a plausible case for having a future or commercial economic impact.[149] Thus, there is no instance in which a localized regulation of an activity that is noneconomic in nature, or speculation that fur trade would once again become a central part of the economy, are valid applications of Congress's Commerce Clause authority.[150] Moreover, the dissent reasoned that the ESA would not be overturned by simply limiting its application to species that do have commercial or economic impact on interstate commerce.[151] Overall, the dissent argues that allowing Congress to prevail here would allow the federal government to encroach upon a state's police power.[152] Especially when Congress could easily regulate this activity under its spending power.[153]

F. A District Court in Utah's Central Division Held that the ESA Was Unconstitutional

In *People for the Ethical Treatment of Property Owners v. U.S. Fish & Wildlife Service*, the court held that the ESA was unconstitutionally passed using Congress's Commerce Clause power.[154] The court argued that based on *Lopez* and *Morrison*, Congress did not have the power to use the Commerce Clause to regulate intrastate animals.[155] In this case, the U.S. Fish

144. *Id*.
145. *Id*.
146. *Id*. at 507.
147. *Id*.
148. *Id*. at 507–08.
149. *Id*. at 508.
150. *Id*. at 508–09.
151. *Id*. at 508.
152. *Id*. at 509.
153. *Id*.
154. 57 F. Supp. 3d 1137, 1346 (D. Utah Cent. Div. 2014).
155. *Id*. at 1344.

and Wildlife Service passed regulations concerning the take of the Utah Prairie Dog, an intrastate species.[156] Once again, a similar line of logic is used against Congress's use of its Commerce Clause power. The court held that the take of an intrastate animal does not have a connection to interstate commerce, nor does the regulation prohibiting the take of the animal have any jurisdictional element that would relate to interstate commerce.[157] Here, the court argued that taking an animal that does not have an interstate economic market for it could not affect interstate commerce.[158] Moreover, the animals' biological value is a noneconomic concern, and thus, is not a basis for Congress's Commerce Clause power.[159] Even though the Prairie Dog may have garnered some interstate travel, that has never amounted to enough of a reason to justify the use of the Commerce Clause.[160]

G. Why the Supreme Court May Reverse Lower Courts Rationale

The Supreme Court has yet to hear a Commerce Clause challenge to the ESA.[161] However, the Court may hear a new challenge to settle this turbulent area of law.[162] While the aforementioned circuit courts have all upheld the ESA, they have done so under differing rationales.[163] Moreover, some members on the Supreme Court may be willing to overturn lower court precedent.[164] Justice Roberts's dissent in *Rancho Viejo*, coupled with Justice Thomas's and Justice Alito's strict views on constitutional and statutory interpretation, may be indicative of a Court that is ready to limit the ESA.[165] Before her ascent to the Supreme Court, Justice Barrett reportedly endorsed Justice Scalia's approach to the Affordable Care Act, opining that it was an unconstitutional regulation under the Commerce Clause.[166] Such a view would limit Congress's ability to regulate intrastate animals under the ESA.[167] Justice Gorsuch also holds a particularly narrow view on the scope of Congress's Commerce Clause authority and its ability to address

156. *Id*. at 1340.
157. *Id*. at 1344–45.
158. *Id*.
159. *Id*.
160. *Id*. at 1345.
161. Jennifer A Maier, *Outgrowing the Commerce Clause: Finding Endangered Species a Home in the Constitutional Framework*, 36 GOLDEN GATE UNIV. L. REV. 489, 508 (2006).
162. *Id*.
163. *Id*. at 509.
164. *Id*.
165. *Id*. at 512–13.
166. Jody Freeman, *What Amy Coney Barrett's Confirmation Will Mean for Joe Biden's Climate Plan*, VOX (Oct. 26, 2020), https://www.vox.com/energy-and-environment/21526207/amy-coney-barrett-senate-vote-environmental-law-biden-climate-plan.
167. *Id*.

environmental concerns.[168] While the ESA may still enjoy its validity thanks to Congress's Commerce Clause authority, the current make-up of the Supreme Court leaves one to ask not if the ESA will be curtailed, but rather when.

The ESA is also in danger of weakening from the executive branch. In 2020, President Trump changed how the law defined "critical habitat" to include only habitat that is currently occupied by a species, which could limit population growth.[169] Furthermore, on President Trump's first day in office for his second term, the President signed an Executive Order that allowed fast-tracking consultation during a national energy emergency.[170] Normally, this fast-tracking process was only reserved for natural disasters and other national defense and security emergencies.[171] Like in his first term, President Trump has continued to dismantle the regulations that are necessary to protect endangered and threatened species, demonstrating the need to find other ways to safeguard these species.[172]

IV. SOLUTION: CONGRESS SHOULD REGULATE THE PROTECTION OF ENDANGERED SPECIES UNDER ITS SPENDING POWER.

Congress could plainly regulate the protection of interstate species under its spending power.[173] The Endangered Species Act (ESA) is an important piece of legislation when it comes to the protection, conservation, and recovery of threatened or endangered species. To rest its viability on a faulty premise that could be subject to attack, especially when there is a more constitutionally sound option, risks lives of thousands of intrastate species.[174] With changes in the Supreme Court and opinions concerning federalism and state's police power becoming salient, public issues comes the risk of the Court striking down the ESA as it is applied to purely intrastate species.[175]

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168. Richard J. Lazarus & Andrew Slottje, *Justice Gorsuch and the Future of Environmental Law*, 43 STAN. ENV'T L.J. 1, 2 (2024).

169. Amanda Heidt, *Will the Endangered Species Act Survive Trump?*, SCIENCENEWS (Feb. 5, 2025), https://www.sciencenews.org/article/endangered-species-act-trump-esa.

170. *Id*.

171. *Id*.

172. *Id*.

173. Gibbs v. Babbitt, 214 F.3d 483, 509 (4th Cir. 2000).

174. Defenders of Wildlife, *supra* note 10.

175. Jonathan Wood, *The Endangered Species Act Exceeds Congress' Constitutional Powers*, PACIFIC LEGAL FOUND. (Oct. 24, 2013), https://pacificlegal.org/the-endangered-species-act-exceeds-congress-constitutional-powers/; David W. Scopp, *Commerce Clause Challenges to the Endangered Species Act: The Rehnquist Court's Web of Confusion Traps More Than the Fly*, 39 S.F. L.R. 789, 789 (2005); Eric Biber, *The ESA and the Commerce Clause*, LEGALPLANET (Nov. 18, 2014), https://legal-planet.org/2014/11/18/the-esa-and-the-commerce-clause.

Congress would clearly be within its constitutional authority when protecting intrastate species under its spending power. While the power is not unlimited, Congress's spending power would allow them to condition the receipt of federal funds on the conditions that these intrastate animals be protected. But what would this look like?

First, Congress would need to look to *South Dakota v. Dole*, as this case details important considerations when enacting legislation concerning Congress's spending power.[176] Under that case, Congress is allowed to attach conditions on the receipt of federal funds in the pursuit of the general welfare of the country.[177] While general welfare is not expressly defined, the cause must be one that is of national concern.[178] The preservation, conservation, and protection of endangered species is clearly a cause of national concern.[179] Examples can be seen in the district court cases mentioned previously.[180] Historically, the preservation of sacred resources and regulation over wildlife and the environment have been a national concern.[181] Conservation of biodiversity and the protection of scarce natural resources is an appropriate area for the federal government to regulate. While it may not be an enumerated power found in Article I of the Constitution, under its spending power, Congress may secure objectives that are outside of its enumerated or implied powers.[182] Moreover, courts should defer to Congress when they have decided when a particular expenditure is intended to serve a public purpose.[183] Like in *Dole*, where the Court found that the interstate problem of drinking and driving required an interstate solution, here, the protection of endangered or threatened species is an interstate problem that requires an interstate solution.[184]

While Congress could not have directly regulated the states on intrastate highways, the Court found that conditioning of funds would still be considered an interstate solution to a problem that was exclusively intrastate.[185] While some endangered species are intrastate, it may be that Congress cannot directly regulate their protection, but can condition funds to remedy a pervasive problem across multiple states—even if the particular instances are intrastate. Moreover, in *Dole*, the Court found that the condition

176. South Dakota v. Dole, 483 U.S. 203, 203 (1987).

177. *Id.*

178. *Id.*

179. *See Id.* at 203; Rancho Viejo, LLC. v. Norton, 323 F.3d 1062, 1079-80 (D.C. Cir. 2003).

180. *E.g.*, Gibbs v. Babbitt, 214 F.3d 483, 486–87 (4th Cir. 2000); GDF Reality Invs., Ltd. v. Norton, 326 F.3d 622, 644 (5th Cir. 2003).

181. *Babbit*, 214 F.3d at 500.

182. *Dole*, 483 U.S. at 207.

183. *Id.*

184. *Id.* at 208.

185. *Id.*

imposed by Congress for the receipt of highway funds was related to the objective it sought to address: safe highway travel.[186] Here, Congress can condition the receipt of federal funds used for conservation in the states. One such example would be the Great American Outdoors Act.[187] The federal government has recently announced a $2.8 billion investment in the 2025 fiscal year to support this act, which would protect and sustain public lands in all 50 states.[188] Of that $2.8 billion dollars, $900 million has been allocated to the Land and Water Conservation Fund.[189] Under this Fund, the federal government provides matching grants that states and communities can use to create and improve parks and safeguard natural and cultural heritage.[190] Much like how conditioning highway funds was related to incentivizing safe travel on highways, conditioning funds on the safeguarding of natural resources is related to the protection of intrastate species. Thus, it would be appropriate for Congress to condition the receipt of funds disbursed from the Land and Water Conservation Fund on the protection of intrastate animals.

In doing so, Congress would need to heed the Court's limitations on the Spending Clause. One such limitation is that Congress would need to condition the funds in a manner that is unambiguous, as to allow the states to understand the choice they are making.[191] Congress cannot hide these conditions from the states as that would violate this principle. Moreover, Congress cannot use these conditions to persuade the states to partake in activities would themselves be unconstitutional.[192] Here, a state regulating wildlife within its borders would not be an unconstitutional activity. The protection of intrastate animals would not violate the constitutional rights of any citizen. Congress would need to be weary to not allow this financial inducement to turn into coercion.[193] If Congress were to place conditions on too much funding, this may take away a state's ability to make an independent choice. Like in *Dole*, only 5% of a state's funds would be lost were the state not to accept the condition.[194] Here, if Congress were to use the Land and Water Conservation Fund as the vehicle to protect intrastate

186. *Id.*

187. *Agriculture and Interior Departments Invest $2.8 Billion to Protect Public Lands, Support Conservation Efforts Across the United States*, U.S. DEP'T OF AGRIC. (June 4, 2024), https://www.usda.gov/about-usda/news/press-releases/2024/06/04/agriculture-and-interior-departments-invest-28-billion-protect-public-lands-support-conservation.

188. *Id*.

189. *Id*.

190. NAT'L PARK SERV: LAND & WATER CONSERVATION FUND, *supra* note 14.

191. South Dakota v. Dole, 483 U.S. 203, 203 (1987).

192. *Id.* at 208.

193. *Id.* at 211.

194. *Id.*

species, it would hardly be coercive upon the states. The Land and Water Conservation Fund provides matching grants to states and local communities within them for the purpose of protecting natural resources.[195] By placing conditions on the receipt of these grants, Congress is not depriving the state of any part of its budget, only withholding grant money. As stated in *Steward Machine Co. v. Davis*: "[E]very rebate from a tax when conditioned upon conduct is in some measure a temptation. But to hold that motive or temptation is equivalent to coercion is to plunge the law in endless difficulties."[196] Here, Congress would be providing mild encouragement or temptation to states to protect intrastate endangered or threatened species.

Sebelius provides more limits that Congress would need to adhere to when conditioning the receipt of federal funds.[197] First, if Congress were to choose another path besides using the Land and Water Conservation Fund, it would need to make sure that they do not withhold too much of a state's budget. In that case, 10% of the state's budget would be lost if they did not accept the conditions imposed by the federal government.[198] This was considered coercive.[199] More importantly, Congress would need to be cautious when choosing which program or path to condition funds to. In *Sebelius*, the federal government attached conditions to the funds of an existing program, the Medicaid program.[200] Under this program, states had come to expect certain funding and had already accepted certain conditions.[201] The federal government cannot, under its spending power, impose post-acceptance or retroactive conditions.[202] Congress cannot take away existing funding for state programs for choosing not to participate in new conditions.[203]

There are currently several existing programs created by the federal government to help states protect endangered or threatened species.[204] Some of these initiatives include the Habitat Conservation Plan Land Grants Program, the Conservation Planning Assistance Grants Program, the Recovery Challenge and Land Acquisition Grants Programs, and the Traditional Conservation Grant Program.[205] Another such program is the

195. NAT'L PARK SERV.: LAND & WATER CONSERVATION FUND, *supra* note 14.
196. Steward Machine Co. v. Davis, 301 U.S. 548, 548–49 (1937).
197. Nat'l Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 519, 519 (2012).
198. *Id.* at 582.
199. *Id.*
200. *Id.* at 582–83.
201. *Id.* at 584.
202. *Id.*
203. *Id.* at 585.
204. *E.g.*, U.S. FISH & WILDLIFE SERV., *supra* note 14.
205. *What We Do*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/program/cooperative-endangered-species-conservation-fund (last visited Mar. 30, 2026).

Cooperative Endangered Species Conservation Fund.[206] This program helps states develop and implement conservation programs for listed, candidate, or at-risk species and roughly $51.8 million has been given to states for this program.[207] These programs would be the most natural fit to attach conditions to, as they are directly related to the protection of endangered species. However, if Congress would use these grant programs as the vehicle to protect intrastate species, they would need to make sure that post-acceptance conditions are not attached. Under *Sebelius*, the federal government cannot take an existing program and attach new conditions to it, without giving the states a meaningful choice concerning acceptance.[208]

Moreover, Congress would need to balance a state's reliance on these funds when carrying out conservation programs. If the federal government were to withhold all of a state's conservation funding, then a court may find that to be coercion. Congress could likely attach conditions to this grant program if it made sure that if a state did not accept, the loss of funds would not be determinative for a court. However, the Court in *Sebelius* did not articulate a precise level of funding that, if withheld by the federal government, would make it coercive upon the states.[209] Of course, this balancing act will be difficult. If Congress places conditions on too much funding, it may be deemed coercive but if too little funding has conditions placed upon it, that may not make the incentives worthwhile for a state. However, placing conditions on how these federal funds are used is well within the realm of constitutionality.

CONCLUSION

The Endangered Species Act (ESA) is an important piece of legislation that protects and preserves the Nation's wildlife. Since the enactment of the ESA, hundreds of species have been saved from extinction.[210] One such species is none other than our national bird: the bald eagle.[211] Through the Act, habitat protection allowed the bald eagle to recover once the federal government banned certain toxic chemicals that were affecting the birds.[212]

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206. *Id.*
207. *Id.*
208. *Sebelius*, 567 U.S. at 519.
209. *Id.* at 585.
210. *Celebrating 50 Years of Success in Wildlife Conservation*, U.S. DEP'T OF INTERIOR (Feb. 2, 2013) https://www.doi.gov/blog/endangered-species-act-celebrating-50-years-success-wildlife-conservation.
211. *Id*.
212. *Id.*

In 2007, the bald eagle was removed from the endangered species list.[213] It is a shame that we, as a country, almost let our national symbol blink out of existence. It would be a bigger shame to stand by and let thousands of other species go extinct, just because they lived within one state. Congress should protect these species by regulating them through its spending power; a less controversial and a more legally sound option than its Commerce Clause power. While this has not been overturned by the Supreme Court yet, waiting for it to occur will only be a disservice to the intrastate wildlife that depends upon federal protections. While protection is not guaranteed though Congress's spending power, it is a better alternative to no protection at all. In the words of Teddy Roosevelt: "The wildlife and its habitat cannot speak, so we must and we will."[214]

213. *Id*.

214. U.S. Fish & Wildlife Serv. (@USFWS), X (Mar. 14, 2024, 2:04 PM) https://x.com/USFWS/status/1768337314785153413.

THE CARROT OR THE STICK?: CONSERVING CRITICAL HABITAT UNDER THE ESA

Caroleen M. Dineen*

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INTRODUCTION

This Article addresses the requirement to designate critical habitat for a listed species under the federal Endangered Species Act (ESA).[1] This requirement is evaluated in the context of the ESA's statutory purposes and its framework for species conservation and protection. The Article describes the ESA's statutory and regulatory requirements for species conservation and protection and for the listing and critical habitat determinations.

This Article focuses on the critical habitat designation requirement that is triggered by an agency's decision to list a species as threatened or endangered under the ESA. The ESA requires the relevant federal agencies, with certain exceptions, to list a species when the statutory and regulatory requirements require that action. At the time of listing, the agency must designate the species' critical habitat (i.e., the habitat needed for species conservation and requiring protection).[2] The ESA provides designation exceptions for economic, national security, and "other relevant" impacts.[3] Among other considerations, the agency is directed to weigh the benefits of exclusion against conservation unless exclusion may result in species extinction.[4]

This Article addresses the critical habitat designation requirement, process, application, and compliance with ESA standards. The Article also discusses challenges with, and impediments to, critical habitat designation in light of changing administrative priorities and shifting political priorities. Further, the Article discusses whether legislative, regulatory, and policy changes could improve the designation process and/or create incentives for critical habitat preservation and conservation outside the designation process. Consideration of incentive-based options seems particularly relevant based on recent decisions and proposals regarding ESA implementation, administrative agency authority, regulatory enforcement, and proposed and anticipated changes to federal environmental statutes, regulations, and policy.

While it describes the ESA's history and requirements generally, the scope of this Article's analysis is limited to wildlife under the jurisdiction of the United States Fish and Wildlife Service (FWS).[5] Part I of this Article

1. *See generally* 16 U.S.C. § 1531 (2024) (providing context for why critical habitat designation emerged).

2. 16 U.S.C. § 1533(a)(3)(A) (2024); 16 U.S.C. § 1533(b)(2) (2024).

3. 16 U.S.C. § 1533(b)(2) (2024).

4. *Id.*

5. The FWS administers the ESA for "terrestrial, freshwater, and catadromous species," and the National Marine Fisheries Service (NMFS) administers the Act for "marine and anadromous species."

addresses the ESA's history, development, and legal framework and the standards for species listing. Part II describes the critical habitat designation requirement, including the mandate to balance conservation needs with other interests when considering designation. Part III discusses some impediments to initiating designation and the effect of anticipated challenges to proposed designations. Part IV evaluates the roles of mandates and incentives and discusses how those options may be balanced based on changing federal administrations and agency priorities. This Part also proposes options to promote compliance through incentive-based approaches within and outside the designation process to conserve habitat that is critical to achieving the ESA's conservation objectives for listed species.

I. ENDANGERED SPECIES ACT

A. Conservation Prior to the ESA

As enacted in 1973, the ESA reflects a desire to ensure the nation's imperiled wildlife, fish, and plant species—*and their habitat*—will be protected and conserved.[6] The ESA recognizes the effect of economic growth and development without sufficient concern for conservation on the viability of an imperiled species.[7] In addition, it notes concern about other species "in danger of or threatened with extinction" and about the loss of species with "esthetic, ecological, educational, historical, recreational, and scientific value" to the United States.[8] Reflecting those concerns, the statute's purpose is to establish both "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved" and "a program for the conservation of such endangered species and threatened species."[9]

The United States Fish and Wildlife Service (FWS) traces the ESA's origin to the Lacey Act of 1900, which was prompted by concerns about the

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PERVAZE A. SHEIKH & ERIN H. WARD, CONG. RSCH. SERV., R46677, THE ENDANGERED SPECIES ACT: OVERVIEW AND IMPLEMENTATION 6 (2021).

6. *See* § 1531.
7. *See generally* § 1531(a)(1).
8. § 1531(a)(2)–(3).
9. § 1531(b).

passenger pigeon's survival.[10] The Lacey Act responded to those concerns[11] by prohibiting transport of unlawfully taken wildlife across state lines.[12] In 1918, Congress enacted the Migratory Bird Treaty Act, which as currently codified includes wildlife protections from international treaties signed by the United States between 1916 and 1976.[13]

During the 1930s and 1940s, Congress enacted several other laws promoting wildlife protection and conservation. These laws included the Migratory Bird Hunting and Conservation Stamp Act, the Fish and Wildlife Coordination Act, and the Pittman-Robertson Wildlife Restoration Act.[14] In 1940, Congress passed the Bald and Golden Eagle Protection Act (BGEPA), which established protections against the take or possession of bald and golden eagles—and their nests.[15] BGEPA provided specifically for take authorization for scientific and other purposes.[16]

From the 1960s until the ESA's passage in 1973, Congress passed additional wildlife protection legislation. In the mid-1960s, the United States Department of the Interior (DOI) created the Committee on Rare and Endangered Wildlife Species and asked Congress to enact legislation to protect endangered wildlife species.[17] In response to increasing awareness about environmental and wildlife protection problems, Congress passed the Endangered Species Preservation Act of 1966 (ESPA).[18] This legislation empowered DOI to list native fish and wildlife species as endangered.[19] This law's "endangered" definition referenced species that the DOI determined were "threatened with extinction . . . because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of

10. *Endangered Species Act Milestones: Pre 1973*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/esa50/our-history/pre-1973 (last visited Mar. 30, 2026) [hereinafter *ESA Milestones: Pre-1973*]; *see generally* 16 U.S.C. § 701 (2024) (Lacey Act § 10); This statute includes the Lacey Act's migratory bird conservation and preservation provisions. *Id*. Subsequent Lacey Act amendments also are codified in Title 16. 16 U.S.C. § 3372 (2024); *see generally* § 3371; *ESA Milestones: Pre 1973*.

11. According to the FWS, the passenger pigeon was "declared extinct when the last known individual . . . die[d] in the Cincinnati Zoo" in 1914. *ESA Milestones: Pre-1973, supra* note 10.

12. *Id.*; *see* § 3372(a).

13. *See* § 703; *see also ESA Milestones: Pre 1973*, *supra* note 10.

14. § 718; *see* §§ 661–666e (2024) (requiring the FWS to make recommendations to minimize impacts on fish and wildlife resources associated with federal actions affecting streams and water bodies); § 669 (coordinating with state governments to pass wildlife conservation laws); § 2901(b); *ESA Milestones: Pre-1973*, *supra* note 10 (providing funding via taxes for "states to acquire wildlife habitat").

15. § 668.

16. *See* § 668a (authorizing the "taking, possession, and transportation of specimens" for scientific, exhibition, religious, or agricultural or wildlife protection purposes).

17. *ESA Milestones: Pre-1973*, *supra* note 10.

18. *Id.*; *see* Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, 80 Stat. 926 (1966).

19. Endangered Species Preservation Act § 1(c).

overexploitation, disease, predation, or because of other factors, and that its survival requires assistance."[20] While the ESPA did not include a requirement to designate critical habitat, it did authorize habitat acquisition for endangered species to be included in the National Wildlife Refuge System.[21]

Three years later, the 1966 law was amended and renamed the Endangered Species Conservation Act of 1969.[22] This legislation improved protection for species "threatened with worldwide extinction."[23] During that year, the National Environmental Policy Act and the first state endangered species act also were enacted.[24] In the early 1970s and prior to passage of the ESA, Congress created the United States Environmental Protection Agency (EPA) and enacted several environmental protection statutory programs, including the Clean Air Act, Marine Mammal Protection Act, and Clean Water Act.[25]

On December 28, 1973, the 93rd Congress enacted the ESA.[26] The legislation reflected the need for action to protect imperiled wildlife, fish, and plant species to avoid extinction.[27] President Nixon's signing statement declared that:

> Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed. It is a many-faceted treasure, of value to

20. *Id.*

21. *Id.* §§ 2(b), 4(a); *see* Endangered Species Act of 1973, Pub. L. No. 93-205, § 5, 87 Stat. 884, 889 (1973).

22. *ESA Milestones: Pre-1973*, *supra* note 10. *Compare* Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, § 1–3, 80 Stat. 926, 927, (1966), *with* Endangered Species Conservation Act of 1969, Pub. L. No. 91-135, § 12(d), 83 Stat. 275, 283 (current version at 16 U.S.C. § 668a).

23. Endangered Species Conservation Act § 5; *ESA Milestones: Pre-1973*, *supra* note 10.

24. *ESA Milestones: Pre-1973*, *supra* note 10.

25. *Endangered Species Act Milestones: 1970s*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/esa50/our-history/1970s (last visited Apr. 15, 2026); *Summary of the Clean Air Act*, EPA, https://www.epa.gov/laws-regulations/summary-clean-air-act (last updated Feb. 23, 2026); 42 U.S.C. § 7401 (2023) (requiring promulgation of air emissions regulations and creation of air quality standards); 16 U.S.C. § 1371(a) (2024) (establishing marine mammal take and import moratorium, and recognizing need for marine mammal conservation); *see* 16 U.S.C. § 1361 (2024); *Summary of the Clean Water Act*, EPA, https://www.epa.gov/laws-regulations/summary-clean-water-act (last updated Feb. 23, 2026); 33 U.S.C. §§ 1251, 1252 (2023) (authorizing requirements and programs to regulate pollutant discharges and establish water quality standards).

26. Endangered Species Act of 1973 § 1; Statement on Signing the Endangered Species Act of 1973, 1 PUB. PAPERS 1027–28 (Dec. 28, 1973).

27. Endangered Species Act of 1973 § 2; *see* Mitch Merry, *Celebrating 40 Years Of The Endangered Species Act*, ENDANGERED SPECIES COAL. (Dec. 28, 2013), https://www.endangered.org/celebrating-40-years-of-the-endangered-species-act/#.

> scholars, scientists, and nature lovers alike, and it forms a vital part of the heritage we all share as Americans.[28]

In this statement, he further characterized the ESA as an "important step toward protecting a heritage which we hold in trust to countless future generations of our fellow citizens[,]" noting American's "lives will be richer, and America will be more beautiful in the years ahead, thanks to the [ESA]."[29]

The original enactment of the ESA authorized acquisition of lands and waters through existing statutory authorities,[30] but it did not include a requirement to designate critical habitat.[31] The critical habitat provisions were added through the 1978 ESA amendments.[32] The House Report addressing the legislative amendments stated that "[t]his one small section has developed into one of the most significant portions of the entire statute."[33] That law required the federal agencies to designate critical habitat "to the maximum extent prudent" and specified the timing provisions for designation determinations.[34] The 1978 amendments also specified the critical habitat designation allowed—but did not require—critical habitat designation for species that had been listed prior to this legislation.[35] In 1982, Congress amended the critical habitat designation timing provisions to allow additional time to publish a final rule designating critical habitat to the "maximum extent prudent and determinable."[36]

B. Statutory Policy and Purposes

In enacting the ESA, Congress included its "findings and declaration of purposes and policy" for enacting the statutory framework.[37] Among the

28. 1 PUB. PAPERS, *supra* note 26.

29. *Id.* at 1028.

30. The ESA leveraged land acquisition authority from existing environmental statutes, such as the Fish and Wildlife Coordination Act, Fish and Wildlife Act of 1956, and Migratory Bird Conservation Act. *See generally* Endangered Species Act of 1973 § 5. These statutes had provisions authorizing the acquisition of land or waters for conservation purposes. *See, e.g.*, Fish and Wildlife Act of 1956, Pub. L. No. 1024, 70 Stat. 119 (1956) (codified at 16 U.S.C. § 742a (2024)); *cf.* Fish and Wildlife Coordination Act, Pub. L. No. 85-624, 72 Stat. 563 (1958) (codified as amended at 16 U.S.C. §§ 661–666 (2024)); and Migratory Bird Conservation Act, Pub. L. No. 1024 ch.1036, 70 Stat. 1119 (1956); Act of Aug. 14, 1946, ch. 965, 70 Stat. 1119 (codified at 16 U.S.C. §§ 661–666 (2024)).

31. *See* Endangered Species Act of 1973 §§ 1–17.

32. Endangered Species Act Amendments of 1978, Pub. L. No. 95-632, § 11(1), 92 Stat. 3751, 3764 (1978) (codified as amended at 16 U.S.C.§ 1533 (2024)).

33. H.R. REP. NO. 95-1625, at 731 (1978).

34. *Id.* at 740.

35. Endangered Species Act Amendments of 1978 § 11(1).

36. 16 U.S.C. § 1533(a)(3)(A)(i) (2024).

37. § 1531.

findings was a concern the "various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of *economic growth and development untempered by adequate concern and conservation*."[38] The statutory findings also included concern that "other species . . . have been so depleted in numbers that they are in danger of or threatened with extinction" and also that "these species . . . are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."[39]

In addition, Congress specified statutory purposes: "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and" to effectuate the related treaties and conventions to which the United States was a signatory.[40] The ESA's statutory policy provisions directed federal agencies to "seek to conserve endangered species and threatened species[,] . . . [use] their authorities in furtherance of the [ESA's] purposes[, and] cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species."[41]

The ESA's history and development demonstrate the basis for its focus on measures and actions to conserve imperiled species, which is supported by the judicial and congressional recognition of the need for its broad protections. The United States Supreme Court has noted the "plain intent of Congress in enacting [the] statute was to halt and reverse the trend toward species extinction, whatever the cost."[42] The Supreme Court also called the ESA "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[43] Further, the Supreme Court stated, "beyond doubt[,] . . . Congress intended endangered species to be afforded the highest of priorities."[44] Other decisions have similarly recognized the lofty goals and specific requirements of the ESA's conservation mandates.[45]

The ESA originated from a history of actions recognizing the need to take action to avoid extinction of species in peril and identify those species threatened with extinction. The ESA and its predecessors recognized the

38. § 1531(a)(1) (emphasis added).
39. § 1531(a)(2)–(3).
40. § 1531(b).
41. § 1531(c)(1)–(2).
42. Tenn. Valley Auth. v. Hill, 437 U.S. 153, 184 (1978).
43. *Id.* at 180.
44. *Id*. at 174.
45. *See, e.g.*, Nat. Res. Def. Council, Inc. v. U.S. Dep't of Interior, 13 F. App'x 612, 615 (9th Cir. 2001) (Pregerson, J., dissenting) (emphasizing the ESA requirements to "identify endangered species, designate their 'critical habitats,' and develop and implement recovery plans.").

need to protect species from the direct threats they faced. The statutory amendments to the ESA and its implementing regulations created a program designed to protect not only the species but also the critical habitat needed for their survival. In practice, the ESA's program of species protection has failed to achieve all its goals, necessitating consideration of options and incentives to achieve the potential embodied in the ESA.

C. Species Listing and Delisting

The ESA's findings, purposes and policies for its conservation program are reflected in the requirements for listing and delisting species. In addition to stressing the important values attributed to wildlife species, the ESA expresses concerns about the extinctions of some species' as well as threats to other species' existence.[46] Further, the ESA notes the nation's commitment as part of "the international community to conserve to the extent practicable" species "facing extinction."[47] The policy provisions also reflect the need for federal agencies to conserve endangered and threatened species and to cooperate with state and local agencies regarding water issues affecting species conservation.[48]

The ESA defines "conservation" to mean "the use of all [necessary] methods and procedures . . . to bring any endangered species or threatened species to the point at which the measures . . . are no longer necessary."[49] "Species" includes the species, subspecies, "and any distinct population segment" of a species.[50] Under the ESA, the term "endangered species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range."[51] A threatened species means any species which "is likely to become an endangered species within the foreseeable future" throughout all or a significant portion of its range.[52]

According to the FWS, the "foreseeable future extends as far into the future as the Services can make reasonably reliable predictions about the threats to the species and the species' responses to those threats."[53] When

46. 16 U.S.C. § 1531(a)(1)–(3) (2024).

47. § 1531(a)(4). The statute references various international treaties and conventions concerning conservation of wildlife and fisheries. *Id.*

48. § 1531(c).

49. § 1532(3).

50. § 1532(16).

51. § 1532(6). The implementing regulations exclude insects "determined by the Secretary to constitute a pest whose protection . . . would present an overwhelming and overriding risk to man." Conservation of Endangered and Threatened Species of Fish, Wildlife, and Plants–Cooperation with The States, 50 C.F.R § 81.1 (2024).

52. § 1532(20); 50 C.F.R. § 424.11(d) (2024).

53. § 424.11(d).

determining the foreseeable future, the FWS evaluates that standard on a "case-by-case basis, using the best available data and taking into account considerations such as the species' life-history characteristics, threat-projection timeframes, and environmental variability."[54] The FWS is not required to "identify the foreseeable future in terms of a specific period of time."[55]

The methods and procedures needed for conservation "include . . . all activities associated with scientific resources management such as research, census, law enforcement, *habitat acquisition and maintenance*, propagation, live trapping, and transplantation . . . ."[56] The program for species conservation established through the ESA includes requirements for agency action and consultations, prohibitions against "take" of listed species, enforcement authority for ESA violations, and authorizations of "incidental take" of listed species.[57] Take is defined in the ESA to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" and includes enforcement mechanisms and penalties for violations.[58] Section 9 specifies activities concerning endangered and threatened species that violate the ESA. For example, the ESA bars the take of a listed species without agency authorization.[59]

The FWS periodically prepares a National Listing Workplan (Workplan) for ESA listing of domestic species and for designating critical habitat.[60] The Workplan includes the FWS priorities and timing for accomplishing these responsibilities.[61] Including species in the Workplan does not guarantee either listing or designation, since the FWS would have to first complete a species status assessment, conduct a rulemaking process, and enact final rules.[62]

The ESA requires federal agencies to cooperate with state and local agencies to promote species conservation.[63] The implementing agencies—FWS (within the DOI) and National Marine Fisheries Service (NMFS) (within the Department of Commerce)—have adopted joint regulations concerning the ESA's listing and critical habitat designation processes and

54. *Id.*
55. *Id.*
56. § 1532(3) (emphasis added).
57. §§ 1538(a), 1536(b)(4), 1539, 1540.
58. § 1532(19).
59. §§ 1538, 1540.
60. U.S. FISH & WILDLIFE SERV., NATIONAL DOMESTIC LISTING WORKPLAN (2024).
61. *Id.*
62. *National Listing Workplan*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/project/national-listing-workplan (last visited Mar. 30, 2026).
63. 16 U.S.C. § 1535(a) (2024); 50 C.F.R. § 424 (2024).

decisions.[64] Furthering its statutory mandate to promote the ESA's policies, purposes, and conservation goals, and to satisfy its statutory requirements, the FWS also has adopted regulations to implement its delegated authority and ESA requirements.[65]

The joint ESA regulations address the process for the FWS's decision to list or delist species.[66] The FWS must make decisions regarding listing, reclassification, or delisting "solely on the basis of the best available scientific and commercial information regarding a species' status *without reference to* possible economic or other impacts of such determination."[67] This evaluation also requires a species status review.[68] Factors considered in the listing or reclassification decision include the "present or threatened destruction, modification, or curtailment of [the species'] range; overutilization [of the species] for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other natural or manmade factors affecting its continued existence."[69]

For delisting, the FWS also must make decisions based on best available science.[70] The delisting factors are applied for consideration of proposals to delist a species.[71] These factors include species extinction, species recovery "to the point at which it no longer meets the definition" of either an endangered species or threatened species, and new information demonstrating the listed species no longer meets the endangered or threatened species definitions.[72]

Section 4(d) of the ESA requires the FWS to "issue such regulations as [the Secretary] deems necessary and advisable to provide for the conservation of" threatened species.[73] In recent years, the FWS has used different interpretations regarding protections available to threatened species.[74] In 2019, the FWS issued a final rule eliminating the "blanket rules" that applied Section 9 prohibitions to species listed as threatened after the

64. § 424.

65. *See* § 1531(c)(1)–(2); *see generally* 50 C.F.R. § 17.1 (2026).

66. 50 C.F.R. § 424.11. Unless otherwise noted, this Article focuses on the FWS's implementation of the joint regulations.

67. § 424.11(b) (emphasis added).

68. § 424.11(c).

69. 16 U.S.C. § 1533(a)(1)(A)–(E) (2024); *accord* § 424.11(c)(1)–(5).

70. § 424.11(e).

71. *Id.*

72. § 424.11(e)(1)–(4).

73. § 1533(d).

74. Endangered and Threatened Wildlife and Plants; Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. 44753 (Aug. 27, 2019) (to be codified at 50 C.F.R. § 424).

rule's effective date.[75] The 2019 rule applied only to "species listed as threatened species on or before the" rule's effective date and did not change protections for those previously listed species.[76] The 2019 rule also specified protections for threatened species listed after the rule became effective would exist only "if the FWS promulgates a species-specific rule."[77] In addition, the 2019 rule stated FWS planned to issue the specific threatened species rule "concurrent with the final listing or reclassification determination" but retained discretion after listing or reclassification.[78]

The FWS reversed course in 2024, issuing a final rule reinstating the regulatory protections applicable to threatened species under the 4(d) rule.[79] The agency noted the approach to protections for threatened species was consistent with the approach used "for 40 years before" the 2019 rule.[80]

In addition to asserting it would result in less duplication and reduce administrative costs, the FWS noted the rule's enhanced protection for threatened species:

> [W]henever it's determined that the standard suite of protections is appropriate, the Service will not need to develop any additional regulatory text to codify a species-specific 4(d) rule. Reinstating the "blanket rule" option also ensures there is never a lapse in threatened species protections. If the Service does not promulgate a species-specific 4(d) rule at the time of listing, the "blanket rule" protections will be in place to provide for the conservation of that threatened species. The Service is simply providing a streamlined option for protecting threatened species in situations in which they do not promulgate species-specific 4(d) rules.[81]

Recently, the FWS proposed a rule that would rescind the 2024 regulation incorporating the blanket rule and return to the 2019 rule's

75. *Id.*

76. *Id.* at 44753.

77. *Id.* at 44753.

78. *Id.* The final rule also noted the amended rule "our regulatory approach for threatened species similar to the approach that the National Marine Fisheries Service (NMFS) has taken since Congress added section 4(d) to the Act." *Id.*

79. Endangered and Threatened Wildlife and Plants; Regulations Pertaining to Endangered and Threatened Wildlife and Plants, 89 Fed. Reg. 23919, 23919 (Apr. 5, 2024).

80. U.S. FISH & WILDLIFE SERV., ESA REGULATION FINAL REVISIONS – SECTIONS 4 & 7 FREQUENTLY ASKED QUESTIONS 7 (2024).

81. *Id.*

approach eliminating the blanket rule coverage.[82] The FWS also announced a "pause" of the 2024 rule until the agency can complete its rescission.[83] The FWS's announcement also indicated the agency plans to issue species-specific rules for threatened species after adopting a new rule.[84]

Other regulatory changes to ESA rules are on the horizon. On April 17, 2025, the FWS and NMFS proposed a joint rule to repeal the regulatory harm definition for purposes of the ESA's "take" definition.[85] The current rule defines harm to "mean[] an act which actually kills or injures wildlife."[86] The regulatory definition states the act in this definition "may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, . . . feeding or sheltering."[87] The agencies' summary of the proposed rule states "[t]he existing regulatory definition of 'harm,' which includes habitat modification, runs contrary to the best meaning of the statutory term 'take.'"[88] The agencies further asserted the proposed definition change was made "to adhere to the single, best meaning of the ESA."[89]

The ESA creates a comprehensive statutory program for species protections that includes assessment of the species and threats to its survival, classification of the species' status, and determination of its critical habitat to protect species. With provisions for enforcement and penalties, as well as opportunities for cooperative programs and funding opportunities, the ESA's statutory framework establishes a "carrot and stick" approach for species preservation and conservation.

Implementing the requirements and rewards of this framework through the ESA's regulations, policy, and permitting, however, has often proven challenging or misguided. The shifting sands of the federal administration's focus, priorities, and resource allocations have led to varying levels of inaction, attention, and resistance to ESA conservation. In addition, stakeholder resistance and legal challenges to agency actions, as well as varying levels of reliance on cooperative and voluntary efforts, have resulted in different perspectives about the ESA's purposes, implementation, compliance, and effectiveness.

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82. Kat Dwyer, *Conservation Victory Feds to Restore Targeted, Science-Based Endangered Species Policy*, PERC (Aug. 19, 2025), https://www.perc.org/2025/08/19/conservation-victory/.

83. *Id.*

84. *Id.*

85. Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102 (proposed Apr. 17, 2025) (to be codified at 50 C.F.R. § 17).

86. *Id.* at 16103.

87. *Id.*

88. *Id*. at 16102. The proposed rule would remove the harm definition from 50 C.F.R. § 17.3 and 50 C.F.R. § 222.102. *Id.* at 16105.

89. *Id.* at 16102.

D. ESA Implementation and Authorizations

The FWS is required to determine whether a species is endangered or threatened based on statutory factors.[90] Those factors include the "present or threatened destruction, modification, or curtailment" of the species' habitat or range; the species' "overutilization for commercial, recreational, scientific, or educational purposes; disease, . . . predation; inadequa[te] . . . regulatory mechanisms; or other natural or manmade factors affecting" the species' existence.[91] Section 4 of the ESA also provides for delisting a species and changes in the species' listing status.[92] The agency is required to make listing and delisting decisions "solely on the basis of the best scientific and commercial data available" concerning the species.[93] In addition, Section 4 includes requirements for designating critical habitat "concurrently with making a determination" regarding a species' status and for revising the designation.[94] The FWS conducts the listing, delisting, and rulemaking processes through the promulgation of regulations under ESA authority.[95]

Section 7 of the ESA requires the FWS to "insure that any [agency] action authorized, funded, or carried out" by FWS "is not likely to jeopardize the continued existence of any" listed species "or result in the destruction or adverse modification of [its critical] habitat."[96] Other federal agencies are required to "confer" with the FWS concerning an agency action or its consideration of a permit or license application "which is likely to jeopardize" a species' existence or destroy or adversely modify a species' proposed critical habitat.[97] After completing the consultation process, the FWS issues its decision concerning whether the action may result in the incidental take of a listed species and whether any "reasonable and prudent measures . . . [can] minimize [the] impact."[98] Those reasonable and prudent measures are addressed through a variety of mitigation measures which may include modification of the proposed action and financial, land preservation, or other mitigation measures.[99]

Incidental take permits are one mechanism for the FWS to authorize take

90. 16 U.S.C. § 1533(a)(1) (2024).
91. § 1533(a)(1)
92. § 1533(a)(2).
93. § 1533(b).
94. § 1533(a)(3)(A)(i).
95. § 1533.
96. § 1536(a)(2).
97. § 1536(a)(4).
98. § 1536(b)(4).
99. *Id.*; § 1539(a).

of a listed species or destruction or adverse modification of a listed species' habitat. Other mechanisms include habitat conservation plans and candidate conservation agreements authorized under Section 10 of the ESA.[100]

II. CRITICAL HABITAT DESIGNATION

A. Habitat Determination

Critical habitat designation decisions often invoke the balancing of interests between the ESA's conservation focus, property rights, and development pressure in rapidly developing areas. Courts evaluating the legality of the United States Fish & Wildlife Service's (FWS) critical habitat designation decisions recognize the difficulty of balancing the conservation of critical habitat against the specified impacts required by the ESA.

The Supreme Court has clarified that designated habitat must actually be habitat for a listed species. In *Weyerhaeuser Company v. United States Fish & Wildlife Service*, the Court considered the FWS's critical habitat designation for the dusky gopher frog.[101] The Court noted the species "once lived throughout coastal Alabama, Louisiana, and Mississippi, in the longleaf pine forests that used to cover the southeast."[102] The Court also noted the pressures on the dusky gopher frog's survival from rapid development; stating "more than 98% of those forests have been removed to make way for urban development, agriculture, and timber plantations[,]" which created a "closed-canopy forest inhospitable to the frog."[103] Further, "[t]he near eradication of the frog's habitat sent the species into severe decline[,]" with a depleted population of 100 frogs in one Mississippi pond in 2001—the year the FWS placed the dusky gopher frog on the endangered species list.[104]

The FWS cited "resource constraints" for not designating critical habitat when the dusky gopher frog was listed.[105] While the FWS later identified two other "naturally occurring populations" and established an additional population, the initial frog population remained "the only stable one and by

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100. § 1539(a); *Candidate Conservation Agreements with Assurances*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/service/candidate-conservation-agreements-assurances (last visited Mar. 31, 2026).

101. *See generally* 586 U.S. 9 (2018).

102. *Id.* at 14.

103. *Id.*

104. *Id.*; Endangered and Threatened Wildlife and Plants; Final Rule To List the Mississippi Gopher Frog Distinct Population Segment of Dusky Gopher Frog as Endangered, 66 Fed. Reg. 62993 (Dec. 4, 2001) (to be codified 50 C.F.R. § 17).

105. *Weyerhaeuser*, 586 U.S. at 15 (citing Endangered and Threatened Wildlife and Plant; Designation of Critical Habitat for Dusky Gopher Frog (Previously Mississippi Gopher Frog), 77 Fed. Reg. 35118, 35118–19 (June 12, 2012) (to be codified at 50 C.F.R. § 17)).

far the largest."[106] Nine years later the FWS proposed designating the four population areas as critical habitat for the dusky gopher frog.[107] Since these populations "were all located in two adjacent counties" in coastal Mississippi, the FWS concluded additional critical habitat needed to be designated to mitigate the risk that "extreme weather or an outbreak of an infectious disease could jeopardize the entire species."[108] The additional area proposed for designation as "unoccupied critical habitat" was a "1,544-acre site in . . . Louisiana" that was not known to have had a dusky frog population since 1965 and that had a "closed-canopy timber plantation . . . [on] much of the site."[109] The FWS concluded, however, that this "site retained five ephemeral ponds 'of remarkable quality,' and [it] determined that an open-canopy forest could be restored on the surrounding uplands 'with reasonable effort.'"[110] The FWS also determined the ponds and the site's distance from the occupied sites "made it essential for the conservation of the species."[111]

In addressing the ESA's requirement to balance economic and other interests when making the designation determination, the FWS "commissioned a report on the probable economic impact of designating each area, including [the Louisiana site], as critical habitat . . . ."[112] The Weyerhaeuser Company owned part of the Louisiana site and leased the remainder.[113] The Court in *Weyerhaeuser* noted the Louisiana site was in "a fast-growing part of the New Orleans metropolitan area, and the landowners ha[d] already invested in plans to more profitably develop the site."[114] The Court also noted that with this designation, "Section 7 of the ESA [consultation provision] would require the Corps to consult with the Service before issuing any permits" because of the wetlands on the site.[115] The economic report concluded denial of permits to fill some wetlands would "prohibit[] development on 60% of [the site]" and "estimated that this would

106. *Id.*; U.S. FISH & WILDLIFE SERV., DUSKY GOPHER FROG (*RANA SEVOSA*) RECOVERY PLAN iv (2015).

107. *Weyerhaeuser*, 586 U.S. at 16; Endangered and Threatened Wildlife and Plant; Designation of Critical Habitat for Dusky Gopher Frog (Previously Mississippi Gopher Frog), 77 Fed. Reg. at 35119.

108. *Weyerhaeuser*, 586 U.S. at 16 (citing Endangered and Threatened Wildlife and Plant; Designation of Critical Habitat for Mississippi Gopher Frog, 75 Fed. Reg. 31394 (June 3, 2010) (to be codified at 50 C.F.R. § 17).

109. *Id.*

110. *Id.*

111. *Id.* at 16–17 (citing Endangered and Threatened Wildlife and Plant; Designation of Critical Habitat for Dusky Gopher Frog (Previously Mississippi Gopher Frog), 77 Fed. Reg. at 35118, 35124, 35133, 35135).

112. *Id.* at 17 (citing 16 U.S.C. § 1533(b)(2) (2024); App. 63).

113. *Id.* at 17.

114. *Id.*

115. *Id.*

deprive the owners of $20.4 million in development value."[116] The report also identified a $33.9 million impact for the developers if all site development activities were barred.[117]

When balancing economic impact and conservation benefit, the FWS "concluded that those potential costs were not 'disproportionate' to the conservation benefits of designation."[118] Therefore, the FWS refused to "'exercis[e] [its] discretion to exclude' [the site] from the dusky gopher frog's critical habitat."[119] The Weyerhaeuser Company challenged the designation, arguing "habitat cannot include areas where the species could not currently survive."[120] While the FWS agreed "critical habitat must be habitat," it "argue[d] that habitat includes areas . . . that would require some degree of modification to support a sustainable population of a given species."[121]

The Supreme Court considered whether the ESA required designated critical habitat to be *habitat* for a listed species.[122] In doing so, the Court focused on the ordinary meaning of "habitat" in the term "critical habitat."[123] The Court stated that "[a]ccording to the ordinary understanding of how adjectives work, 'critical habitat' must also be 'habitat.'"[124] Since "[a]djectives modify nouns—they pick out a subset of a category that possesses a certain quality–[i]t follows that 'critical habitat' is the subset of 'habitat' that is 'critical' to the conservation of an endangered species."[125]

The Court then considered the term from a statutory context.[126] Noting that "[s]tatutory language cannot be construed in a vacuum," the Court stated it "must also consider 'critical habitat' in its statutory context."[127] The Court held the ESA's requirement to "designate any habitat of such species which is then considered to be critical habitat" led to the conclusion that "[o]nly the 'habitat' of the endangered species is eligible for designation as critical habitat."[128] Further, the Court determined "[e]ven if an area otherwise meets the statutory definition of unoccupied critical habitat because the Secretary finds the area *essential for the conservation of the species*, [the ESA] does

116. *Id.*
117. *Id.*
118. *Id.*
119. *Id.* at 17–18 (quoting App. 188–90).
120. *Id* .at 21.
121. *Id.*
122. *Id.* at 19.
123. *Id.*
124. *Id.*
125. *Id.* at 9, 19–20.
126. *Id.* at 9, 20.
127. *Id.* (quoting Sturgeon v. Frost*,* 577 U.S. 424, 438 (2016) (internal quotation marks omitted)).
128. *Id.* (emphasis omitted).

not authorize the Secretary to designate the area as critical habitat *unless it is also habitat for the species*."[129]

The Court rejected the argument that "the statutory definition of critical habitat is complete in itself and does not require any independent inquiry into the meaning of the term 'habitat,' which the statute leaves undefined."[130] The Court also determined "the statutory definition of 'critical habitat' tells us what makes habitat 'critical,' not what makes it 'habitat.'"[131] Further, the Court stated the ESA does not include a "baseline definition of habitat—it identifies only certain areas that are indispensable to the conservation of the endangered species."[132] Further, the Court noted that "[t]he definition allows the [FWS] to identify the subset of habitat that is critical, but leaves the larger category of habitat undefined."[133] Since the appellate court concluded "'[t]here is no habitability requirement in the text of the ESA or the implementing regulations[,]' . . . [t]he court therefore had no occasion to interpret the term 'habitat' in [the ESA] or to assess the Service's administrative findings regarding" the Louisiana site.[134] Therefore, the Court vacated the appellate court's decision and remanded the case for it "to consider these questions in the first instance."[135]

Shortly following the Supreme Court's *Weyerhaeuser* decision, two district courts focused on whether the challenged critical habitat designations actually included "habitat" as defined by the ESA and interpreted by the Supreme Court.[136] In a challenge related to the Gunnison sage-grouse listing, governmental and other parties challenged the designation of 1.4 million acres in Colorado and Utah as "critical habitat" that occurred concurrent with the species' listing.[137] Among other concerns justifying its designation decision, the FWS identified the "serious threats" of "habitat loss, degradation, and fragmentation" to support its listing throughout its range.[138] The FWS also identified various factors causing the species' habitat decline to 10% of its original range, including development of residences and infrastructure, mineral and water development, and

129. *Id.* (emphasis added).

130. *Id.*

131. *Id.* at 9, 20.

132. *Id.*

133. *Id.* at 20–21.

134. *Id*. at 21 (quoting Markle Interests, LLC v. U.S. Fish & Wildlife Serv., 827 F.3d 452, 468 (5th Cir. 2016)).

135. *Id.*

136. Colorado v. U.S. Fish & Wildlife Serv., 362 F. Supp. 3d 951, 969–74 (D. Colo. 2018); Otay Mesa Prop., v. U.S. Dep't Interior, 344 F. Supp. 3d 355, 368–78 (D.C.C. 2018).

137. *Colorado*, 362 F. Supp. 3d at 960.

138. *Id.* at 970–71 (noting climate change and West Nile Virus as threats to the species, with determined local conservation programs being insufficient to protect the species and its habitat).

livestock management practices.[139] The FWS also noted the isolation of the sage-grouse's populations "increas[ed] the likelihood of extinction associated with habitat decline."[140] The FWS therefore concluded, "'based on the best scientific information available,'" the "current and anticipated habitat threats, and their cumulative effects[,] contribute to the overall decline of the Gunnison sage-grouse and pose a substantial threat to the species 'throughout its range.'"[141] Those threats included "small population sizes, declining population trends, low genetic diversity, geographic isolation, and overall low viability."[142] The court also determined the decision was "based on accurate population estimates, coupled with numerous other threats to the habitat and supported by a reasonable analysis with a scientific basis."[143] Considering these threats and the agency's evaluation, the court—applying *Chevron* deference[144]—concluded the FWS's decision was "not arbitrary and capricious" because it was supported by "more than a dozen scientific studies to support its findings—none of which [were] challenged by [the] [p]laintiffs."[145]

In another post-*Weyerhaeuser* case, California landowners challenged the designation of their land as critical habitat for the Riverside fairy shrimp.[146] The landowners challenged the FWS's method for determining "the geographical area occupied by the [Riverside fairy shrimp] species" and the consistency of FWS's identification of the species' critical habitat.[147] The court in *Otay* concluded the agency's "occupied" critical habitat identification "was unreasonable and therefore arbitrary and capricious."[148] The court also rejected the FWS's designations of unoccupied critical habitat, concluding the "alternative designation of the [acreage] surrounding the stock pond as unoccupied critical habitat violated the ESA, because the agency made that determination" in part, "without conducting any further analysis about whether preservation of this area was essential for the conservation of the species."[149] The Court concluded the agency did not "justify[] its apparent threshold determination that the Riverside fairy shrimp

139. *Id.* at 969–74.
140. *Id.* at 970.
141. *Id.* (quoting AR at 199435–76).
142. *Id.* at 972.
143. *Id.* at 970.
144. Chevron U.S.A. Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837, 865 (1984), *overruled by* Loper Bright Enters. v. Raimondo, 603 U.S. 369 (2024).
145. *Colorado*, 362 F. Supp. 3d at 970.
146. Otay Mesa Prop., v. U.S. Dep't Interior, 344 F. Supp. 3d 355, 368–78 (D.C.C. 2018).
147. *Id.* at 366.
148. *Id.*
149. *Id.*

species 'occupies'" the entire area it had identified as "occupied critical habitat under the ESA."[150]

In *Otay* the court considered a dictionary definition of "occupied" and recognized the term "is susceptible to more than one meaning in the [ESA] context."[151] The *Otay* court concluded the ESA's text and structure "plainly indicate [] Congress intended for the agency" to identify the areas "where the [listed] species physically exists, at least for some period of time, and then determine which areas '*within*' that location qualify as critical habitat as defined by the statute."[152]

Based on the recognition that "occupied" had more than one meaning, the *Otay* court concluded "that term is properly considered ambiguous such that the FWS is entitled to deference."[153] Applying *Chevron* deference, the court considered whether "the agency's interpretation of an ambiguous term 'is based on a permissible construction of the statute.'"[154] With that deference, the *Otay* court determined the FWS improperly "included [as occupied critical habitat] *the land around these pools*, where the *species has never been found and could never physically exist*."[155] The *Otay* court therefore concluded "[t]here is nothing about the ESA's use of 'occupied,' or the plain meaning of that term, or, quite frankly, common sense, that permits this result."[156]

As explained above, both courts applied the *Chevron* deference required at the time of the decisions. The *Colorado DNR* court noted the "narrow" review standard under *Chevron* and stated a court was "not empowered to substitute its judgment for that of the agency."[157] The court also explained that when an "agency articulated a rational basis for its interpretation and application, and considered all the relevant factors, the Court will uphold the

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150. *Id.* at 367.

151. *Id.* at 368.

152. *Id.* at 369.

153. *Id.* at 368.

154. *Id*. (quoting Chevron U.S.A. Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837, 843 (1984) (internal quotations omitted)).

155. *Id.* at 370 (emphasis added); *See* Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Riverside Fairy Shrimp, 77 Fed. Reg. 72070, 72081 (Dec. 4, 2012) (to be codified at 50 C.F.R. pt. 17); The Court also reasoned that:

> The FWS's reading also defies logic: under its interpretation of 'occupied,' if two vernal pools containing Riverside fairy shrimp cysts were sighted on either side of the Mojave desert, the agency could deem all of the desert area between the two ponds as the 'geographical area occupied by the species' even though the species has never been, and could never be, present in the desert.

Otay, 344 F. Supp. 3d at 370.

156. *Otay*, 344 F. Supp. 3d at 370 (citing Ariz. Cattle Growers' Ass'n v. Salazar, 606 F.3d 1160, 1164 (emphasizing the Riverside fairy shrimp's limited "degree of mobility or migration")).

157. Colorado, v. U.S. Fish & Wildlife Serv., 362 F. Supp. 3d 951, 962 (D. Colo. 2018).

agency action."[158] The *Otay* court stated, while a "court must defer to the agency's interpretation of a statute if it is 'based on a permissible construction of the statute[,]'" a court "must overturn agency action and interpretation inconsistent with the regulations and statutes themselves."[159]

In *Loper Bright Enterprises v. Raimondo*,[160] the Supreme Court overruled *Chevron* and determined that a court "may not defer to an agency interpretation of the law simply because a statute is ambiguous."[161] The Court in *Loper Bright* concluded that "[c]ourts must exercise their independent judgment in deciding whether an agency has acted within its statutory authority" and must "use every tool at their disposal to determine the best reading of the statute and resolve the ambiguity."[162] The Court's rejection of deference to agency interpretation and adoption of a judicial interpretation approach to achieve the statute's "best reading" significantly impacts the consideration of agency expertise concerning a species' status and the need for habitat protection. The effect of disregarding the scientific knowledge and experience of agencies will likely change how and whether the species obtains and retains protection under the statutes in the future.

B. Standards

The ESA requires the FWS to make species listing and critical habitat decisions based on what is commonly referred to as "best available science."[163]

> The Secretary shall make determinations . . . *solely on the basis of the best scientific and commercial data available* to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.[164]

158. *Id.*
159. *Otay*, 344 F. Supp. 3d at 364–65.
160. 144 S. Ct. 2244, 2273 (2024).
161. *Id.*
162. *Id.* at 2273, 2251.
163. 16 U.S.C. § 1533(B)(1)(a) (2024).
164. *Id.* (emphasis added).

The ESA does not include a statutory definition for "best available science."[165] Rather, the term is described in a way that reflects the ESA's mandate for the agency's determination to only consider "the best scientific and commercial data available" to the Secretary after a species status review and consideration of other efforts "to protect such species."[166] The ESA does define what constitutes "critical habitat" for a listed species.[167] Under the ESA, critical habitat includes "the specific areas within the geographical area occupied by the species, at the time it is listed . . . , on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection."[168] The term also includes the "specific areas outside the geographical area occupied by the species at the time it is listed . . . , upon a determination by the Secretary that such areas are essential for the conservation of the species."[169]

For occupied critical habitat, the current regulations specify that FWS will consider the "physical and biological features essential to the conservation of the species" by evaluating, "at an appropriate level of specificity[,]" an analysis which may include "consideration of the appropriate quality, quantity, and spatial and temporal arrangements of such features in the context of the life history, status, and conservation needs of the species."[170] The FWS also must "[d]etermine which of these features may require special management considerations or protection."[171] It may designate "specific areas outside the geographical area occupied by the species at the time of listing" that the FWS "determines are essential for the conservation of the species."[172]

The ESA envisions concurrent decisions on species listing and critical habitat designations.[173] The FWS must designate critical habitat "[t]o the *maximum extent* prudent and determinable."[174] When this standard is satisfied, the FWS "will identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat."[175] When the agency determines "designation

165. *See* § 1532.
166. § 1533(B)(1)(a).
167. § 1533(5)(A).
168. § 1533(5)(A)(i).
169. § 1532(5)(A)(ii).
170. 50 C.F.R. § 424.12(b)(1)(ii)–(iii).
171. § 424.12(b)(1)(iv).
172. § 424.12(b)(2).
173. § 1533(3)(a)(3)(A)(i).
174. § 424.12(a) (emphasis added).
175. § 424.12(b).

of critical habitat is *not prudent* or . . . is *not determinable*," the FWS "will state the reasons for not designating critical habitat in the publication of proposed and final rules listing a species."[176]

The FWS considers a variety of factors when determining whether a critical habitat designation meets the prudent standard. In evaluating whether designation is "prudent," the FWS considers whether "[t]he species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species."[177] Designation also may not be prudent when the FWS concludes there is no threat to "[t]he present or threatened destruction, modification, or curtailment of a species' habitat or range."[178] Further, areas that do not "meet the definition of critical habitat" and areas with no or "no more than negligible conservation value . . . for a species occurring primarily outside . . . the United States" should not be designated based on the prudent standard.[179]

In evaluating whether critical habitat designation is "determinable," sufficiency of information is considered.[180] The FWS may decline to designate critical habitat when the agency lacks "[d]ata sufficient to perform required analyses."[181] Designations also may not be determinable when "biological needs of the species are not sufficiently well known to identify any area that meets the [critical habitat] definition."[182]

The designated critical habitat cannot "include the entire geographical area which can be occupied by the threatened or endangered species" without a specific determination by the FWS.[183] The designated critical habitat area specified in the regulation must "be shown on a map, with more detailed information" about the designation—including the jurisdictions of the identified areas—and published in the Federal Register.[184] Further, the regulations allow designation of an "inclusive area as critical habitat" when "several habitats . . . are located in proximity to one another."[185]

The ESA also requires the FWS to balance the need to designate or revise critical habitat for species' conservation against "the *economic* impact, the impact on *national security*, and *any other relevant impact*, of specifying any particular area as critical habitat."[186] The Secretary may exclude an area

176. § 424.12(a) (emphasis added).
177. § 424.12(a)(1)(i).
178. § 424.12(a)(1)(ii).
179. § 424.12(a)(1)(iii)-(iv).
180. § 424.12(a)(2).
181. § 424.12(a)(2)(i).
182. § 424.12(a)(2)(ii).
183. 16 U.S.C. § 1532(5)(C) (2024).
184. § 424.12(c).
185. § 424.12(d).
186. § 1533(b)(2) (emphasis added).

from critical habitat with a determination that the benefits of exclusion outweigh the benefits of designation.[187] An exception to that discretion exists when the "best available science" shows the failure to designate the area as critical habitat will result in the species' extinction.[188] When critical habitat is designated, the FWS must provide "to the maximum extent practicable, . . . a brief description and evaluation of . . . activities" that "may adversely modify [the] habitat, or may be affected by such designation."[189]

A designation exception exists for critical habitat land "or other geographic areas owned or controlled by the Department of Defense, or designated for its use" when the: (1) land is "subject to a compliant or operational integrated natural resources management plan" (INRMP) authorized in the ESA;[190] and (2) the FWS "determines in writing that such plan provides a conservation benefit to the species for which critical habitat is being designated."[191] To determine whether the conservation benefit exists, the FWS must consider the "extent of the area and features present" and "the type and frequency of use of the area by the species."[192] The FWS also must consider "[t]he degree to which the relevant elements of the INRMP will protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis."[193]

When considering critical habitat designation, the ESA requires the FWS to "tak[e] into consideration" the probable economic, national security, and other relevant impacts of the designation.[194] Further, the FWS will "tak[e] into account those efforts, if any, being made by" states and other countries "or . . . [their] political subdivision[s] to protect such species."[195] Factors for this consideration include "predator control, protection of habitat and food supply, or other conservation practices" within the agency's "jurisdiction."[196]

Congress is considering ESA changes that would impact the standards and process for critical habitat designation. In March 2025, Representative Bruce Westerman, the Chair of the House of Representatives

187. *Id.*

188. *Id.*

189. § 1533(b)(8); 16 U.S.C. § 670(a) (2024).

190. § 670(a). The Section references the Department of Defense provision addressing the military's establishment of integrated natural resources management plans: "The Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations." *Id.*

191. 50 C.F.R. § 424.12(h).

192. § 424.12(h)(1)–(2).

193. § 424.12(h)(3)–(4).

194. § 424.12(a).

195. 16 U.S.C. § 1533(b)(2) (2024).

196. § 1533(b)(1)(A).

Committee on Natural Resources, introduced a bill that proposes significant changes to the ESA listing, delisting, and critical habitat designation provisions.[197] Among other changes, H.R. 1897l would define "habitat" for designation purposes to mean:

> (i)(I) means the abiotic and biotic setting that currently or periodically contains the resources and conditions necessary to support 1 or more life processes of the threatened species or endangered species; and
> (II) does not include an area visited by only vagrant individual members of the threatened species or endangered species.
> (ii) If the setting described in clause (i)(I) does not support all of the life processes of the relevant threatened species or endangered species, the threatened species or endangered species must be able to access, from the setting, other areas necessary to support its remaining life processes.[198]

Further, the bill would prohibit FWS from designating critical habitat designation on private land "subject to a land management plan" that satisfies the bill's criteria.[199] The prohibition applies when the FWS Secretary determines the:

> [P]rivately owned or controlled land or other geographical area that is subject to a land management plan that the Secretary determines is: (1) 'similar in nature to an integrated natural resources management plan' for military lands, (2) 'prepared in cooperation with the Secretary and the head of each applicable State fish and wildlife agency,' or 'is submitted to the Secretary in a manner that is similar to the manner in which an applicant submits a conservation plan' under ESA Section 10(a)(2)(A).[200]

197. H.R. REP. NO. 119-1897 § 2(D)(i)(I)–(II) (2025); *see* Bruce Westerman, *It's Time for ESA Reform*, CONGRESSMAN BRUCE WESTERMAN, https://westerman.house.gov/media-center/weekly-columns/its-time-esa-reform (last visited Mar. 31, 2026); *see also It's Time to Reform the Endangered Species Act*, HOUSE COMM. ON NAT. RES. (Mar. 6, 2025), https://naturalresources.house.gov/news/documentsingle.aspx?DocumentID=416964.

198. H.R. REP. NO. 119-1897 § 2(D)(i)(I)–(II) (2025); *see* Westerman, *supra* note 197; *see also* HOUSE COMM. ON NAT. RES., *supra* note 197.

199. H.R. REP. NO. 119-1897 § 305(a)(3)(C).

200. *Id.* § 305(a)(3)(C)(i)–(ii).

The prohibition also applies to "an activity or a limitation on an activity that the Secretary determines will likely conserve the species concerned" or "result in . . . 'an increase in the population of the species concerned above the population of such species on the date that such species is listed . . . .'"[201] Further, the legislation includes "maintaining the same population" of the species as "would likely occur if such land . . . is designated, and the activity or limit will to the maximum extent practicable, . . . 'minimize and mitigate the impacts of any activity that will likely result in an incidental taking of the species concerned.'"[202] In addition, H.R. 1897 requires the FWS to publish the "best scientific and commercial data available that are used as the basis for each [listing or critical habitat designation] regulation."[203]

C. Process and Timing

Listing of a species as endangered or threatened triggers the requirement to protect its critical habitat.[204] The ESA listing process generally requires FWS to publish the "final regulation designating critical habitat . . . concurrently with the final regulation implementing the determination that such species is endangered or threatened."[205] Despite the mandate to designate at the time of listing, the statute includes provisions for a change in that timing when the FWS determines a delay is necessary.[206] One circumstance permitting the change is when "it is essential to the conservation of such species that the regulation implementing such determination be promptly published."[207]

The FWS also may delay the critical habitat designation when "critical habitat of such species is not then determinable."[208] In the latter case, the ESA allows the FWS to extend the one-year statutory deadline by "not more than one additional year[,]" and requires the FWS to "publish a final regulation, based on such data as may be available at that time, designating, to the maximum extent prudent, such habitat."[209] Recognizing that critical habitat may not be designated under either timeline, the ESA also provides for critical habitat to be designated for a listed species when "no critical habitat

201. *Id.* § 305(a)(3)(C)(iii)–(iv)(I).
202. *Id.* § 305(a)(3)(C)(iv)(II)–(v).
203. *Id.* § 401(b)(9).
204. 16 U.S.C. § 1532(5)(A) (2024).
205. § 1533(3)(b)(6)(c).
206. § 1533(a)(2)(C)–(3)(A); 50 C.F.R. § 424.12(a).
207. § 1533(b)(6)(C)(i).
208. § 1533(b)(6)(C)(ii).
209. *Id.*

has heretofore been established."[210] Critical habitat designations also may be revised after designation.[211]

As described above, an initial critical habitat designation, and any subsequent revisions, must be based "solely on the basis of the best scientific and commercial data available" at the time of the decision.[212] Those designations and revisions also must "tak[e] into consideration the economic, national security, and relevant impacts of specifying any particular area as critical habitat."[213] The ESA allows FWS to "exclude any area from critical habitat" based on a determination "that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat."[214] An exception is provided when the FWS determines "based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned."[215]

III. IMPEDIMENTS TO DESIGNATION

A. Inaction and Resistance

The loss of habitat needed for species conservation is a long-standing problem that affects habitat conservation and the ability to designate critical habitat. A 1995 National Research Council report on the interaction of ESA and science described the challenges associated with habitat conservation in developing areas.[216] This report noted "[t]he role of conserving habitat for endangered species has been recognized since the first federal endangered species legislation."[217] The report also stated that "[o]ver time, as our knowledge of species requirements has grown, the legislation has evolved from the regulation of harvest and trade in species to the protection of habitat."[218] Referencing the ESA's statutory purpose "to conserve endangered species 'and the ecosystems on which they depend[,]'" the report's authors recognized "a clear mandate linking successful conservation

210. § 1532(5)(B).
211. § 1533(b)(2).
212. § 1533(B)(1)(a).
213. § 1533(b)(2).
214. § 1533(b)(2).
215. § 1533(b)(2).
216. NAT'L RSCH. COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 73 (Nat'l Acads. Press 1995) [hereinafter NRC Report].
217. *Id.*
218. *Id.*

of species to the habitats that they require" and concluded "[t]his linkage is entirely appropriate scientifically."[219]

Delays in regulatory action have been identified as an issue for successful ESA regulation and conservation. One assessment of ESA population sizes and timing of listing and recovery actions noted the ESA is "often considered a model for endangered species protection globally" and "one of the world's strongest laws for protecting biodiversity."[220] Despite that impression, the assessment determined the ESA's effectiveness was "undermine[d]" by "small population sizes at time of listing, coupled with delayed protection and insufficient funding."[221] Further, the assessment identified various reasons for challenges associated with ESA conservation, including "a pattern of not protecting species until their populations have reached very low levels[,]" a practice that "increases both the time to recovery and the likelihood that species will vanish entirely."[222] The assessment also emphasized that as of 2022, "only 54 US species have been declared fully recovered and delisted."[223]

1. Administrative Focus

Federal administration philosophy and priorities also affect the timing and approach to implementing the ESA's critical habitat designation requirement and enforcing its mandate. For example, during the mid-1980s the United States Fish and Wildlife Service (FWS) revised the critical habitat regulation concerning "adverse modification" to incorporate that term within the "jeopardy" standard.[224] This rule amendment was justified on the basis that "critical habitat designation provides no additional protection for species beyond what the listing itself provides."[225]

In addition to variations in the ESA's regulatory approach during different administrations, variation in listing action rates indicates the relative

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219. *Id.* (quoting 16 U.S.C. § 1531).

220. Erick Eberhard et al., *Too Few, Too Late: U.S. Endangered Species Act Undermined by Inaction and Inadequate Funding*, PLOS ONE, Oct. 2022, at 1, 1.

221. *Id.*

222. *Id.* The assessment noted "environmental, genetic, and demographic" factors contributed to those challenges. *Id.* at 1–2.

223. *Id.* at 1.

224. Patrick Parenteau*, An Empirical Assessment of the Impact of Critical Habitat Litigation on the Administration of the Endangered Species Act*, 2, n.6 (Vt. L. Sch. Faculty Papers, Paper No. 1, Aug. 2005) https://www.academia.edu/?h=111848454.

225. *Id.*

importance of implementation of the ESA's requirements over time.[226] A 2005 assessment of listing actions from 1974–2004 noted significant disparities in the number of listing actions based on Presidential administration.[227] For example, during that period ESA listings ranged from a high of 65 during the Clinton administration's two terms to a low of seven in President George W. Bush's first administration.[228] The 286 candidate species at the time of that report noted the average time these species had been in candidate status was 17 years, "many" had been on the candidate list for 25 years, and "[l]isting delays led to the extinction of 42 species."[229]

Further, the number of listing determinations—and the impetus for those determinations—varied greatly during the 1974–2004 period.[230] While 390 listing determinations were issued during President Clinton's second term, President George W. Bush's first term resulted in 98 listing determinations.[231] Of those listing determinations during the second Clinton administration term, 48% were made without litigation resulting in court-ordered action; in the first Bush administration term, only 6% were not based on a court order.[232]

2. Necessary Information

While supported by science, the practicality of designation can create significant challenges. The National Research Council report stated the ESA's Section 7 consultation requirement, which requires federal agencies "to ensure . . . their activities are not likely to jeopardize the continued existence of federally listed species or destroy or adversely modify designated critical habitat[,]" does "correspond[] to the understanding of conservation biology that certain habitat is essential for species survival."[233] The report then addressed the potential for critical habitat designation while acknowledging the challenges associated with this decision:

> Habitat critical to species can be identified from the knowledge of species and ecosystems as objectively and scientifically as a species can be identified for listing. As is the case with listing decisions on

226. D. NOAH GREENWALD & KIERAN F. SUCKLING, CTR. FOR BIOLOGICAL DIVERSITY, PROGRESS OR EXTINCTION? A SYSTEMATIC REVIEW OF THE U.S. FISH AND WILDLIFE SERVICE'S ENDANGERED SPECIES ACT LISTING PROGRAM 1974-2004 (2005).

227. *See id.*

228. *Id.*

229. *Id.*

230. *Id.*

231. *Id.*

232. *Id.*

233. NRC Report, *supra* note 216, at 74–75.

> many rare species, detailed information needed to designate critical habitat might be lacking. Simple occurrence of a species within a habitat does not necessarily mean that the habitat is required by the species or that the amount and quality of habitat might be considered "critical." But that a species is absent from a given habitat does not mean that the habitat is not critical to the persistence of the species. Identification of the relationship of a species to habitat and the *determination of what is critical to the long-term survival of that species are high priorities for long-term conservation*. The complexity of designating critical habitat will vary by species, but *designation should be possible in many cases*.[234]

Despite this assessment of the potential for designating habitat, the report also noted, as of the time of the report, the fact that "nearly 80% of all species listed do not have critical habitat designations is a cause for concern."[235]

As of June 2025, the FWS reports that 107,534,610.67 acres (36,061.23 miles) of critical habitat have been designated for the 965 FWS-listed and FWS-NMFS jointly listed species.[236] In addition, the FWS has proposed critical habitat designations for 3,635,612.44 acres (179.5 miles).[237] Approximately 120 of these species do not have final critical habitat designations.[238]

3. Habitat Conversion

The rate of habitat conversion creates additional concerns about habitat availability and protection. A significant factor affecting critical habitat designation is the rate of habitat conversion associated with development from the pre-ESA area to the present. As of 2022, the fastest growing states since the post-World War II era include Arizona, Florida, Idaho, Utah, North Dakota, and Alaska.[239] In Nevada, the population increased 22 times during

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234. *Id.* at 75–76 (emphasis added) (internal citations omitted).

235. *Id.* at 76.

236. *USFWS Threatened & Endangered Species Active Critical Habitat Report*, U.S. FISH & WILDLIFE SERV., https://ecos.fws.gov/ecp/report/critical-habitat (last visited Mar. 31, 2026). The FWS data reflects active proposed and final critical habitat for FWS only, and Joint FWS-NMFS threatened and endangered species. *Id.*

237. *Id.*

238. *See id.* (compiling data). The non-final designation status information references proposed critical habitat designations as "Not Prudent," and "Critical Habitat Plot Points."

239. *See* Marc Perry et al., *Florida Fastest-Growing State for First Time Since 1957*, U.S. DEP'T OF THE CENSUS (Dec. 22, 2022), https://www.census.gov/library/stories/2022/12/florida-fastest-growing-state.html.

the 1946–2022 period.[240] From 1946 to 2022, Florida's population increased "just over 9 times its 1946 population."[241] Further, its "average annual growth remained over 3.0%" between 1960 and 1989.[242]

With larger populations creating a need for increased housing and infrastructure, a consequence of population growth is increasing habitat conversion. The increase in housing permits provides some perspective on the scope of development.[243] For example, the "ten states issuing the highest number of single-family permits combined accounted for 63.9% of the total single-family permits issued" in 2023.[244] For the three states with the highest number of permits reported, two (Texas and Florida) reported declines in total permit issuance from the previous year, and the other (North Carolina) reported only a slight increase.[245] For multi-family housing development, 15 states reported growth in permit issuance.[246] Even with declines in certain states, the rate of habitat conversion is significant.

4. Rulemaking Process

The FWS rulemaking process for critical habitat designation can be a lengthy and complicated one. The ESA prescribes the requirements and timing for FWS actions to designate critical habitat for a listed species.[247] However, the complexity, available resources, and resistance to the process may impede the FWS's ability to pursue and complete habitat designation.

Two Florida species provide examples of listed species without formal habitat protection measures in all or some of their range. The Florida panther was first determined to be threatened with extinction in 1967, under the Endangered Species Preservation Act of 1966.[248] As explained by the FWS, this species' status was dire by the time it was listed:

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240. *Id.*

241. *Id.*

242. *Id.*

243. *See State and Local Data*, NAT'L ASS'N OF HOME BUILDERS, https://www.nahb.org/news-and-economics/housing-economics/state-and-local-data (last visited Mar. 31, 2026).

244. *Building Permits by State and Metro Area*, NAT'L ASS'N OF HOME BUILDERS, https://www.nahb.org/news-and-economics/housing-economics/state-and-local-data/building-permits-by-state-and-metro-area [https://web.archive.org/web/20250206173412/https://www.nahb.org/news-and-economics/housing-economics/state-and-local-data/building-permits-by-state-and-metro-area] (last visited Mar. 31, 2026).

245. *Id.*

246. *Id.*

247. *See infra* Part II.C.

248. 32 Fed. Reg. 4001 (Mar. 11, 1967); *See* Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, § 10(a), 80 Stat. 926, 930 (1966); FLA. FISH & WILDLIFE CONSERVATION COMM'N, FLORIDA'S ENDANGERED AND THREATENED SPECIES 8 (2025).

> Habitat loss, declining prey populations, and persecution resulting from European settlement were the primary causes of the decline of pumas in North America, including the Florida panther. By the late 1890s, pumas had been extirpated from all of eastern North America except for a small population in Florida. In 1958, the Florida panther was so rare that the State of Florida designated panthers as endangered, and the federal government followed suit in 1967. Status surveys conducted in 1973 and 1974 found only one female in Glades County west of Lake Okeechobee and a handful of others in the Big Cypress region of South Florida.[249]

As of 2020, the Florida panther population included only "a single breeding population located in South Florida [that was] . . . the only breeding population of puma east of the Mississippi River."[250] The species' distribution includes urbanized and growing portions of South Florida, including "the extreme southern portions of the peninsula into Central Florida up to Interstate 4 (I-4) and occasionally further north," with this group generally being "dispersing males from the core breeding population in South Florida."[251] The 2020 assessment also specified that "Florida panthers require large landscapes to meet their biological needs and minimum areas needed to support viable populations of panthers and pumas have been estimated at 1000–8100 km[,]" or approximately 621–5,033 miles.[252]

The Endangered Species Preservation Act did not provide for critical habitat designation concurrent with, or as a result of, a species' listing.[253] When the ESA was enacted in 1973, it authorized—but did not require—critical habitat for species listed prior to the ESA's enactment.[254] Despite the significant concerns about habitat fragmentation and protection, the FWS has not designated critical habitat for the Florida panther to date.[255] Further, the agency's horizon for recovery is a long one, with the recovery plan estimating

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249. U.S. Fish & Wildlife Serv., *Species Status Assessment for the Florida Panther*, iv–v (2020) (Exec. Summary).

250. *Id.* at v.

251. *Id.*

252. *Id.*

253. *See* Endangered Species Preservation Act §§ 1–10.

254. H.R. REP. NO 95-1625 (1978); 16 U.S.C § 1533 (2024); 50 C.F.R. § 424.12(e). According to the regulation, "[t]he Secretary may designate critical habitat for those species listed as threatened or endangered but for which no critical habitat has been previously designated. For species listed prior to November 10, 1978, the designation of critical habitat is at the discretion of the Secretary." *Id.*

255. *Species Status Assessment for the Florida Panther*, *supra* note 249, at iv.

2085 as the year in which the Florida panther may have a large and stable enough population to be delisted.[256]

The gopher tortoise, a species prevalent in Florida and in some other Southeastern states, also has a long ESA regulatory history. In July 1987, the FWS listed the gopher tortoise as a threatened species in the western portion of its range (west of the Mobile and Tombigbee Rivers in Alabama, Louisiana, and Mississippi).[257] Threats to this species at the time of listing and presently include habitat loss, degradation, and fragmentation.[258] The habitat threats result from "urbanization and development all rooting from an increased human population" in the gopher tortoise's Southeastern range.[259] In addition, the FWS determined more than 80% of the gopher tortoise's habitat was within privately owned lands.[260]

In 2006, the FWS received a petition to list the eastern portion of the gopher tortoise's range as threatened under the ESA and additional petitions in subsequent years.[261] The FWS issued multiple findings on petitions to list the eastern gopher tortoise population between 2009 and 2022.[262] The FWS determined the eastern population did not require a threatened listing under the ESA but retained the threatened status of the eastern population.[263] Despite the threats to this species' habitat, the FWS did not designate critical habitat at the time of listing or within the several years following the listing.[264] Regulatory initiatives related to the gopher tortoise focused largely on listing of the western portion of the species' range.[265]

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256. Jonathan Adler, *Tarnished Gold: The ESA at 50*, 18 FIU L. REV. 385, 400 (2024) (citing SUCKLING, ET AL., CTR. FOR BIOLOGICAL DIVERSITY, ON TIME, ON TARGET: HOW THE ENDANGERED SPECIES ACT IS SAVING AMERICA'S WILDLIFE 13 (2012)).

257. FWS, Determination of Threatened Status for Gopher Tortoise (Gopherus polyphemus); 52 Fed. Reg. 25376, 25380 (July 7, 1987).

258. FWS, Endangered and Threatened Wildlife and Plants; Finding for the Gopher Tortoise Eastern and Western Distinct Population Segments, 87 Fed. Reg. 61834, 61840 (Oct. 12, 2022).

259. *Id.* at 61842.

260. *Id.* at 61844.

261. *See ECOS Species Profile: Gopher Tortoise (Gopherus polyphemus)*, U.S. FISH & WILDLIFE SERV., https://ecos.fws.gov/ecp/species/6994 (last visited Mar. 31, 2026).

262. *See* FWS, 90-Day Finding on a Petition to List the Eastern Population of the Gopher Tortoise, 74 Fed. Reg. 46401 (Sept. 9, 2009); FWS, 90-Day Finding on a Petition to List the Eastern Population of the Gopher Tortoise, 75 Fed. Reg. 1567, 1568 (Jan. 12, 2010); FWS, 2-Month Finding on a Petition To List the Gopher Tortoise as Threatened in the Eastern Portion of Its Range, 76 Fed. Reg. 45130, 45162 (July 27, 2011); FWS, Endangered and Threatened Wildlife and Plants; Finding for the Gopher Tortoise Eastern and Western Distinct Population Segments, 87 Fed. Reg., *supra* note 258 at 61858.

263. FWS, Endangered and Threatened Species; Finding for the Gopher Tortoise Eastern and Western Distinct Population Segments, 87 Fed. Reg. at 61834.

264. *Id.* at 61834.; *see* FWS, *supra* note 258, at 61834, 61868.

265. FWS, Endangered and Threatened Wildlife and Plants; Finding for the Gopher Tortoise Eastern and Western Distinct Population Segments, *supra* note 258, at 61834.

The sage-grouse provides another example of a long and contentious listing process demonstrating the habitat-development struggle for lands identified as listed species habitat.[266] As with many other listed species, habitat loss was identified by FWS as a major factor in the sage-grouse's decline.[267] Sagebrush lands providing habitat for the species were fragmented and impacted by "energy development, infrastructure, agricultural conversion, wildfire, invasive plants, and other factors."[268] The species' vulnerability to the West Nile Virus, which "is always fatal for" this species, also is exacerbated by certain development that "introduce standing pools of water [creating habitat for] mosquitos [that] carry the . . . virus."[269] This disease was found in all but one of the states within the sage-grouse's range by 2006.[270]

The sage-grouse was first proposed for ESA listing in 1991, and the process leading to a final decision spanned 24 years.[271] During the next 14 years, multiple petitions were filed to protect the species in all or parts of its range.[272] While some of these petitions were rejected, three were determined by the FWS to "present[] substantial evidence in support of the listing."[273] The FWS first determined that listing was not warranted in 2005.[274] In reviewing a challenge to the listing decision, the court in *Western Watersheds Project v. Fish and Wildlife Service* concluded the FWS had failed to "use the best science" and the Department of Interior (DOI) had

266. PERVAZE A. SHEIKH ET AL., CONG. RSCH. SERV., R44592, SAGE-GROUSE CONSERVATION: BACKGROUND AND ISSUES 1 (2016).

267. *See* FWS, Endangered and Threatened Wildlife and Plants: 12-Month Finding on a Petition to List Greater Sage-Grouse (Centrocercus urophasianus) as an Endangered or Threatened Species, 80 Fed. Reg. 59858, 59941 (Oct. 2, 2015).

268. SHEIKH, *supra* note 266, at 1. Since the sage-grouse requires "large treeless areas to discourage the roosting of avian predators and to permit travel between breeding and nesting sites[,]" development with the species' habitat has a significant impact on the species. *Id.*

269. *Id.* at 2.

270. *Id.*

271. *Id.* at 1.

272. *Id.*

273. *Id.* at 5; Endangered and Threatened Wildlife and Plants; 90-Day Finding for Petitions To List the Greater Sage-Grouse as Threatened or Endangered, 69 Fed. Reg. 21484, 21484 (Apr. 21, 2004).

274. SHEIKH, *supra* note 266, at 7; FWS, Endangered and Threatened Wildlife and Plants; 12-Month Finding for Petitions To List the Greater Sage-Grouse as Threatened or Endangered; Proposed Rule, 70 Fed. Reg. 2243, 2244 (Jan. 12, 2005).

"wrongfully interfered with the listing decision."[275] In 2008, the FWS initiated a status review for the sage-grouse.[276]

Based on that review, the FWS determined in 2010 that the "inadequacy of existing regulatory mechanisms is a significant threat to the greater sage-grouse now and in the foreseeable future."[277] However, the FWS concluded listing was "warranted, but precluded by higher priority listing actions"; the agency stated it would "develop a proposed rule . . . as our priorities allow."[278] FWS's settlement agreement for prior litigation included a 2015 deadline for the agency to propose a listing rule or make a determination that listing was not warranted.[279] In September 2015, FWS issued its decision not to list the species on the basis of adequate regulatory mechanisms to protect the sage-grouse.[280]

The FWS recognized that fragmentation of sagebrush habitat was a primary threat to the sage-grouse's survival.[281] While the sage-grouse originally existed in 16 states, the species' range shrunk to 11 states by 2016.[282] FWS has estimated that by 2016, the species' numbers may have declined "between 69% and 99% from historic to more recent times."[283]

The FWS's sage-grouse listing decision reflects a result based on both inaction and resistance. The DOI Secretary at the time described sage-grouse protection efforts "as the most comprehensive conservation effort in the nation's history."[284] The action, however, raised concerns that the protection associated with listing the species might change public land management in

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275. FWS, 12-Month Finding to List the Greater Sage Grouse, 70 Fed. Reg., *supra* note 277, at 2282; W. Watersheds Project v. U.S. Fish & Wildlife Serv., 535 F. Supp. 2d 1173, 1185 (D. Idaho 2007).

276. *W. Watersheds Project*, 535 F. Supp. 2d at 1185; FWS, Endangered and Threatened Wildlife and Plants; Initiation of Status Review for the Greater Sage-Grouse (Centrocercus urophasianus) as Threatened or Endangered, 73 Fed. Reg. 10218, 10218 (Feb. 26, 2008).

277. FWS, Initiation of Status Review for the Greater Sage-Grouse, *supra* note 279, at 10218–19; FWS, Endangered and Threatened Wildlife and Plants; 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered, 75 Fed. Reg. 13909, 13924 (Mar. 23, 2010).

278. FWS, 12-Month Finding to List the Greater Sage Grouse, 75 Fed. Reg., *supra* note 280, at 13910; *see* 16 U.S.C. § 1533(b)(3)(B)(iii)(II) (2024).

279. *See* In re Endangered Species Act Section 4 Deadline Litig., No. 10-377, at 5 (D.D.C. July 12, 2011).

280. FWS, 12-Month Finding to List Greater Sage-Grouse, 80 Fed. Reg., *supra* note 270, at 59858; *see* 16 U.S.C. § 1533(b)(3)(B)(iii)(II) (2024).

281. FWS, 12-Month Finding to List Greater Sage-Grouse, 80 Fed. Reg., *supra* note 270, at 59858.

282. SHEIKH, *supra* note 266, at 3.

283. *Id.*

284. *Id.* at 8; *Historic Conservation Campaign Protects Greater Sage-Grouse*, U.S. DEP'T OF THE INTERIOR (Sept. 22, 2015), https://www.fws.gov/news/ShowNews.cfm?ID=F5B7455D-0824-997C-47667F8ABBFFBA86.

a manner that could impact authorizations of "economic uses such as mining, fossil and alternative fuel development" as well as "grazing, hunting, fishing, and outdoor recreation."[285]

Actions preceding this listing decision, however, also reflected some cooperative efforts at conservation in lieu of listing. Federal agency and state initiatives to conserve sage-grouse habitat, including developing "best practices" for habitat management and memoranda of understanding with federal agencies, were initiated to avoid the species' listing.[286] At least five states in the sage-grouse's range adopted conservation plans for the species and its habitat, including prescribed hunting timing and limits, predator control, and "habitat restoration after energy development."[287]

In 2010, the Natural Resources Conservation Service created the Sage-Grouse Initiative (SGI) as a means to utilize federal conservation programs to provide technical and financial assistance to assist farmers and ranchers to implement sage-grouse conservation practices.[288] During fiscal years 2010 through 2015, the SGI resulted in conservation practices through 1,289 contracts on more than five million acres.[289] Including additional efforts through the 2015 SGI expansion, the SGI reportedly resulted into conservation exceeding eight million acres.[290] Despite these efforts, questions remained about the validity of the decision not to list the species, including the adequacy and variation of state management actions, effect of grazing and other land management practices, interplay between land management plans and economic development considerations, and the sufficiency of federal land management plans.[291]

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285. SHEIKH, *supra* note 266, at 8; *see* FWS, 12-Month Finding to List Greater Sage-Grouse, 80 Fed. Reg., *supra* note 270, at 59873.

286. FWS, 12-Month Finding to List the Greater Sage-Grouse, 80 Fed. Reg., *supra* note 270, at 59873; *see* DOI, *supra* note 287; John W. Connelly et al., *Guidelines to Manage Sage Grouse Populations and Their Habitats*, 28 WILDLIFE SOC'Y BULL. 967, 968 (2000); Interagency Agreement Between the U.S. Dep't of Agric. Nat. Res. Conservation Serv. & the U.S. Dep't of the Interior Bureau of Land Mgmt. & Fish & Wildlife Ser. (July 1, 2011); *Sage Grouse Initiative*, U.S. DEP'T OF AGRIC. NAT. RES. CONSERVATION SERV., https://www.nrcs.usda.gov/programs-initiatives/sage-grouse-initiative (last visited Apr. 18, 2026); Memorandum of Understanding Between the U.S. Dep't of Agric. Forest Serv. & the U.S. Dep't of the Interior Bureau of Land Mgmt. on Greater Sage-Grouse Conservation 1 (2011) (FS Agreement No. 11-IA-11132400-104); U.S. FISH & WILDLIFE SERV., GREATER SAGE-GROUSE CONSERVATION OBJECTIVES TEAM FINAL REPORT 35 (2013).

287. SHEIKH, *supra* note 266, at 9.; *see, e.g.*, NEV. DEP'T OF WILDLIFE, GREATER SAGE-GROUSE CONSERVATION PLAN FOR NEVADA AND EASTERN CALIFORNIA 14 (2004); COLO. PARKS & WILDLIFE, COLORADO GREATER SAGE-GROUSE CONSERVATION PLAN 156 (2008).

288. NEV. DEP'T OF WILDLIFE, *supra* note 290, at 67. The Environmental Quality Incentives Program (EQIP) and Agricultural Conservation Easement Program (ACEP) were part of this initiative. *Id.*

289. SHEIKH, *supra* note 266, at 10.

290. *Id.*

291. *Id.* at 12–13.

The lack of agency action to list species or designate critical habitat when the species' primary threats include habitat loss and fragmentation is a significant concern. Challenges associated with judicial intervention and agency action, however, create additional impediments to action. For example, in 2007 the Eleventh Circuit considered an industry and association group challenge to the FWS's listing of the Alabama sturgeon as an endangered species.[292] The plaintiffs argued in part that the listing should be repealed because of the FWS's failure to designate critical habitat for the species.[293] The court stated it was "troubled by the [FWS's] apparent practice of routinely delaying critical habitat designation until forced to act by court order[,]" and it noted that research for Congress estimated that FWS "had designated critical habitat 'for only about 10% of listed domestic species.'"[294] The court also stated that "in every case brought against the agency for failure to designate [critical habitat], the agency has lost."[295] The court further recognized that "[r]egardless of the cause, it is clear that the Service chronically fails to meet its statutory duty of designating critical habitat of endangered species within the time the Endangered Species Act requires."[296]

Despite the agency's failure to act, the court rejected the plaintiffs' request to invalidate the species listing.[297] The court concluded that removing the listing status of this species would "make a bad situation worse, and defeat the Congressional intent behind the Endangered Species Act."[298] Further, the court reasoned that eliminating the listing status of a species based on the agency's failure to designate critical habitat would defeat the ESA's purposes, as "Congress intended to protect endangered species, not to strip them of protection in order to motivate an administrative agency to protect them."[299]

Application of the best available science requirement in listing and critical habitat designation decisions also creates complications and challenges to agency action and inaction. The National Science Council assessment recognized the long-term "challenges" of applying the standard

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292. Alabama-Tombigbee Rivers Coal v. Kempthorne, 477 F.3d 1250, 1252–53 (11th Cir. 2007).

293. *Id.* at 1253–54.

294. *Id.* (citing Ctr. for Biological Diversity v. Norton, 240 F. Supp. 2d 1090, 1103 (D. Ariz. 2003); M. LYNNE CORN, CONG. RSCH. SERV., IB10009, ENDANGERED SPECIES: CONTINUING CONTROVERSY, CRS ISSUE BRIEF FOR CONGRESS, at CRS–7 (Nov. 21, 2000)). The Congressional Research Service reports that, as of 1999, the Service had designated critical habitat "for only about 10% of listed domestic species; in every case brought against the agency for failure to designate [critical habitat], the agency has lost.". *Id*.

295. *Kempthorne*, 477 F.3d at 1268. (citations omitted).

296. *Id.* at 1269 (citing *Norton*, 240 F. Supp. 2d at 1103).

297. *Id.* at 1277.

298. *Id.* at 1269.

299. *Id*.

to ESA actions.[300] The report stated "[t]he distinction between science and public policy is often fuzzy, because the possession of scientific knowledge and the implementation of that knowledge are so closely linked."[301] While finding "there has been a good match between science and the ESA" in general at that point, the report noted "points where the agreement between science and the ESA is poorer."[302] Examples included "lack of timely designation of endangered or threatened status and similarly timely removal from these categories when recovery goals have been achieved."[303] The report recommended that "[s]urvival habitat should be identified and designated for protection if necessary *when species are listed* as endangered."[304] Further, the report "recognized that species conservation must include strong provisions for habitat conservation[,]" including "a trigger (threatened or endangered status of a species) that caused certain legal prohibitions (jeopardy and taking restrictions)" as well as "the designation of critical habitat and through the elaboration and implementation of recovery plans."[305] Further, the report recommended the agencies ensure that ESA species listing and designation decisions are made "in a scientifically defensible way [that] requires objective methods for assessing risk of extinction and for assigning species to categories of protection according to that risk."[306]

The concerns expressed in the National Research Council long ago continue to affect the credibility of listing and critical habitat designations today. The ESA mandates that, with certain exceptions, critical habitat be designated when a species is listed. The required balancing of conservation objectives with other broad interests, i.e., economic, national security, and "other relevant" impacts, necessarily affects the outcome of how much habitat is actually designated. Previous determinations by the FWS demonstrate the critical habitat designation may occur well after a species is listed—or may not occur at all.

Even when the FWS does act, the critical habitat designation decision may exclude significant areas with characteristics of benefit to the species that may warrant its designation. Previous listing and designation actions show the remedies for requesting consideration of designation (e.g., petition process), or challenging a designation decision (i.e., litigation) can create significant delays in initiating or requiring action. This delay is of particular

300. *See generally* NRC Report, *supra* note 216.
301. *Id.* at ix.
302. *Id.*
303. *Id.*
304. *Id.* at xi (emphasis added).
305. *Id.*
306. *Id.* at 12.

concern when the threat of losing significant critical habitat in rapidly developing areas exists. To effectively address conservation of critical habitat as envisioned by the ESA, additional approaches should be considered.

B. Other Challenges and Considerations

To private and other landowners, the presence of ESA-listed species or designation of a listed species' critical habitat may be met with opposition because of the potentially significant consequences associated with listing and designation. Private lands create a particular challenge for species and habitat protection under the ESA. Concerns about reductions in property value, regulatory constraints on property use, and the financial, timing, and other impacts of obtaining approvals for land use on ESA-regulated land affect the ability to effectively conserve species and their habitat. Evaluating the economic costs to private landowners is an important step in improving the process of listing and critical habitat designation.

Private land constitutes a significant portion of ESA-listed habitat. While federal lands play an important role in conserving ESA-listed species and their habitat, they cannot alone satisfy the full need.[307] According to a 2016 study, habitats on private lands are relied upon by at least two-thirds of species listed as endangered under the ESA.[308] At least two-thirds of listed species rely upon private land for some or all of their habitat, and habitat for one-third of listed species is found *only* on private land.[309] Private lands are an exclusive source of habitat for a "significant percentage" of listed species.[310] This private habitat, therefore, plays an integral role in species conservation, since federal lands cannot alone fill the habitat need even if all federal lands "were managed exclusively for species conservation."[311]

1. Economic Value Concerns

The effects of ESA listings and critical habitat designations on private property may create significant concerns for landowners regarding their property values and the regulatory effects of ESA compliance. Some commentators have expressed apprehension that these concerns may lead to actions that are counterproductive to protecting listed species and conserving

307. Adler, *supra* note 256, at 407.

308. *Id.*

309. *Id.*

310. *Id.*

311. *Id.* (citing DANIEL M. EVANS ET AL., ISSUES IN ECOLOGY REP. 20, SPECIES RECOVERY IN THE UNITED STATES: INCREASING THE EFFECTIVENESS OF THE ENDANGERED SPECIES ACT 3 (2016)).

their habitat. For example, concern exists that listing and critical habitat designation may turn some landowners—"would-be conservationists[—] into opponents of conservation efforts."[312] The perceived threat of property value decline from the presence of listed species may create "anti-conservation sentiment among many private landowners who view endangered species as economic liabilities" because "the ESA restricts future land-use options where threatened or endangered species are found but makes no provisions for compensation."[313] According to this view, "maintaining high-quality habitats that harbor or attract endangered species would represent a gamble against loss of future economic opportunities."[314]

These concerns may be exacerbated by the demand for new development, which creates challenges for ESA conservation. Housing development data from 2024 shows that the demand for housing is significant.[315] Data from the United States Census Bureau indicates a significant increase in "privately owned housing permits[,]" rising from approximately 2013 to 2023. Housing starts rose from under 1 million in 2013 to a high of 1.6 million in 2021, and housing permits increased from 1 million to more than 1.6 million that year.[316] While the totals decreased somewhat from the 2021 highs, both permits and starts remained near 1.4 million in 2023.[317] In December 2024, overall annual housing starts were estimated at "a seasonally adjusted annual rate of 1.5 million units."[318]

2. Preemptive Action Threat

Another concern about the potential consequences of ESA critical habitat designations is that these actions may lead to preemptive habitat destruction. Landowners may destroy habitat while listing or critical habitat designations are pending to avoid the restrictions that could be imposed after those actions become final.[319] Incidents occurring before listing or designation reportedly include "accelerated [forest] harvest rotations to avoid regrowth of [spotted owl] habitat" in the Pacific Northwest and "raz[ing]

312. *Id.* at 410.

313. *Id.*

314. *Id.*

315. Robby Brumberg et al., *How Many Houses Are Built Each Year in the U.S.? 2026*, CONSUMER AFFAIRS (last updated Apr. 10, 2024), https://www.consumeraffairs.com/homeowners/how-many-houses-are-built-every-year.html.

316. *Id.* (analyzing the graph titled "New privately owned housing permits, starts and completions from 2013 to 2024").

317. *Id.*

318. Robert Dietz, *Housing Starts End 2024 on an Up Note*, NAT'L ASS'N OF HOME BUILDERS (Jan. 17, 2025), https://eyeonhousing.org/2025/01/housing-starts-end-2024-on-an-up-note/.

319. Adler, *supra* note 256, at 410.

hundreds of acres of juniper tree stands" after the FWS's endangered listing of the golden-cheeked warbler.[320] One study found that some owners of private lands, on which endangered red-cockaded woodpeckers were found, "harvest[ed] their forestlands prematurely and reduced[d] the length of their timber harvesting rotations" to avoid ESA-based restrictions and potential economic loss. This 2003 study estimated that "[p]roviding habitat for a single woodpecker colony could cost a private timber owner as much as $200,000 in foregone timber harvests."[321] A 2004 study determined that, based on the threat of restrictions associated with the presence of a listed red-cockaded woodpecker, "'a [private] landowner is 25% more likely to cut forests when he or she knows or perceives that a red-cockaded woodpecker cluster is within a mile of the land than otherwise'" and concluded for this species "'the ESA has a strong negative effect on the habitat,' and the effect appears to be 'substantial.'"[322]

Criticism of the regulatory approach to critical habitat designation and protection is not limited to private landowners. A 2007 National Center for Policy Analysis report stated that "[s]ome, or all, of the habitat of 78 percent of species listed are on private land."[323] That report also cited comments from a group characterized as "the ESA's staunchest supporters" that recognized the preemptive action problem:

> According to Environmental Defense's Michael Bean, widely regarded as one of the foremost experts on the ESA, "[T]here is increasing evidence that at least some private landowners are actively managing their land so as to avoid potential endangered species problems." His comments on the red-cockaded woodpecker are broadly applicable to most endangered species. "The problems they're trying to avoid are the problems stemming from the Act's prohibition against people taking endangered species by adverse modification of habitat. And they're trying to avoid those problems by avoiding having endangered species on their property." Bean then explained the motivations behind these actions. "Now it's important to recognize that all of these actions that landowners are either taking or threatening to take are not the result of malice toward the red-cockaded woodpecker, not the result of malice toward the

320. *Id.* at 411.

321. *Id.* at 411 (citing Dean Lueck & Jeffrey A. Michael, *Preemptive Habitat Destruction Under the Endangered Species Act*, 46 J.L. & ECON. 27, 33 (2003)).

322. *Id.* at 412 (citing Daowei Zhang, *Endangered Species and Timber Harvesting: The Case of Red-Cockaded Woodpeckers*, 42 ECON. INQUIRY 150, 151, 160, 162 (2004)).

323. BRIAN SEASHOLES, NAT'L CTR. FOR POL'Y ANALYSIS, REP. NO. 303, BAD FOR SPECIES, BAD FOR PEOPLE: WHAT'S WRONG WITH THE ENDANGERED SPECIES ACT AND HOW TO FIX IT 3 (2007).

environment. Rather, they're fairly rational decisions motivated by a desire to avoid potentially significant economic constraints."[324]

3. Costs and Delays

Noncompliance with the ESA can be costly. Section 9 of the ESA penalizes those who violate its requirements.[325] Even landowners who seek to comply with the ESA's processes for actions with the potential to impact listed species or critical habitat, however, may face substantial costs and delays to obtain necessary authorizations. Because "effective conservation requires either the imposition of greater regulatory requirements on private landowners, or innovative ways to encourage voluntary conservation efforts on private land,"[326] the cooperation of landowners and other stakeholders (e.g., local governments) is critical to ESA conservation success. Cooperative efforts, like the ESA provisions for habitat conservation plans and candidate conservation agreements, provide options for those stakeholders to engage in negotiations to reach a conservation solution. While these efforts may produce positive results for the species, they can also be both time-consuming and costly.[327]

Even landowners sympathetic to conservation of ESA-listed species may be frustrated by the time, costs, and other obstacles associated with ESA authorizations, which may substantially delay actions and impose significant costs for ESA compliance. For example, authorization for property development that included critical habitat for the Perdido Key Beach Mouse (PKBM) demonstrates the potential complexity and costs of the process. The PKBM is one subspecies of ESA-listed beach mice[328] inhabiting Escambia

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324. *Id*. (citing Michael Bean, Presentation on "Ecosystem Approaches to Fish and Wildlife Conservation: Rediscovering the Land Ethic" at the U.S. Fish & Wildlife Service's Office of Training and Education Seminar Series, Arlington, Va. (Nov. 3, 1994)).

325. 16 U.S.C. §§ 1538, 1540 (2024).

326. Adler, *supra* note 256, at 413.

327. Adler, *supra* note 256, at 413 (citing Christian Langpap & Joe Kerkvliet, *Endangered Species Conservation on Private Land: Assessing the Effectiveness of Habitat Conservation Plans*, 64 J. ENV'T ECON. & MGMT. 1, 1 (2012)).

328. Other listed beach mouse subspecies inhabit coastal dunes in Florida and Alabama, including the Alabama beach mouse, Choctawhatchee beach mouse, Santa Rosa beach mouse, and St. Andrew beach mouse. *Alabama Beach Mouse (Peromyscus polionotus ammobates)*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/species/alabama-beach-mouse-peromyscus-polionotus-ammobates (last visited Mar. 31, 2026); *Choctawhatchee Beach Mouse (Peromyscus polionotus allophrys)*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/species/choctawhatchee-beach-mouse-peromyscus-polionotus-allophrys (last visited Mar. 31, 2026); *Santa Rosa Beach Mouse (Peromyscus polionotus leucocephalus)*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/species/santa-rosa-beach-mouse-peromyscus-polionotus-leucocephalus (last visited Mar. 31, 2026); *St. Andrew Beach Mouse (Peromyscus polionotus*

County in the Florida Panhandle.[329] This species was first listed as endangered in 1984 and is found only on Perdido Key, Florida.[330] Threats to the PKBM's survival include population growth and corresponding development, habitat destruction from development and hurricanes within its dune habitat, and the introduction of predators such as domestic cats, coyotes, and foxes.[331] The PKBM was listed in 1984, and critical habitat was designated at the time of listing.[332]

The FWS issued a recovery plan for the PKBM and two other beach mouse subspecies in 1987 and proposed plan amendments during the time of the species' listing.[333] In the recovery plan, the FWS stated that "[a]lteration and destruction of habitat for recreational, commercial and residential development has been a major factor in the decline of beach mice."[334] In fact, two hurricanes occurring after the PKBM's listing demonstrated how vulnerable the species is to their effects. While 500–800 PKBM were estimated to inhabit Perdido Key in early 2004, the landfall of Hurricane Ivan later that year destroyed "much of the mouse's dune habitat."[335] After the 2005 hurricane season, "few mice were found" on Perdido Key, and no live PKBM were found in a March 2007 survey.[336]

PKBM recovery attempts were significantly complicated by the combined threats associated with land development and natural disasters. Escambia County eventually finalized a habitat conservation plan for the

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peninsularis), U.S. FISH & WILDLIFE SERV., https://www.fws.gov/species/st-andrew-beach-mouse-peromyscus-polionotus-peninsularis (last visited Mar. 31, 2026).

329. *Perdido Key Beach Mouse*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/species/perdido-key-beach-mouse-peromyscus-polionotus-trissyllepsis (last visited Mar. 31, 2026).

330. End. Status & Crit. Hab. for Alabama Beach Mouse, Perdido Key Beach Mouse, & Choctawhatchee Beach Mouse; 49 Fed. Reg. 23794, 23794–95 (June 7, 1984).

331. Endangered and Threatened Wildlife and Plants; Draft Recovery Plan Revisions for 43 Southeastern Species, 84 Fed. Reg. 38284, 38284 (Aug. 6, 2019); Rick O'Connor, *50 Years of the Endangered Species Act, Part 2: The Perdido Key Beach Mouse*, UNIV. OF FLA., IFAS: BLOGS (June 8, 2023), https://blogs.ifas.ufl.edu/escambiaco/2023/06/08/50-years-of-the-endangered-species-act-part-2-the-perdido-key-beach-mouse/.

332. Endangered and Threatened Wildlife and Plants, 50 Fed. Reg. 23872, 23880–82 (June 5, 1985).

333. U.S. FISH & WILDLIFE SERV., CHOCTAWHATCHEE BEACH MOUSE, PERDIDO KEY BEACH MOUSE AND ALABAMA BEACH MOUSE RECOVERY PLAN, EXECUTIVE SUMMARY (1987); Endangered and Threatened Wildlife and Plants; 21 Draft Recovery Plan Revisions for 43 Southeastern Species, 84 Fed. Reg. 38291, 38292 (Aug. 6, 2019); *see, e.g.*, U.S. Fish & Wildlife Serv., *Perdido Key Beach Mouse Recovery Plan Draft Amendment* 1 (2019).

334. CHOCTAWHATCHEE BEACH MOUSE, PERDIDO KEY BEACH MOUSE AND ALABAMA BEACH MOUSE RECOVERY PLAN, *supra* note 333; Endangered and Threatened Wildlife and Plants; 21 Draft Recovery Plan Revisions for 43 Southeastern Species, 84 Fed. Reg. 38291, 38292 (Aug. 6, 2019).

335. *The Mouse That Roared*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/story/mouse-roared (last visited Mar. 31, 2026).

336. *Id.*

species, which included a limitation on the amount of land that could be developed, requirements such as clustering to minimize impacts, mitigation fees of $100,000 per acre, and annual homeowner impact fees.[337]

The individual incidental take permit (ITP) process preceding that plan proved to be long and difficult for landowners. The largest Perdido Key development, which originally proposed 1,900 residences on an approximately 400-acre site, sought FWS authorization under an ITP. The FWS determined the site included 59 acres of PKBM critical habitat.[338] After eight years, the FWS authorized development on 26 acres, and the eventual plan allowed for development of fewer than 1,000 clustered residences with changes to the development plan, $1.9 million payment to conserve PKBM habitat, and other measures.[339]

While the ESA listing of the western population of the gopher tortoise occurred in 1987, the proposed listing of the Eastern population was a long and contentious process that spanned nearly 35 years.[340] The gopher tortoise's range in the United States spans across six Southeastern states.[341] In 1987, the FWS listed the Western population of the gopher tortoise as threatened.[342] At that time, the species was not listed in the Eastern portion of the range.[343] Although the first petition to list the Eastern population was first proposed for listing in 2006, final action was not taken on the listing decision until 2022.[344] The Service concluded that the Western Distinct Population Segment (DPS) would continue to be listed as threatened under the ESA and that the Eastern DPS did not warrant ESA listing as either threatened or endangered.[345] Among other considerations related to the Eastern DPS, the FWS noted the conservation contributions of public and private organizations and stakeholders, as well as the species protection afforded by state laws and regulations for this DPS.[346]

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337. *Id.* Escambia County commissioners and FWS agreed to limit development to 66 acres on Perdido Key during a 30-year period. *Id.* The plan also requires mitigation fees of $100,000 per acre and annual homeowner impact fees of $201. *Id.* Further, development requirements include a native vegetation requirement, installation of wildlife friendly lights, and a ban on outdoor cats. *Id.*

338. *Id.*

339. *Id.*

340. *Gopher Tortoise Program*, FLA. FISH & WILDLIFE CONSERVATION COMM'N, https://myfwc.com/wildlifehabitats/wildlife/gopher-tortoise/ (last visited Mar. 31, 2026); *see generally* FWS, RANGE-WIDE GOPHER TORTOISE CONSERVATION STRATEGY (2013).

341. RANGE-WIDE GOPHER TORTOISE CONSERVATION STRATEGY, *supra* note 340, at 4.

342. *Id.* at 1.

343. *Id.* at 2.

344. FLA. FISH & WILDLIFE CONSERVATION COMM'N, GOPHER TORTOISE MANAGEMENT PLAN 16–18 (2024).

345. *Id.* at 2.

346. *Id.* at 11.

IV. CRITICAL HABITAT CONSERVATION: MANDATES AND INCENTIVES

Thirty years ago, the National Research Council recognized the important role of critical habitat designation and the need for specific actions to promote habitat conservation for listed species, stating:

> Because most species are endangered due to loss or degradation of habitat, site-specific actions should include identification, restoration, and management of habitat. Habitat acquisition for endangered species has also been a part of the federal program from its beginnings. Later amendments to the ESA have augmented the authority and funding for this effort, but acquisition has not kept and cannot keep pace with the number and size of the affected habitats or the modification and degradation that they face. In summary, habitat protection has always been an important component of endangered species programs. As our experience with endangerment and recovery has increased, habitat has become the central ingredient, and the ESA, in emphasizing habitat, reflects the current understanding of the crucial biological role habitat plays for species.[347]

Voluntary action, however, is essential for successful ESA implementation. An evaluation of ESA landowner incentives during the previous administration describes the need for an incentive-based approach:

> Positive incentives are crucial to supporting these actions, especially for private and state landowners that are under no ESA obligation to conserve species. And although Section 7(a)(1) requires federal agencies to help conserve species, this requirement is largely unenforceable as courts have generally found that the section does not require agencies to carry out any specific recovery action. Thus, incentives also might be employed to advance recovery on federal lands.[348]

This assessment also noted that these voluntary incentives "can come in many forms, including regulatory relief, financial support, technical support,

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347. NRC Report, *supra* note 216, at 75.

348. UCI L. CTR. FOR LAND, ENV'T & NAT. RES. (CLEANR), THE SIX PRIORITY RECOMMENDATIONS FOR IMPROVING CONSERVATION UNDER THE FEDERAL ENDANGERED SPECIES ACT 6 (2021).

and social recognition."[349] However, the incentive-based process may vary by landowner and may be "expensive and complex for many landowners" to implement.[350]

The ESA's development reflects both the purposes of its predecessor statutes and, preceding its enactment, a growing public awareness and concern about the need to protect species threatened with extinction. The ESA and its predecessors created ambitious goals to protect imperiled species and conserve the habitat necessary for them to thrive. Implementation of the ESA's requirements, however, has not always lived up to the statute's lofty objectives. The critical habitat designation requirement provides an example of the challenges associated with implementing the ESA's mandates. A variety of factors—scientific, economic, legal, policy, and practical—have created impediments to designation. Given these impediments and the shifting federal environmental objectives, a greater focus is needed on improving critical habitat protection through other means. In addition to evaluating statutory compliance, creating or enhancing non-regulatory incentives to critical habitat conservation may create "de facto" compliance in situations where regulatory action is impractical or unlikely to achieve designation through the statutory mandates.

The first endangered species were listed under the Endangered Species Preservation Act of 1966.[351] The first listed species habitat acquisition under this law occurred in 1968, when 2,300 acres were purchased as habitat for the Florida key deer.[352] During 1973, the year of the ESA's enactment, six animal and one fish species were listed.[353] By 2020, the United State Fish and Wildlife Service (FWS) had listed 718 domestic animal species.[354] Of those species, 503 were listed as endangered, and 215 were listed as threatened.[355] As of August 31, 2025, the total had increased to 744, with 495 animal species listed by FWS[356] as endangered, and 249 species listed as threatened.[357] According to the 2025 data, 679 active draft and final recovery

349. *Id.*

350. *Id.*

351. *ESA Milestones: Pre-1973*, *supra* note 10.

352. *Id.*

353. *Species Listed During Calendar Year 1973*, U.S. FISH & WILDLIFE SERV., https://ecos.fws.gov/ecp/report/species-listings-by-year?year=1973 (last visited Mar. 31, 2026).

354. SHEIKH & WARD, *supra* note 5, at 1, 3. Further, a total of 944 domestic plant species had been listed as endangered (772) or threatened (172) as of 2020. *Id.* at 3.

355. *Id.*

356. Env't Conservation Online Sys., *Listed Species Summary (Boxscore)*, U.S. FISH & WILDLIFE SERV., https://ecos.fws.gov/ecp/report/boxscore (last visited Mar. 31, 2026). The FWS data includes species listed by FWS and species listed jointly by FWS and the NMFS. *Id.*

357. *Id.* United States listings include those populations in which the United States shares jurisdiction with another nation. *Id.*

plans have been prepared for FWS-listed or FWS-NMFS-listed species in the United States.[358] ESA delisting data reflects that 135 species have been delisted under the ESA, with 122 of that total delisted by FWS.[359]

The ESA's conservation goal depends on the ability to implement measures to protect imperiled species and their habitat. While the statutory framework reflects the importance of protection for both the species and their habitats, the discourse above identifies the challenges with achieving its species and habitat protection and conservation objectives. In an era of changing federal administration perspectives on the ESA's purpose and mandates and their relative priority, both mandates (statutory and regulatory) and incentives for conservation and compliance are needed. While the relative emphasis on mandates and incentives is likely to shift over time, both will be necessary to implement the ESA's requirements and pursue achievement of its objectives and purposes.

A. Leveraging Habitat Value on Public Lands

With or without designation, public lands can provide a significant habitat conservation opportunity for ESA-listed species. States and local governments have habitat acquisition programs that could promote conservation of listed species habitat. Proactive use of federal, state, and other available funding for habitat acquisition, restoration, and conservation may assist with developing the capacity to identify and protect habitat that can be used by listed species.[360] Within and near those areas, additional conservation opportunities may be created through mechanisms like conservation easements, wildlife corridors, and other innovative approaches to habitat protection.[361] As noted in the National Research Council report on the interaction of ESA and science, the Endangered Species Preservation Act of 1966 included a policy statement directing that "the Secretary of Interior, the Secretary of Agriculture, and the Secretary of Defense . . . shall preserve the habitats of such threatened species on lands under their jurisdiction."[362]

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358. *Id.* Some recovery plans cover more than one species, and a few species have separate plans covering different parts of their ranges. This count includes only plans generated by the USFWS (or jointly by the USFWS and NMFS), and only listed species that occur in the United States. *Id.*

359. Env't Conservation Online Sys., *Delisted Species*, U.S. FISH & WILDLIFE SERV., https://ecos.fws.gov/ecp/report/species-delisted (last visited Mar. 31, 2026).

360. MARK K. DESANTIS, CONG. RSCH. SERV., R45480, U.S. DEPARTMENT OF THE INTERIOR: AN OVERVIEW (June 23, 2021).

361. *Id.*

362. NRC Report, *supra* note 216, at 73.

The Department of Interior (DOI) manages approximately 475 acres of federal and tribal lands.[363] The mission of the FWS, a DOI agency, is "[t]o conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."[364] Management of the National Wildlife Refuge System's more than 836 million acres of protected lands and waters is one of the FWS's responsibilities.[365] The National Wildlife Refuge System includes national wildlife "refuges, . . . wetland management districts, and other protected areas."[366] The National Park Service, a bureau within the DOI, controls significant federal these land areas pursuant to its directive to manage public lands "[t]o preserve unimpaired the natural and cultural resources and values of [national parks] for the enjoyment, education, and inspiration of this and future generations."[367] Further, the DOI's Bureau of Land Management is responsible for 244 million acres in support of its mission "[t]o sustain the health, diversity and productivity of public lands for the use and enjoyment of present and future generations."[368]

While they are not—and should not be—solely responsible for ESA conservation of species and habitat, federal lands can play an important role for both. The existing habitat within national parks, wildlife refuges, conservation areas, and other federal lands that qualify as critical habitat can promote its availability to ESA species within their borders. Preservation, conservation, rehabilitation, and maintenance of these federal lands could augment the amount of available critical habitat. With changing administrative priorities and regulatory initiatives, a consistent legal and policy framework for ensuring the commitment to public lands habitat needs to be maintained at the federal level.

To ensure that federal lands can provide necessary critical habitat, however, adequate funding is also essential. Federal land management agencies need sufficient resources—financial, programmatic, and personnel—to improve, preserve, and maintain current and potential habitat. Agencies would need funding and other resources to assess, plan for, and implement operational and use conditions. Resources would be needed to

363. DESANTIS, *supra* note 360, at 1. The CRS report also notes that approximately "700 million acres of subsurface minerals are under DOI management." *Id*.; *see* Reorganization Plan No. 3 of 1946, 11 Fed. Reg. 7875 (July 16, 1946).

364. DESANTIS, *supra* note 360, at 19.

365. *Id.* at 20. The acreage within the National Wildlife Refuge System also includes waterfowl production areas, coordination areas, and national monument areas outside national wildlife refuge boundaries but part of the National Wildlife Refuge System and FWS-managed submerged lands within marine national monuments. *Id.* [836 million acres].

366. *Id.*

367. *Id.* at 17.

368. *Id.* at 12.

avoid negative impacts from land uses and to identify the appropriate level of access to habitat areas on federal lands open to the public. Consistent attention and guaranteed personnel are prerequisites for successfully leveraging public lands for critical habitat benefits. While this focus would not eliminate the need for private land conservation measures, ensuring public land is suitable for ESA habitat will help promote both species and habitat viability.

B. Targeting Existing Programs and Funding

Federal agencies contribute to habitat restoration with technical assistance and funding, efforts that may lead to protection of additional habitat for listed species. For example, the Ecological Services Program's responsibilities include restoring and protecting "healthy populations of fish, wildlife, and plants and the environments upon which they depend."[369] This program works with government agencies and landowners to assist them with "avoid[ing], minimiz[ing], and mitigat[ing] threats to" their lands and natural resources.[370]

In addition, DOI's Office of Surface Mining Reclamation and Enforcement administers coal mining regulation and operations.[371] The agency has responsibility for approximately 700 million acres of federal onshore subsurface mineral estate, and it supervises Bureau of Indian Affairs (BIA) mineral estate development on approximately 59 million acres.[372] This agency's mission includes "mitigat[ing] the effects of past mining by aggressively pursuing reclamation of abandoned coal mines."[373] To implement that mission, the agency is authorized to award grants to states and tribes for their reclamation efforts.[374]

1. Section 6 Grants

The ESA includes requirements for FWS to cooperate with other agencies as well as state, local, and tribal governments to implement the ESA's objectives.[375] The FWS satisfies this requirement in part through programs and financial and other assistance.[376] The agency assists states and

369. *Ecological Services*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/program/ecological-services (last visited Mar. 31, 2026).

370. *Id.*

371. DESANTIS, *supra* note 360, at 18.

372. *Id.* at 13.

373. *Id.* at 18.

374. *Id.*

375. 16 U.S.C. §§ 1531–1544 (2024).

376. *See generally id.*

territories to develop and implement listed species conservation and monitoring programs through a variety of funding sources, including the Traditional Conservation Grant Program.[377] Through Section 6 of the ESA, FWS is authorized to fund various grants and programs.[378] These programs include the Cooperative Endangered Species Conservation Fund, which funds species and habitat conservation on public lands in states and territories.[379] Through the Habitat Conservation Plan grants, FWS funds voluntary conservation efforts by stakeholders to implement cooperative conservation goals, promote listed species recovery, fund habitat protection, and avoid habitat-land use conflicts.[380] FWS also awards Recovery Land Acquisition grants, which provide matching grants for listed species habitat acquisition to support recovery plan implementation.[381] These grants can fund a variety of activities, including habitat and species status surveys, habitat restoration and enhancement, research, and provide "opportunit[ies] to protect habitat essential to listed species" through funding for habitat acquisition"[382]

Further, the Cooperative Endangered Species Conservation Fund (CESCF) grants funds for "species and habitat conservation actions" by states and territories on non-federal lands.[383] These matching grants require a cooperative agreement with the DOI and are intended to cooperate "with public and private partners, reduce conflicts between species conservation and economic development, and promote long-term conservation of species and the ecosystems on which they depend."[384] During fiscal year 2024, FWS-

377. *Traditional Conservation Grants*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/service/traditional-conservation-grants (last visited Mar. 31, 2026); *Cooperative Endangered Species Conservation Fund Grants*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/library/collections/cooperative-endangered-species-conservation-fund-grants (last visited Mar. 31, 2026) [hereinafter Cooperative Conservation Grants].

378. 16 U.S.C. § 1535 (2024).

379. *Id.*; Cooperative Conservation Grants, *supra* note 377.

380. *Habitat Conservation Plan Land Acquisition Grants*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/service/habitat-conservation-plan-land-acquisition-grants (last visited Mar. 31, 2026). Stakeholders include "landowners, states, and other stakeholders," and grants are provided in combination of "state, local, and private contributions." *See Cooperative Endangered Species Conservation Fund-Section 6*, LAND & WATER CONSERVATION FUND, https://lwcfcoalition.org/section-6 (last visited Mar. 31, 2026).

381. *Cooperative Endangered Species Conservation Fund-Section 6*, *supra* note 380.

382. *Id.*; *Habitat Conservation Plan Land Acquisition Grants*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/service/habitat-conservation-plan-land-acquisition-grants (last visited Mar. 17, 2026).

383. *Cooperative Endangered Species Conservation Fund*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/program/cooperative-endangered-species-conservation-fund/what-we-do (last visited Mar. 30, 2026).

384. *Id.*

funded grants totaled approximately $62.34 million through the CESCF.[385] Other programs funded through the ESA Section 6 authorization include Conservation Planning Assistance Grants and Species Recovery Grants.[386]

Other statutes also authorize grants to benefit listed species and their habitat. For example, the Coastal Wetlands Planning, Protection, and Restoration Act provides funding to coastal states for the acquisition of coastal wetlands.[387] This program also can fund efforts to restore, manage, and enhance those wetlands.[388] The Fish and Wildlife Act of 1956 and the Migratory Bird Conservation Act include provisions for FWS actions to acquire and conserve wildlife lands and resources.[389] Other statutes establish FWS funding for public-private partnership grants "to protect, enhance, restore, and manage" wetlands, "waterfowl [and] other migratory birds and other fish and wildlife" as well as wetland ecosystems and other habitats.[390] Finally, the Partners for Fish and Wildlife Act funds actions to restore, enhance, and manage private lands with habitat for fish and wildlife.[391]

ESA Section 6 funding can provide opportunities to leverage existing funding to benefit listed species and conserve habitat. Section 6 authorizes the FWS to "enter into a cooperative agreement . . . with any [s]tate which establishes and maintains an adequate and active program for the conservation of endangered species and threatened species."[392] The Section 6 cooperative agreement identifies funding opportunities for "international commitments" for listed species protection related to: states' "readiness . . . to proceed with a conservation program" satisfying ESA objectives and purposes, states' listed species' numbers and species' restoration potential, the "relative urgency" for initiating a species' protection program, and the importance of monitoring candidate and recovered species.[393]

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385. *Id.* The Cooperative Endangered Species Conservation Fund also provides funding to support habitat conservation plans and conservation plan agreements. *Id.*

386. *Id.*

387. 16 U.S.C. §§ 3951–3956; Coastal Wetlands Planning, Protection, and Restoration Act, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/law/coastal-wetlands-planning-protection-and-restoration-act (last visited Mar. 30, 2026).

388. *Id.*

389. 16 U.S.C. §§ 742(a)–754.

390. *North American Wetlands Conservation Act*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/law/north-american-wetlands-conservation-act (last visited Mar. 30, 2026); 16 U.S.C. §§ 715–715d, 4401; *Migratory Bird Conservation Act*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/law/migratory-bird-conservation-act (last visited Mar. 30, 2026).

391. 16 U.S.C. §§ 3771–3774.

392. 16 U.S.C. § 1535(c).

393. § 1535(d)(1).

Congress could amend ESA Section 6 funding provisions to prioritize grants for the acquisition, conservation, and rehabilitation of habitat that is, or could be, critical habitat for ESA-listed species. While the needs identified in the Section 6 funding list are important considerations to promote ESA species listing and recovery, the critical habitat priority focuses on a specific statutory mandate that has not received sufficient attention or support. The need for critical habitat protection—inside or outside the designation process—through cooperative programs and funding could supplement the protection afforded by the designation process and implement the ESA mandate in a more meaningful way.

2. Conservation Easements

In addition to funding programs that preserve and conserve habitat for listed species, Section 6 grants can provide funding to compensate landowners for voluntary actions that will protect listed species' habitat. Conservation easements are an option to conserve critical habitat with a less-than-fee-simple acquisition.[394]

> [The FWS] will acquire lands and waters consistent with legislation, other congressional guidelines, and Executive Orders, for the conservation of fish and wildlife and related habitat and to provide wildlife-oriented public use for educational and recreational purposes. The same policy states that when lands are to be acquired, we are to acquire only the minimum interest necessary to reach management objectives.[395]

The National Conservation Easements Database identifies more than 220,000 conservation easements protecting almost 38 million acres as of early 2025.[396] Protection of habitat through conservation easements can provide significant conservation benefits. The "strength [of a conservation easement] lies in permanent restriction of alternative uses of the land base, which maintains existing habitat by limiting landscape fragmentation and

394. U.S. FISH AND WILDLIFE SERV., CONSERVATION EASEMENT HANDBOOK: SUPPLEMENTS, 601 FW 6 (ADMINISTRATION OF NATIONAL WILDLIFE REFUGE SYSTEM CONSERVATION EASEMENTS), NATIONAL WILDLIFE REFUGE SYSTEM 2 (2022).

395. *Id.*

396. NAT'L CONSERVATION EASEMENT DATABASE, CONSERVATION EASEMENTS (2026).

conversion to uses incompatible with wildlife habitat."[397] As a perpetual restriction, a conservation easement "typically incorporates flexibility for landowners to manage the encumbered land in accordance with the best practices of the day."[398]

Funding available through Section 6 grants and other federal, state, local, and private funding sources can be used to promote the acquisition of conservation easements. These acquisitions will stimulate sufficient critical habitat protection to achieve species recovery and conservation. The preservation of this habitat may have benefits other than species protection, since conservation of lands that otherwise may be vulnerable to conversion can provide numerous environmental benefits.

3. Wildlife Corridors

Further, ESA funding can support federal, state, and other entities' efforts to create connections between areas of existing habitat with the potential to provide significant conservation benefits. For example, wildlife corridors provide an opportunity to create habitat connections that promote the species' survival and viability. The 2023 Council on Economic Quality Guidance (CEQ Guidance) described wildlife corridors as "distinct components of a landscape, waterscape, or seascape that provide connectivity."[399] It explains that wildlife corridors "facilitate movement of species between blocks of intact habitat," and "allow[] wildlife to access needed resources and facilitate[] fundamental ecological processes."[400] These corridors also "promote[] climate adaptation and resilience by enabling wildlife to adapt, disperse, and adjust to changes in the quality and distribution of habitats, including climate-driven shifts in species' geographic ranges."[401]

Promoting habitat connections through wildlife corridors and other innovative mechanisms to conserve or protect habitat can promote other ESA objectives and priorities. The CEQ Guidance noted that "connected habitats" can provide benefits to human populations, including "flood risk reduction,

397. Drew E. Bennett & Travis Brammer, *Habitat Leasing as an Alternative to Affirmative Conservation Easements in Conserving Wildlife on Private Lands*, WILDLIFE SOC'Y BULLETIN, Aug. 2, 2023, at 1, 1.

398. *Id.*

399. Memorandum from Brenda Mallory, Chair Council on Environmental Quality, Guidance for Fed. Departments and Agencies on Ecological Connectivity and Wildlife Corridors to Heads of Fed. Departments and Agencies 1, 1 (May 21, 2023) (on file with author).

400. *Id.* at 1; Nicole E. Heller & Erika S. Zavaleta, *Biodiversity Management in the Face of Climate Change: A Review of 22 Years of Recommendations*, 142 BIOLOGICAL CONSERVATION 14, 24 (2008).

401. Memorandum from Brenda Mallory, *supra* note 399, at 1.

extreme heat mitigation, health and public safety, access to nature, hunting and fishing, livelihoods, and subsistence."[402] Concerns related to development of wildlife corridors include the "spread of invasive species and wildlife diseases between ecosystems[,]" facilitation of predator and nuisance species crossings between ecosystems, and increase in the spread of wildfires.[403]

A recent Congressional Research Service report evaluated the concepts and effects of wildlife corridors to promote species conservation.[404] That report defined the term "[w]ildlife corridors" as "components of the landscape that are managed to create or improve ecological connectivity for one or more species."[405] The report noted "[s]pecies need connectivity between habitats to seek out sources for food and shelter and, in some cases, to adapt to environmental stressors and climate change."[406] Providing opportunities for "species to move between areas of their habitat[,]" wildlife corridors can play a role in reducing "the effects of habitat fragmentation in natural and urban settings."[407]

Some federal agencies have supported establishment of wildlife corridors, including work to "document the migration routes of certain species" for mapping of species' movements.[408] Wildlife corridors and crossings have been created on federally owned lands, and federal agencies have "support[ed] wildlife corridors that traverse federal and nonfederal lands."[409] Development and management of wildlife corridors may involve state-federal stakeholder collaboration: "In these cases, federal agencies collaborate with states and other stakeholders to establish and manage wildlife corridors."[410]

Perspectives on wildlife corridors may depend on determination of "the costs and benefits of . . . [their] implementation and management."[411] Supporters recognize wildlife corridors may increase species conservation and enhance biodiversity. Other support is based on their ability to "enhance populations of game animals popular for hunting and fishing."[412] Opposition

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402. *Id.*

403. PERVAZE A. SHEIKH & MARIEL J MURRAY, CONG. RSCH. SERV. R48350, WILDLIFE CORRIDORS: BACKGROUND AND ISSUES FOR CONGRESS 3 (Jan. 13, 2025) (citing Nick M. Haddad et al., *Potential Negative Effects of Corridors*, 28 CONSERVATION BIOLOGY 1178, 1178–80 (2014)).

404. *Id.*

405. *Id.* at Summary.

406. *Id.*

407. *Id.* at Summary, 1.

408. *Id.* at Summary

409. *Id.*

410. *Id.*

411. *Id.*

412. *Id.*

to wildlife corridors may focus on concerns about possible land use restrictions and a "spread of predators (e.g., wolves, grizzly bears) or invasive species."[413] Opponents also may have concerns about operational and maintenance costs and the corridors' effects on infrastructure.[414]

Congress has appropriated funds for wildlife crossing and fish passage projects in the past, and legislation promoting wildlife corridors has been proposed in recent years.[415] Topics in this legislation included "establishing or supporting wildlife corridors on federal and nonfederal lands[,]" appropriations for agency "grants to nonfederal stakeholders" for creation of wildlife corridors and "implement[ation] [of] other conservation activities."[416] Topics of congressional interests include the approach to federal and other wildlife corridor actions, coordination among governmental and private stakeholders, scientific support, and funding.[417]

Further, "at least 13 states have enacted legislation or issued direction to support wildlife corridors and crossings," and some tribes have obtained "federal financial and technical assistance to conserve wildlife through wildlife corridors crossing their lands and waters."[418] Florida, for example, has used wildlife corridors to promote conservation of the Florida panther. This species was listed as endangered in 1967 under the Endangered Species Preservation Act and has suffered from extremely low numbers recorded and threats of extinction for many years.[419]

4. Conservation/Mitigation Banking

Another incentive-based option for species and habitat conservation is conservation (or mitigation) banking. A conservation bank creates "a market-based system for conserving species and their habitat."[420] The banking system creates "a partnership between a landowner, one or more government agencies, and the community of developers and others who implement or fund projects that adversely affect" candidate and listed species or "other

413. *Id.*
414. *Id.*
415. *Id.*
416. *Id.*
417. *Id.* at 5.
418. *Id.* at Summary.
419. Endangered and Threatened Wildlife and Plants; 5-Year Status Reviews of 23 Southeastern Species, 82 Fed. Reg. 125 (June 30, 2017). In the 1970s, there were reports of as few as ten panthers in the wild. In the 1990s, the FWS and Florida introduced eight female Texas pumas into Florida to promote population increase and genetic diversity. Jason Totoiu & Richard Grosso, *Strategies to Recover the Florida Panther and Secure the Preservation of the Florida Wildlife Corridor*, 99 FLA. BAR J. 1, 9 (2025).
420. *Conservation Banking*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/service/conservation-banking (last visited Mar. 30, 2026).

species of concern."[421] The conservation banking process involves the landowner's commitment to "permanently protect[] and manag[e] land for" the affected species.[422] In exchange, the FWS "approves a specified number of habitat or species credits that the bank owners may sell to developers and other project proponents who need to offset project impacts to the same species occurring at another location within the community."[423] Under this *in-kind* mitigation strategy, landowners subject to mitigation pay for the habitat benefit offered by landowners willing to be responsible for "preservation of existing high-quality habitat, restoration of habitat in degraded areas, and/or establishment of habitat where needed to conserve particular species" within the conservation bank.[424] Under this system, *landowners* include "[p]rivate, tribal, and government lands."[425]

Conservation banking creates the potential for a "win-win" situation for regulators and the regulated community. In Florida, the system has been used to preserve habitat for the gopher tortoise and to protect the species.[426] Gopher tortoises are listed under the ESA as a threatened species in the Western portion of their range; they are also listed under Florida law as a threatened species within the state.[427] This species' dependence on habitat is affected by the significant amount of habitat that occurs on private land:

> Privately owned lands account for approximately 80 percent of potential gopher tortoise habitat, of which approximately half are managed for forest production. Across the gopher tortoise range, large working forests account for over 6 million ac[res] . . . of forest land, representing a significant land use with the potential to influence gopher tortoise resiliency and viability. While not all working forest lands include appropriate habitat conditions for gopher tortoises, approximately 2.78 million ac[res] . . . of suitable soil types and 2.98 million ac[res] . . . of open pine conditions are estimated to occur on private forest lands.[428]

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421. *Id.*
422. *Id.*
423. *Id.*
424. *Id.*
425. *Id.*
426. *Gopher Tortoise Permits*, FLA. FISH & WILDLIFE CONSERVATION COMM'N, https://myfwc.com/license/wildlife/gopher-tortoise-permits/ (last visited Mar. 30, 2026).
427. *Gopher Tortoise Mitigation Contributions*, FLA. FISH AND WILDLIFE CONSERVATION COMM'N, https://myfwc.com/license/wildlife/gopher-tortoise-permits/mitigation/ (last visited Mar. 30, 2026) [hereinafter FWC Mitigation]; GOPHER TORTOISE MANAGEMENT PLAN, *supra* note 344, at 20.
428. Endangered and Threatened Wildlife and Plants; Finding for the Gopher Tortoise Eastern and Western Distinct Population Segments, 87 Fed. Reg. 196 (Oct. 12, 2022).

Before 2008, the Florida Fish and Wildlife Conservation Commission (FWC) required financial mitigation for development that destroyed gopher tortoise habitat, including their burrows, and allowed entombment of the species.[429] The FWC convened a statewide stakeholder group to develop a program for the conservation and protection of gopher tortoises. This process led to the creation of the first Gopher Tortoise Management Plan and permitting guidelines.[430]

The most recent version of the Gopher Tortoise Management Plan notes that 61% of "[t]he remaining . . . [acreage] of potential gopher tortoise habitat . . . is held by private landowners."[431] The permit system creates a financial incentive for landowners to preserve those private lands by creating a system of mitigation payments and credits.[432] The permit process includes establishment of FWC-certified mitigation banks authorized to accept relocated gopher tortoises for conservation purposes within preserved and maintained habitat for this species. In exchange, the permittees pay mitigation contributions for the relocated tortoises to obtain authorization for the permitted action.[433] Selling credits allows the landowners to preserve their lands and their ownership, and it creates an approved option for permittees to secure authorizations for permitted actions by relocating gopher tortoises to appropriate habitat.

Regulatory standards and requirements are essential to ensuring the efficacy of conservation banking as a viable habitat protection and promote this option as a conservation tool. To be effective, the conservation banking regulations must "reduce uncertainty, increase transparency, and adequately address [any] current deficiencies."[434] Other considerations for improving conservation banking to promote and increase available habitat include implementation of pilot programs; transparency in banking design, implementation, accounting, and documentation; and evaluation of conservation benefits.[435]

A holistic evaluation of species conservation actions and programs (e.g., "educational awareness," "habitat protection," and species monitoring)—rather than reviewing "one conservation action at a time"—may assist

429. GOPHER TORTOISE MANAGEMENT PLAN, *supra* note 344, at 16–17.

430. *Id.* at 16.

431. *Id.* at 48.

432. FWC Mitigation, *supra* note 427.

433. *Id.* at 24.

434. Maria Jose Carreras Gamarra & Theodore P. Toombs, *Thirty Years of Species Conservation Banking in the U.S.: Comparing Policy to Practice*, 214 BIOLOGICAL CONSERVATION 6, 7, 16–17 (2017).

435. *Id.* at 6.

regulators, landowners, and the public in considering how to most effectively conserve and protect species and habitat.[436]

These examples of incentive-based conservation options may allow leveraging of available funding through existing programs to achieve both their stated objectives and benefits for listed species and their habitat. If the focus and funding is targeted toward priority species and property, existing resources can be leveraged to create a greater benefit. One option is to amend existing statutes and regulations authorizing these programs to prioritize acquisitions, funding, and other assistance to benefit the species most in need of protection. Innovative solutions like wildlife corridors can target habitat protection at the place and for the purposes for which it is needed. Combining federal resources with available state, local, and other resources can increase the opportunities to benefit listed species and their habitats.

To achieve ESA compliance and realize its benefits, both the "carrot" and the "stick" are necessary tools. FWS action to comply with ESA mandates to list imperiled species and designate critical habitat is required to effectively implement the ESA. Defending agency actions and proactively regulating activity are both necessary. However, achieving the ESA's goals and objectives will require cooperation among the FWS, other federal, state, and local agencies, landowners, and the regulated community. Creating and utilizing incentives for cooperative voluntary actions can encourage and facilitate needed cooperative conservation efforts by governmental, tribal, organizational, and private landowners. While cooperation alone will not address the need for critical habitat protection and may not always be feasible, the ESA's promise is best achieved by balancing statutory and regulatory mandates with a cooperative framework that focuses on beneficial results.

CONCLUSION

Achieving the purposes and goals of the ESA is a complicated endeavor. The ESA includes laudable goals for a comprehensive program to protect species and habitat. Its statutory framework also includes requirements for action to protect and conserve species and their habitat. In addition, the ESA—through the statute and implementing regulations—specifies time periods for action and creates mandates for compliance. Regarding critical habitat, the ESA provides for balancing of the benefits of both designation and exclusion of listed species habitat. Further, through the statute and

436. *See* David Luther & Katherine Gentry, *Threatened Vertebrate Species: Associations Between Conservation Actions, Funding, and Population Trends*, 39 ENDANGERED SPECIES RSCH. 105, 105, 106 (2019).

voluntary programs, the ESA offers incentives for state, local, and tribal governments as well as private landowners, creating the opportunity for these landowners to assist with the achievement of the ESA's promise.

Despite its comprehensive statutory and regulatory framework, effective implementation of the ESA can be difficult to achieve. Agency inaction, legal challenges, and resistance from landowners and the regulated community can impede progress in listing species and designating critical habitat. Further, shifting federal administration objectives and direction can affect how and whether the ESA's requirements are addressed and which approach—mandates or incentives—will best match the administration's priorities.

The history of attempts to implement the ESA and more recent statutory and regulatory proposals demonstrate the challenges associated with maintaining an effective balance between mandates and incentives to achieve compliance. The effect of failing to timely and effectively designate critical habitat can foreclose significant conservation opportunities for species and their habitat; therefore, employing both mandates and incentives for conservation is essential. The incentive-based and mandate-focused approaches to ESA compliance are both necessary, particularly in the context of critical habitat designation.

Both mandates and incentives can, and should, be considered vital to ESA implementation under any type of administration. Even in an administration heavily focused on mandates to achieve compliance, incentives remain essential because they can stimulate both interest and participation in the regulatory process. The weight of each, however, will likely change based on the focus of the executive branch's priorities and agenda regarding the ESA and its implementation. Both approaches clearly have benefits and challenges. However, with an evolving regulatory framework, balancing mandates and incentives may be the only way to satisfy the ESA's goals regarding habitat conservation through critical habitat designation or other means.

TOWARDS BALANCE AND EQUITY: AN INDIGENOUS REVIEW FOR UPDATING THE 2016 WATER AGREEMENT BETWEEN THE CHOCTAW & CHICKASAW NATIONS WITH OKLAHOMA & THE UNITED STATES GOVERNMENT FOR A SUSTAINABLE FUTURE OF WATER USE

J. Eric Reed*

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INTRODUCTION

This Article discusses the Water Agreement between the Choctaw and Chickasaw Nations with the State of Oklahoma and the United States Government. These agreements relate to water usage at Sardis Lake and the issues connected to the decision in *McGirt v. Oklahoma*. *McGirt* offers the parties an opportunity to review and update the agreement consistent with the jurisdictional clarification precedence established by *McGirt*, both in common law and provisions of the agreement.

In 2020, the U.S. Supreme Court's decision in *McGirt v. Oklahoma*[1] reaffirmed the existence of tribal reservations in eastern Oklahoma, thus reshaping the legal jurisdiction and sovereignty within the state. Although its decision was focused on a criminal jurisdictional matter and state authority, the effects of this decision reached beyond these jurisdictional issues. For instance, one complex area is that of water governance, specifically regarding questions surrounding allocation, regulation, sustainability, and its intersection with tribal sovereignty and state interests. The Sardis Lake Reservoir in Oklahoma illustrates the complex issues of water governance between the State of Oklahoma and the Choctaw and Chickasaw Nations.

In 2016, a water settlement agreement was reached to resolve the long-standing dispute over Sardis Lake. An attempt to balance tribal claims of sovereignty with state development needs through the agreement was a move forward. Nevertheless, local non-Indians and tribal citizens criticized the agreement and Oklahoma's water usage.[2] *McGirt* creates doubt over whether the water agreement is fully just and equitable under the scope of federal law and tribal rights.[3] This Article explores the intersection of legal, environmental, and tribal sovereignty over the Sardis Lake agreement.

1. 591 U.S. 894 (2020).

2. *See, e.g.*, Clifton Adcock, *Lawsuit Filed in Fight over Oklahoma City's Sardis Lake, Kiamichi River Water Permit*, THE FRONTIER (Nov. 22, 2017), https://www.readfrontier.org/stories/lawsuit-filed-in-fight-over-oklahoma-citys-sardis-lake-kiamichi-river-water-permit/.

3. Joe Wertz & Logan Layden, *Inside the Landmark State and Tribal Agreement That Ends Standoff Over Water in Southeast Oklahoma*, KGOU (Aug. 13, 2016), https://www.kgou.org/native-american/2016-08-13/inside-the-landmark-state-and-tribal-agreement-that-ends-standoff-over-water-in-southeast-oklahoma.

McGirt allows Choctaw and Chickasaw tribes to review and amend the agreement consistent with the jurisdictional rulings.

In 1974, the State of Oklahoma contracted with the U.S. Army Corps of Engineers (USACE) to construct Sardis Lake for flood control as an attempt to improve infrastructure and bolster the economy.[4] Oklahoma City diverts water from southeast Oklahoma (Sardis Lake) to provide adequate water needs for the area. Sardis Lake holds significant community, economic, and environmental ties to both tribal members and non-Indians living near the lake.[5] Prior to the construction of Sardis Lake, the area was once known as the town of Sardis, which was flooded by USACE. The cemetery that once remained in the town of Sardis was instead "built up . . . 15 feet," and then the headstones were placed back on the cemetery island on Sardis Lake.[6] According to Herrera and Layden, archaeologists uncovered entire settlements where the lake is now, which included artifacts, remains, and more, further proving the significance of the lake.[7] In 2011, the Choctaw and Chickasaw Nations filed suit against Oklahoma City to prevent the city from transporting water out of Sardis Lake to the city, claiming that it violated the Chickasaw Nations' federally protected water rights.[8] Even though a settlement agreement was reached and was considered "fair and balanced," *McGirt* became a catalyst for re-examining the 2016 water agreement as it relates to tribal sovereignty and tribal regulation within the Indian Territory of the Chickasaw and Choctaw's territorial boundaries.

A. Historical Context of the Sardis Lake in the Choctaw Nation, Indian Territory, Oklahoma

The issues surrounding tribal sovereignty and Native American rights date back to the era of expansion and displacement in the 1800s. The Treaty

4. Christine Pappas, *Water Unity in Oklahoma: A History of the 2016 Water Settlement Agreement*, 95 OKLA. B.J. 7, 7 (2024).

5. *Id.* at 8; Wertz & Layden, *supra* note 3.

6. Rocky Mountain PBS, *Native Lens: Sardis*, YOUTUBE, at 1:33 (Sept. 20, 2021), https://www.youtube.com/watch?v=8V5S6g6sKVk; *accord* Colleen Thurston, *Native Lens: Sardis*, ROCKY MOUNTAIN PBS (Sept. 20, 2021), https://www.rmpbs.org/blogs/native-lens/native-lens-sardis/.

7. Allison Herrera & Logan Layden, *Fight Over Sardis Lake Entangled in Ancient History, Indian Culture and Sacred Water*, STATE IMPACT OKLA. (Apr. 7, 2016), https://stateimpact.npr.org/oklahoma/2016/04/07/fight-over-sardis-lake-entangled-in-ancient-history-indian-culture-and-sacred-water/.

8. M. Scott Carter, *Choctaws, Chickasaws File Lawsuit Over Sardis Lake Purchase*, THE JOURNAL RECORD (Aug. 18, 2011), https://journalrecord.com/2011/08/18/choctaws-chickasaws-file-lawsuit-over-sardis-lake-purchase-law/.

of Dancing Rabbit Creek of Choctaw,[9] later the Chickasaw Treaty of Pontotoc[10] in 1832 with the U.S., and the Treaty of Doaksville[11] with the Choctaw in 1837 hold significance. These treaties show major shifts in land ownership and tribal sovereignty between the Native Nations and the U.S. The Choctaw signed the Treaty of Dancing Rabbit Creek in 1830, giving ten million acres of land to the United States in exchange for financial compensation and resettlement to southeastern Oklahoma.[12] Article III of the treaty explicitly states, "country ceded to [the] United States [and] self-government secured to Choctaws."[13] Although this treaty gave land, resources, and self-governance to the Choctaw, the treaty did not explicitly vest water rights.[14] In 1832, the Treaty with the Chickasaw, also known as the Treaty of Pontitock (*aka* Pontotoc) Creek, was signed; the federal government received six million acres of land and the Chickasaw people moved to their new land west of the Mississippi River.[15] Soon after, the Chickasaw and Choctaw signed the Treaty of Doaksville with the United States in 1837, which relocated the Chickasaw people to Choctaw territory.[16] The Chickasaw Nation established itself as a district on Choctaw land, but it limited self-governance over the Chickasaws' funds and affairs. Eventually, in 1856, the Chickasaw people sought to establish their government and formally separated from the Choctaws.[17] Although the Chickasaw people had slightly more independence, the issue of limited sovereignty persisted under the federal government, and the areas related to water rights were unaddressed. In 1908, the landmark case of *Winters v. United States* established the *Winters* doctrine, implicitly reserving sufficient water rights for Indian reservations.[18] The Court's decision in *Winters* stated that "Indians

9. *See* The Treaty of Dancing Rabbit Creek, Sept. 27, 1830, 7 Stat. 333. Signed on September 27, 1830, and proclaimed on February 24, 1831, this treaty between the United States and the Choctaw Nation ceded all Choctaw lands east of the Mississippi River. *Id.*

10. *See* The Treaty of Pontotoc or Treaty of Pontotoc Creek, Oct. 20, 1832, 7 Stat. 381. It was a removal treaty between the United States and the Chickasaw Nation and was later amended. *See* Treaty with the Chickasaw, May 24, 1834, 7 Stat. 450.

11. The Treaty of Doaksville, signed on January 17, 1837, allowed the Chickasaw Nation to settle in the western part of the Choctaw Nation's territory in Oklahoma. Treaty with the Chocktaw and Chickasaw, Jan. 17, 1837, 11 Stat. 573 (ratified Mar. 24, 1837).

12. *Treaty of Dancing Rabbit Creek*, EBSCO (2023), https://www.ebsco.com/research-starters/politics-and-government/treaty-dancing-rabbit-creek.

13. *Id.*

14. 1830 Treaty of Dancing Rabbit Creek, Feb. 24, 1831, 7 Stat. 333.

15. Phillip Knecht, *Treaty of Pontotoc Creek & Land Grant Office (1832)*, HILL COUNTRY HISTORY (Apr. 5, 2020), https://hillcountryhistory.org/2020/04/05/pontotoccreek/.

16. *History*, THE CHICKASAW NATION, https://www.chickasaw.net/Our-Nation/History.aspx (last visited Apr. 6, 2025).

17. *Id.*

18. MARIEL J. MURRAY & CHARLES V. STERN, CONG. RSCH. SERV., R44148, INDIAN WATER RIGHTS SETTLEMENTS (2025).

did not . . . relinquish to the United States the right to appropriate the waters" as the land was retained under a formal agreement.[19] Such rights "could not be divested under any subsequent legislation" under Native territory or of the United States.[20]

B. Jurisdiction of Sardis Lake and Regional Territorial Boundaries of Choctaw Nation

This created the question of whether the state, tribal nations, or federal government have jurisdiction, control, and regulatory authority over Sardis Lake. As mentioned, *McGirt v. Oklahoma* certified the sovereignty of Oklahoma's tribes and the Indian territory of the Five Tribes. *McGirt* proved successful concerning tribal sovereignty, but still left many questions regarding jurisdiction over environmental concerns, and also how the tribal, state, and federal governments need to collaborate to create a fair and balanced Act, where the Tribes and State are equally treated and neither has a skewed amount of power over the other. Post-*McGirt*, tribes have a stronger legal standing within reservation bounds; the question of who has control or regulatory authority over Sardis Lake remains. The context of *McGirt* and its progeny opened questions regarding how tribes may be able to address environmental situations specifically with oil and gas. Oklahoma has asserted its authority over Sardis Lake, as the state has usurped tribal water rights despite *Winters*. In reality, that same question is more complex and nuanced because of historical, socio-economic, and spiritual implications. Ultimately, regulatory authority should belong to the Native tribes. This authority is built within reservation boundaries and holds significant intrinsic and economic ties reflected in the ruling for the Oneida Nation's existing sovereignty being upheld on the same ruling in *McGirt* on a state regulatory issue.[21]

II. PRE-*MCGIRT* WATER ISSUES AND ENVIRONMENTAL REGULATIONS

The Environmental Protection Agency (EPA) is a federal agency that focuses on the protection of human health and the environment. The EPA has authority to implement federal environmental laws in Indian Country, and has authority to delegate regulatory authority to tribes through treatment in a

19. 207 U.S. 564, 573 (1908).

20. *Id.*

21. Frank Vaisvilas, *U.S. Appeals Court Rules in Favor of Oneida Nation Against Hobart, Endorsing Tribe's Sovereignty*, GREEN BAY PRESS GAZETTE (July. 30, 2020), https://www.greenbaypressgazette.com/story/news/2020/07/30/oneida-nation-wins-appeal-case-against-hobart-over-sovereignty/5547148002.

similar manner as a state (TAS).[22] A typical EPA granted TAS status allows tribes to implement and manage environmental programs, such as the Clean Air Act, Clean Water Act (CWA), and Safe Drinking Water Act.[23] This provides a cooperative effort between federal and tribal entities giving tribes more control over regulations.[24] Although the CWA has provisions of "treatment in a similar manner as a state[,]" the Act "does not authorize states to implement or enforce their water quality management programs in Indian lands" so the EPA can enforce federal water quality standards in Indian lands if such a status is absent.[25] The 2016 settlement (not a typical "TAS" regulatory scenario) included the Choctaw Nation, Chickasaw Nation, the State of Oklahoma, and Oklahoma City. This settlement established a co-management structure rather than the EPA's formal Treatment as a State (TAS) regulatory framework with separate funding that allows the tribes to protect water resources and promote recreation while negotiating water sales to Oklahoma.[26]

A. 2016 Water Use Agreement over Sardis Lake

The 2016 Water Settlement Agreement over Sardis Lake was an enormous step for tribal sovereignty, water governance, and tribal and state cooperation.[27] The agreement involved the Choctaw Nation, the Chickasaw Nation, the State of Oklahoma, Oklahoma City, as well as all or parts of 22 counties in south-central and southeastern Oklahoma.[28] This agreement holds enormous strides for not only Native American tribes, but also non-native rural communities. The agreement reached in its present condition allowed the Choctaw and Chickasaw Nations to settle disputed claims over

22. Elizabeth Kronk Warner & Heather Tanana, *Indian Country Post-McGirt: Implications for Traditional Energy Development and Beyond*, 45 HARV. ENV'T L. REV. 249, 275 (2021).

23. *Tribes Approved for Treatment as a State (TAS)*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/tribal/tribes-approved-treatment-state-tas (last updated Jan. 2026) (providing the regulatory authority used to implement TAS).

24. *Tribal Assumption of Federal Laws – Treatment as a State (TAS)*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/tribal/tribal-assumption-federal-laws-treatment-state-tas (last updated Jan. 6, 2026).

25. Janet K. Baker, *Tribal Water Quality Standards: Are There Any Limits?*, 7 DUKE ENV'T L. & POL'Y F. 367, 369 (1997).

26. *See* Frequently Asked Questions, WATER UNITY OKLA., https://www.waterunityok.com/questions (last visited May 12, 2026) (answering detailed questions on the implementation and unique funding of the CWA).

27. State of Oklahoma et al., City Water Settlement § 10.1.1 (Aug. 2016) (unpublished settlement agreement) [hereinafter *Water Settlement Agreement*], https://www.waterunityok.com/media/1075/agreement-160808.pdf; *see generally* Statement of Findings: Choctaw Nation of Oklahoma and the Chickasaw Nation Water Rights Settlement, 89 Fed. Reg. 14699 (Feb. 28, 2024).

28. *See* Wertz & Layden, *supra* note 3.

water rights in southeastern Oklahoma surrounding Sardis Lake prior to the jurisdictional sovereignty regarding tribal lands and regulation after the *McGirt* decision. Tribal nations sought to establish a voice in all water regulatory decisions within their territories, and the agreement established a five person water commission, including tribal, state, and federal representatives.[29] Furthermore, the agreement provides for lake release restrictions in Section 6.1.8, where water cannot be released from the Sardis Reservoir unless the permit application has been reviewed by the Oklahoma Department of Wildlife Conservation and approved by the Oklahoma Water Resources Board.[30] Along with in-state restrictions, the agreement has provisions for out-of-state use of settlement area waters, barring such use if it violates the Settlement Agreement or state laws.[31] This agreement expands the scope of power for tribes, but legally, the ownership and management of Sardis Lake remains with the U.S. Army Corps of Engineers (USACE). Originally, Oklahoma took a loan from the federal government to build the lake, but failed to pay the required money, defaulting the lake's ownership to the USACE.[32] Tribal involvement in the water management scheme was limited to solely a technical advisory role. Nevertheless, tribal nations observed that agreement as an important path towards cooperative sovereignty, but many communities continue to hold concerns over the long-term implications of Oklahoma City's water usage.[33]

The present agreement poses substantive issues that give rise to issues that encourage renegotiating the Water Agreement to provide better area water use management, water quality, and future sustainability concerns. Such concerns include environmental, ecological, economic, health, and

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29. *Water Settlement Agreement*, supra note 27, at § 5.3.3.2. The agreement states:

> Members – The Settlement Commission shall be comprised office (5) members, appointed as follows: (i) one by the Governor of the State; (ii) one by the Attorney General of the State; (iii) one by the Chief of the Choctaw Nation; (iv) one by the Governor of the Chickasaw Nation; and (v) one by agreement of the aforementioned four members. In the event the four aforementioned members cannot agree on a single person, they shall jointly submit a list of no fewer than three (3) names to the Chief Judge for the United States District Court for the Eastern District of Oklahoma, who shall then make the appointment from that list. The initial appointments to the Settlement Commission shall be made within ninety (90) days of the Enforceability Date.

Id.

30. *See* Okla. Admin. Code tit. 785, § 20-5-5 (b)(3)(iv).

31. The Settlement Agreement states: "Establishment – The Settlement Legislation shall establish the Settlement Commission, the duties and authority of which are defined and limited by the Settlement Agreement and the Settlement Act." *Water Settlement Agreement*, § 5.3.3.1.

32. *United States Seeks $21 Million from State of Oklahoma on Unpaid Reservoir Contract*, U.S. DEP'T OF JUST. (Dec. 18, 2008), https://www.justice.gov/archive/opa/pr/2008/December/08-enrd-1122.html.

33. Wertz & Layden, *supra* note 3.

tribal cultural-resource issues. Many environmentalists argue that the agreement does not go in-depth to protect the environment, potentially affecting its tourism and economy.[34] Additionally, pulp and paper mills, which operate in and around the area of the Kiamichi River, pose concerns over air quality, water pollution, and waste management that could affect Sardis Lake. Companies such as Georgia Pacific and International Paper Valliant paper mills generate harmful byproducts affecting the environment and water quality. Wastewater from paper mills, such as effluent, has "lignin, resin acids, and heavy metals," and if not treated properly can pollute water, harming both aquatic and human life.[35]

Given the issues that gave rise to the litigation and the Settlement Agreement there are many potential future challenges such as the ongoing debates regarding the proposed Southeast Oklahoma Power Corporation hydroelectric project on the Kiamichi River, which faced strong opposition due to environmental and economic concerns, and was denied a Federal Energy Regulatory Commission application on March 27, 2025.[36] Additional water use issues include the long-term financial obligations associated with managing Sardis Lake, coupled with the desire of central Oklahoma cities to acquire expanding water rights. These issues may also lead to future legal disputes unless a more comprehensive solution with an amended agreement creates a fair, balanced, and environmentally responsible water use plan for the Water Settlement area. The future legal battles in the Kiamichi River watershed have touched upon crucial issues of state sovereignty, interstate compacts, tribal water rights, property rights, and environmental protection. These challenges highlight the complex and often competing interests involved in water resource management in the face of growing demand and environmental sensitivity.

B. Post-McGirt Issues and Opportunities for a Fair and Balanced Agreement for Water Use

McGirt fundamentally reshaped the legal landscape by affirming the continued existence of tribal sovereignty and restoring jurisdiction over

34. Clifton Adcock, *Lawsuit Filed in Fight Over Oklahoma City's Sardis Lake, Kiamichi River Water Permit*, THE FRONTIER (Nov. 22, 2017), https://www.readfrontier.org/stories/lawsuit-filed-in-fight-over-oklahoma-citys-sardis-lake-kiamichi-river-water-permit/.

35. Lucie M.J. Levsque, *The Environmental Impact of Paper Mill Wastes: Challenges and Solutions*, 13 INT'L RSCH. J. ENV'T SCI. 1, 1 (2024).

36. *See Pushmataha County Pumped Storage Project*, CHOCTAW NATION OF OKLA., https://www.choctawnation.com/about/eps/pushmataha-county-pumped-storage-project/ (last visited Apr. 8, 2026); *see also* Letter from Nicholas Jayjack, Acting Dir., Div. of Hydropower Licensing, to Johann Tse, Se. Okla. Power Corp. (Apr. 19, 2024) (on file with the Fed. Energy Regul. Comm'n).

resources.[37] Under the federal Indian trust doctrine[38] and *McGirt*, there are legal grounds that tribes can renegotiate the water agreement or alternatively raise issues that the agreement now requires amendments requiring negotiations for changes in the agreement as currently inconsistent with regulatory management of water use. The federal trust responsibility of Congress via the Plenary Power Doctrine states that the United States has a legal fiduciary obligation to protect tribal treaty rights, lands, assets, and resources.[39] This trust responsibility requires the administration of the fiduciary obligation to protect and manage Native American lands and resources for tribes.[40] While not completely consistent with that obligation, the terms of the Choctaw Nation of Oklahoma and the Chickasaw Nation Water Rights Settlement Agreement include specific provisions to ensure tribal participation in the Oklahoma Water Resources Board's (OWRB) consideration of certain water appropriation applications. The provisions reflect their historic treaty territories, which need updating consistent with the trust responsibility to tribes and tribal sovereignty over their territories.

The agreement contemplated tribal participation through the following mechanisms: (1) consultation and review of applications where the Settlement Act and Settlement Agreement establish a framework for the Nations to participate in the OWRB's consideration of water applications which includes procedures for the Nations to be involved in the evaluation of major water right allocation proposals; (2) the protection of existing and future water uses has a provision where the Settlement Agreement recognizes and protects the existing water uses of both the Chickasaw Nation and the Choctaw Nation and further outlines procedures for the Nations to ensure expanded water uses in the future; (3) the Agreement identifies the Settlement Area Waters and Projects to include the Kiamichi River and riparian areas as designated parts of the "Settlement Area Waters" under the

37. *See* Warner & Tanana, *supra* note 22, at 260.

38. *See, e.g.*, Kimberly Chen, *Toward Tribal Sovereignty: Environmental Regulation in Oklahoma After McGirt*, 121 COLUM. L. REV. FORUM 95 (2021) (for a detailed analysis of the post-McGirt environmental landscape under plenary power doctrine and *McGirt*); McGirt v. Oklahoma, 591 U.S. 894, 938 (2020) (Roberts, C.J., dissenting) ("The decision today creates significant uncertainty for the State's continuing authority over any area that touches Indian affairs, ranging from zoning and taxation to family and environmental law.").

39. *See, e.g.*, United States v. Kagama, 118 U.S. 1109, 1112 (1886) (establishing the Constitutional basis for Congress's plenary power over tribes and ended the treaty process to statutory process under federal law that is later identified by scholars as the Plenary Power Doctrine); *see also* Santa Clara Pueblo v. Martinez, 436 U.S. 49, 56 (1978) ("Congress has plenary authority to limit, modify or eliminate the powers of local self-government which the tribes otherwise possess.") (internal citations omitted).

40. *What Is the Federal Indian Trust Responsibility?*, U.S. DEP'T OF THE INTERIOR: BUREAU OF INDIAN AFFS. (Nov. 8, 2017), https://www.bia.gov/faqs/what-federal-indian-trust-responsibility.

Water Settlement Agreement as well as any proposed projects within the "Settlement Area" that are also subject to the provisions of the Settlement Act; and (4) coordination and shared interests of both tribal nations share a recognized and protected interest in the use of water from the Kiamichi River and neither nation can proceed with water-related projects without close coordination with the other.[41]

In essence, the settlement aims to provide the Choctaw and Chickasaw Nations with a voice in water management decisions within their historic territories, ensuring the protection of their water rights and promoting collaborative approaches to addressing water-related challenges. The Tribal Nations must be the party to assert changes, supplements, amendments, updates, and enforce environmental regulations.[42] They also must assert all the terms of the Water Agreement, as a native allottee may not have rights to do so based on a recent federal appeals court decision, *Hill v. U.S. Department of Interior*, decided in August 2025.[43]

Under *McGirt* and the *Winters* doctrine, Tribal Nations can renegotiate water agreements to restore rights to manage, allocate, and protect waters by fostering a more holistic and involved alliance between tribal, state, and federal entities. They can renegotiate an increased representation or regulatory involvement in water governance, as well as emphasize environmental and cultural protection over water, as they are fundamental in tribal values. This will also protect the rights of the tribal and non-Indian citizens living within the Water Settlement Agreement areas.

C. Environmental, Hydrological, and Infrastructure Issues

The purpose of Sardis Lake is primarily for flood control, water supply, recreation, and fish and wildlife support. The U.S. Army Corps of Engineers manages and monitors Sardis Lake, but as of late, has been experiencing staffing shortages, leading to environmental impacts on the lake. These impacts include reduced services, recreational areas temporarily shut down, and gaps in the lake's monitoring.[44] Along with management concerns, water quality and sustainability concerns continue to rise in southeast Oklahoma. These problems and concerns are being caused by water storage decreases,

41. *See* Statement of Findings: Choctaw Nation of Oklahoma and the Chickasaw Nation Water Rights Settlement, 89 Fed. Reg. 14699 (Feb. 28, 2024).

42. *See* Hill v. U.S. Dep't of Interior, 151 F.4th 420, 426–27 (D.C. Cir. 2025).

43. *Id.*

44. Graycen Wheeler, *U.S. Army Corps of Engineers Says Staffing Shortages Will Limit Lake Life for Oklahomans, Visitors*, HIGH PLAINS PUB. RADIO (May 13, 2025), https://www.hppr.org/hppr-news/2025-05-13/u-s-army-corps-of-engineers-says-staffing-shortages-will-limit-lake-life-for-oklahomans-visitors.

due to less inflow and an increase in usage outflow, that can be exacerbated by drought conditions; seasonal shifts in water levels based on environmental conditions require a more scientifically informed water management plan as shown by the present conditions for water quality and use in the region.[45] The 2022 Sardis Water Quality Report states that Sardis Lake is impaired by turbidity, and its current pH has been affecting fish and wildlife propagation.[46] It was also reported that mercury concentrations were found in the lake, along with iron, magnesium, and arsenic.[47] Overall, the lake's water reduced phytoplankton growth and affected shellfish and water consumption. Invasive species and fauna pose a threat to the current ecology of the lake.[48]

The Oklahoma Department of Wildlife Conservation provided an extensive report in its Five-Year Sardis Lake Fisheries Management Plan (2011), identifying which plants and species would be most harmful to the lake.[49] The report highlighted its concerns, particularly with largemouth bass and mussels. With largemouth bass, in 1991, there was an outbreak of Largemouth Bass Virus, causing a higher mortality among this species. As a result of the decline in the ecological status, the quality of the area's water extended to the lake's drinking water. Such issues arose due to the Sardis Lake Water Authorities' inability to filter contaminated water due to persistent infrastructural issues.[50]

The lake's outdated infrastructure, coupled with issues of drought and climate change, calls for a renegotiation into a more climate-informed, sustainable, and sensible water management plan for better water quality in drinking water. The ecological and infrastructural shortcomings have highlighted the urgent need for climate-responsive management of Sardis Lake but also intersect with the legal and political frameworks governing Oklahoma's water resources. The primary problem of protecting the region's water quality and environmentally responsible management of Sardis Lake and surrounding inflow of ground water to the lake is the *Midnight Rider*.[51]

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45. *Sardis Lake Page*, U.S. ARMY CORPS OF ENG'RS, https://www.swt-wc.usace.army.mil/SARD.lakepage.html (last visited May. 4, 2026).

46. *See* U.S. ARMY CORPS OF ENG'RS, SARDIS LAKE WATER QUALITY: 2022, at 1–6 (2022) [hereinafter Water Quality Report]; *see also Sardis Lake Page*, *supra* note 45.

47. Water Quality Report, *supra* note 46, at 1–6.

48. *See* OKLA. DEP'T OF WILDLIFE CONSERVATION, FIVE YEAR SARDIS LAKE FISHERIES MANAGEMENT PLAN – 2011 (2011) (listing "Aquatic Nuisance Species": Zebra Mussels, Asian (Grass) Carp, Bighead Carp, Silver Carp, Snakehead Fish, Alligator weed).

49. *Id.* Specific species and fauna are listed in the report within charts. *Id.* at 14.

50. See Water Quality Report, *supra* note 46, at 1–6.

51. The "Midnight Rider" refers to a provision in the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA), specifically Pub. L. 109-59, § 10211, 119 Stat. 1144, 1937, which

The Governor of Oklahoma activated the Midnight Rider provision almost before the ink dried on the *McGirt* opinion to protect the economic interest of polluters in Indian Territory.[52]

III. THE MIDNIGHT RIDER ATTACKS TRIBAL SOVEREIGNTY AND WATER QUALITY FOR ALL

The Midnight Rider lowered Environmental Protection Agency (EPA) standards for water and air quality over the entire area in eastern Oklahoma, known as Indian Territory.[53] Congress passed this provision to exempt potential toxic tortfeasors in the extraction industry seeking the natural resources within the tribal territories.[54] The Midnight Rider significantly altered how water agreements are negotiated and approved. This approval comes through environmental enforcement and regulation by tribes, states, and federal agencies.

In 2004, the Pawnee Nation of Oklahoma gained treatment in a similar manner as a state (TAS) status under the Clean Water Act (CWA), giving the Pawnee Nation tribal authority over tribal water.[55] Instead, Senator Inhofe discreetly inserted a provision within the Safe, Accountable, Flexible, Efficient, Transportation, Equity Act (SAFETEA), which curtailed tribal sovereignty, requiring that Oklahoma tribes "enter into a cooperative agreement with the state" to obtain TAS status.[56] Section 10211(a) under

granted Oklahoma authority over environmental regulation in Indian country. Following *McGirt*, this provision became central to disputes over state versus tribal environmental jurisdiction.

52. Shannon Biggs, *Media Advisory: Oklahoma Tribes Under Attack from State*, MOVEMENT RTS. (Sept. 7, 2020), https://movementrights.org/media-release-oklahoma-tribes-under-attack-from-state/.

53. Chen, *supra* note 38, at 102.

54. 18 U.S.C. § 1151. This definition is relevant in regard to civil jurisdiction despite the fact that it is found in the federal criminal code. Letter from EPA, Off. of Adm'r, to Kevin Stitt, Governor of Okla. (Oct. 1, 2020) (on file with TurtleTalk); see also DeCoteau v. District County Court, 420 U.S. 425, 427 n.2 (1975). In understanding the context of the enforcement and jurisdiction, applying federal environmental laws within Indian country is more nuanced. As a preliminary manner, tribal lands must first be defined to delineate the boundaries of jurisdictions and why the State of Oklahoma forced the "midnight rider" into the legislation; the definition for "Indian country" is set in 18 U.S.C. § 1151 as: "(a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government . . . , (b) all dependent Indian communities within the borders of the United States . . . , and (c) all Indian allotments, the Indian titles to which have not been extinguished . . . ." This definition made Federal law pre-empt State law and place the tribes in a position over natural resource extraction companies in enforcement in tribal court.

55. *See* Christine Pappas & Terrie A. Becerra, *As Long as the Water Flows: Native American Water Policy in Oklahoma*, 30 OKLA. POL. 61, 67 (2020); *see also Tribes Approved for Treatment as a State (TAS)*, *supra* note 23.

56. Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. No. 109-59, § 10211(b)(2), 119 Stat. 1144, 1937 (2005) [hereinafter SAFETEA].

SAFETEA states that with the request of the state, administrators (the EPA) "shall approve the State to administer" programs in areas "that are in Indian country."[57] Section 10211(b) of the Act states that administrators can treat an Indian tribe in Oklahoma "as a State . . . only if" the tribe meets requirements to be treated as a state and the Indian tribe "enter[s] into a cooperative agreement" with Oklahoma.[58] Senator Inhofe added this provision, unknown to tribal leaders, effectively asserting federal authority over tribal sovereignty, as tribal nations seeking TAS status must obtain an agreement with the state first. As the legal landscape became unsteady after *McGirt*, Oklahoma's Governor Stitt wrote a letter to the EPA requesting approval for the State of Oklahoma to continue administration of environmental programs within tribal land.[59] Rather than call a meeting of parties to evaluate the legal jurisdiction and terms, the Governor chose to attack any tribal attempt to regulate water quality in their jurisdiction post-McGirt.

The EPA granted Oklahoma authority to continue its environmental programs on tribal land with some limitations.[60] These actions, even after *McGirt*, illuminate the state's priority of economic interests over tribal and environmental concerns, as Oklahoma has become a fossil-fuel-dependent state. It was a way to protect the oil and gas industries from the consequences and accountability of violating EPA environmental laws.[61] However, in 2025, the EPA limited Oklahoma and the Governor's control over environmental regulation over all tribal lands.[62] On January 13, 2025, the EPA's Office of the Administrator withdrew the October 1, 2020 decision granting Oklahoma environmental regulatory authority over tribal lands in relation to the Midnight Rider attempting to limit tribal enforcement of the EPA standards.[63]

Rural and tribal communities are suffering from issues of equitable and accessible clean water, as resources are being used to bolster urban

57. SAFETEA, § 10211(a).

58. SAFETEA, § 10211(b)(1)–(2).

59. *See*, Letter from Kevin Stitt, Governor of Okla., to Andrew Wheeler, EPA Off. of Adm'r (July 22, 2020) (on file with EPA) https://www.epa.gov/system/files/documents/2021-12/oklahoma-july-2020-request_0.pdf; *see also* Ti-Hua Chang, *Oklahoma Governor Asked EPA to Strip Tribes of Environmental Authority*, NAT'L CATH. REP. (Sept. 2, 2020), https://www.ncronline.org/news/oklahoma-governor-asked-epa-strip-tribes-environmental-authority. On "Thursday, June 18, 2020, in the State Dining Room of the White House[,] Stitt has asked the EPA to give his state jurisdiction over environmental regulations on Native American reservations." *Id.* (internal citation omitted)).

60. Letter from Kevin Stitt, *supra* note 59, at 3; *see also* Letter from Kevin Stitt, Gov. of Okla., to Michael S. Regan, EPA Off. of Adm'r, at 1–2 (Dec. 4, 2024) (on file with author) (continuing request to deny Tribal regulatory sovereignty over EPA standards).

61. *See*, U.S. Env't Prot. Agency, Final Decision on Letter from EPA to Kevin Stitt, Governor of Okla.'s SAFETEA Request (Jan. 13, 2025).

62. *Id.*

63. *Id.*

community needs rather than rural and tribal communities. Water shut-offs, boil orders, and filtration problems are ongoing for Pushmataha County and surrounding areas.[64] Big corporations affect rural and native communities through water contamination. Tyson Foods and other companies have industrial poultry farms located in southeast Oklahoma but generate lots of waste. These poultry farms and companies have been able to operate with little to no oversight, even though farms are "polluting or depleting the region's groundwater."[65] Along with poultry farm contamination, native and rural communities face a crisis of methamphetamine and mobile meth labs, becoming a public-health and environmental concern.[66] Waste from these meth labs is improperly discarded, contaminating "ground-water . . . wells . . . kill[ing] plants; and harm[ing] aquatic life and animals."[67]

In response to these growing community impacts, many collaborative water projects have taken place to increase water equity. In 2024, the Sardis Lake Water Authority was set to receive $19.3 million to construct a new water treatment plant, which would increase the amount of water treated by five times.[68] Working with state, federal, and tribal entities, the Choctaw Nation will provide $6,481,350, the Oklahoma Water Resources Board$2,896,500, and the U.S. Department of Agriculture $9,927,000.[69] Furthermore, the Choctaw Nation helped with water infrastructure improvements on reservation land through the Broken Bow Water Authority project.[70]

This project was a collaboration between the Choctaw Nation and the Oklahoma Department of Energy and Environment, which increased water supply availability to rural and tribal areas.[71] In a major effort to improve water infrastructure, numerous collaborative projects are underway. At the forefront of these improvements are five Oklahoma tribes (Choctaw,

64. Graycen Wheeler, *'We Are in Desperate Need': Communities in Southeast Oklahoma Run Out of Water as They Wait for Repairs*, KOSU (June 16, 2022), https://www.kosu.org/energy-environment/2022-06-16/communities-in-southeast-oklahoma-run-out-of-water-as-they-wait-for-repairs.

65. Juan Vassallo, *Oklahoma's Loophole: How Tyson's Water Use Goes Unchecked*, SENTIENT FOOD (June 13, 2025), https://sentientmedia.org/tysons-water-use-goes-unchecked/.

66. *See generally* U.S. Env't Prot. Agency, *METHEMPHETAMINE: Threatening the Health and Environment of Tribal Communities*, TRIBAL WASTE J., June 2008, at 1, 3.

67. *Id.* at 4.

68. Mike W. Ray, *Sardis Lake Water Authority Receives Funds for New Treatment Plant*, SW. LEDGER (Nov. 20, 2024), https://www.southwestledger.news/news/sardis-lake-water-authority-receives-funds-new-treatment-plant.

69. *Id.*

70. Tabatha Keton, *CNO Celebrates Completion of Broken Bow Water Project*, BISKINIK (Apr. 1, 2025), https://biskinik.com/news/cno-celebrates-completion-of-broken-bow-water-project.

71. *Id.*

Muscogee, Cherokee, Iowa, and Chickasaw), the state of Oklahoma, and the Indian Health Service, which together have over 20 million in improvement funds.[72] Under Senate Bill 429, Section 4 and Section 6 allow the Oklahoma Water Resources Board to grant funding that matches tribal investments in clean and drinking water improvements.[73] Furthermore, the Chickasaw Nation, in partnership with the Oka' Institute at East Central University, launched "[t]he Tribal Center for Community Excellence,"[74] a collaborative initiative to advance water-based community development, aiming to strengthen and improve long-term water resources across the Chickasaw Nation.[75]

Additional proactive infrastructure improvement efforts from the U.S. Army Corps of Engineers (USACE) are also important to note. Specifically, the USACE aims to improve environmental flow that focuses on reaching the downstream of dams to balance ecology and human water use.[76] The Choctaw and Chickasaw Nations' partnerships with federal, state, and local entities illuminate how tribal sovereignty and cooperative government interaction and engagement can create tangible improvements in rural/tribal infrastructure rather than political posturing for control of one party to the agreement over the others. These projects—federal grants, state American Rescue Plan Act (ARPA) funds, and tribal contributions—with resource management inclusion clearly illustrate a model of collaboration that prioritizes balancing ecological stewardship with sustainable and beneficial community development of water resource usage.[77]

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72. *5 Oklahoma Tribes, IHS, and State of Oklahoma Come Together to Improve Water Infrastructure*, NATIVE NEWS ONLINE (Oct. 20, 2023), https://nativenewsonline.net/health/5-oklahoma-tribes-ihs-and-state-of-oklahoma-come-together-to-improve-water-infrastructure.

73. S. 429, 58th Leg., 2d Sess. §§ 4, 6 (Okla. 2022) (enrolled), vetoed § 6 (2022).

74. *Oka' Institute and Chickasaw Nation Launch Tribal Center for Community Excellence to Advance Water Sustainability*, OKA' INST., https://www.okainstitute.org/post/oka-institute-and-chickasaw-nation-launch-tribal-center-for-community-excellence-to-advance-water-s (last updated July 14, 2025).

75. *Id.*

76. U.S. ARMY CORPS OF ENG'RS, KIAMICHI RIVER – ENVIRONMENTAL FLOWS WORKSHOP SUMMARY REPORT 5 (2022).

77. *See, e.g.*, *Tribal Water and Nat. Res. Conservation Guide*, U.S. ENV'T PROT. AGENCY https://www.epa.gov/nps/tribal-water-and-natural-resources-conservation-guide (last updated Jan. 5, 2026); *see also* Mike W. Ray, *supra* note 64. The Sardis Lake Water Authority (SLWA) has secured a total of $19.3 million in funding for a new treatment plant, which stands as a key model of collaboration blending American Rescue Plan Act (ARPA) funds with tribal contributions and environmental stewardship. The Choctaw Nation will contribute $6,481,350 in American Rescue Plan Act (ARPA) grant funds, and the Oklahoma Water Resources Board will provide $2,896,500 from an ARPA grant, for a total of $9,377,850 in ARPA funding blended with other funding. *Id.*

IV. FACTORS TO CONSIDER WHEN UPDATING THE WATER AGREEMENT BETWEEN THE PARTIES

If state, federal, and tribal entities continue to share responsibility for water infrastructure and resource allocation, the issue of renegotiation—after *McGirt*—requires careful consideration. Any renegotiated framework must weigh these factors to improve the water use plan under the agreement by setting aside petty political posturing. Instead, acknowledging tribal sovereignty and jurisdictional clarity post-*McGirt*, sustainable water allocation for all affected residents over industrial profit, the region's important environment protection and diverse ecology, cultural and historical resources of the area and equitable infrastructure development in both tribal and non-tribal communities is needed. Collaborative efforts between state, tribal, and federal governments are needed to ensure sustainable and equitable water-governance solutions. By looking to commonalities and engaging in worthwhile collaboration over individual greed, a balanced plan based on equality and fairness will improve the entire region for everyone's future.

V. THE IMPORTANCE OF RECOGNIZING INTERNATIONAL NORMS OF HUMAN AND INDIGENOUS PEOPLES RIGHTS IN THE NEGOTIATIONS PROVIDES FOR A SUSTAINABLE FUTURE

Amending and updating the water settlement agreement should incorporate the concepts of the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP) in the consultation and negotiation process. Federal law should be examined in light of the international human rights norms and treaties as any project that affects Indigenous peoples and their lands.[78] By incorporating collaborative efforts from beneficial relationships to these marginalized communities in Oklahoma and the integration of UNDRIP in water governance plans will result in more comprehensive and inclusive plans. These plans could maintain the environmental integrity of the area and provide sufficient water resources that the local community and others can use safely.[79] The current dominating governance framework promotes water colonialism, impacting under-resourced and marginalized

78. *See generally* G.A. Res. 61/295, United Nations Declaration on the Rights of Indigenous People (Sept. 13, 2007).

79. Kat Taylor et al., *Water Governance Frameworks Need to Harmonize with United Nations Declaration on the Rights of Indigenous Peoples*, GLOB. WATER F. (June 18, 2020), https://www.globalwaterforum.org/2020/06/18/water-governance-frameworks-need-to-harmonise-with-united-nations-declaration-on-the-rights-of-Indigenous-peoples-2/.

communities,[80] and UNDRIP is important in restoring Indigenous knowledge and law in these water frameworks. Tribal water governance is not only about sovereignty; it is about understanding that Indigenous People have a unique and spiritual relationship with water.[81] This intrinsic connection with water requires legal systems to adapt to Indigenous water views and have independent, unbiased studies to establish proper and equitable solutions to water justice. Further, using traditional Indigenous natural resource management programs provides long-term sustainability for continued future use and development.

VI. PROPOSED HYDRO-ELECTRICAL PLANT & OTHER POTENTIAL DEVELOPMENTS REQUIRE DETAILED SCIENTIFIC, ENVIRONMENTAL & CULTURAL IMPACT ASSESSMENTS

Additionally, the proposed hydroelectric plant on the Kiamichi River warrants careful attention during renegotiation, as it can have adverse effects on the river and Sardis Lake. The proposed project aims to provide renewable energy for grid operations while also conserving the resources of the Kiamichi River.[82] In 2024, Southeast Oklahoma Power Corporation filed a pre-application for a closed-loop pumped storage hydroelectric project, which would be located along the Kiamichi River with a 100-mile transmission line that would go through Pushmataha into Texas.[83] The Federal Energy Regulatory Commission (FERC) accepted the preliminary application.[84]

In April 2025, FERC issued a letter to Southeast Oklahoma Power Corporation informing the company of the termination of its Integrated Licensing Process.[85] FERC's reason for this decision was that the Proposed Study Plan lacked the required information. Specifically, the plans did not

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80. *See* MURRAY & STERN, *supra* note 18. The EPA has increasingly had to intervene, directing Oklahoma to coordinate with tribal nations on environmental programs following the *McGirt v. Oklahoma* decision, which affirmed tribal territory in eastern Oklahoma as set out in the summary and analysis for the congressional report on the Indian Water Rights Settlements. *Id.* These actions are often described as colonial because they reflect the state government's attempts to control, commodify, and distribute water in a manner that historically disregarded the sovereignty of tribal Nations. *Id.*

81. Taylor et al., *supra* note 79.

82. *About the Project*, SEO POWER CORP, http://www.greenvaultenergy.net/ (last visited Apr. 9, 2026).

83. *Pushmataha County Pumped Storage Hydroelectric Project*, FED. ENERGY REGUL. COMM'N, https://www.ferc.gov/pushmataha-county-pumped-storage-hydroelectric-project (last updated Aug. 28, 2025) [hereinafter Pushmataha County Project].

84. *Id.*

85. Letter from FERC to Johann Tse, Se. Okla. Power Corp., (April 4. 2025) (on file with FERC) https://stateimpactcenter.org/files/AG_Actions_SEOPC_FERC_Termination_04.14.2025.pdf#:~:text=Therefore%2C%20as%20soon%20as%20possible%2C,expires%20on%20March%2031%2C%202027.

address why they did not adopt stakeholder-requested studies and did not incorporate the recommended methodologies.[86] Although plans for this proposed project are on hold for the time being, a new appointee to FERC, Commissioner David Rosner, may approve the proposed project. Rosner's top priorities include grid reliability, managing energy transitions, and gas and transmission-infrastructure development.[87] The project fails to meet basic FERC standards as set out in the denial letter and provides no benefit to the residents of southeast Oklahoma, whether tribal members or not. The proposal completely lacked an Environmental Impact Study (EIS)[88] (as required by law) and U.S. Army Corps of Engineers (USACE) regulations and permit requirements (as required by federal regulations that affect interstate waters).[89] FERC and the USACE use Environment Impact Studies (EIS) in reviewing projects that require ground work modification where this specific Power Plant "*Loop*" project never responded to the previous inquiries of FERC and USACE staff regarding the Environmental Impact of the project. Project Developers and Promoters typically issue a draft EIS to evaluate the environmental effects of the proposed surrender and subsequent decommissioning of a project when it is to be taken down and the impacts of removing it when its use and life has ended but still impacts the environment the project impacts.[90] In relation to the Southern Oklahoma Power Corp. project, Sardis Lake is a federal reservoir constructed and managed by USACE. The project required USACE coordination under Section 408,

86. Pushmataha County Project, *supra* note 83.

87. Ethan Howland, *White House Names Democrat Rosner to Lead FERC*, UTILITY DIVE (Aug. 14, 2025), https://www.utilitydive.com/news/white-house-david-rosner-ferc-chairman/757656/.

88. 42 U.S.C. § 4332. An Environmental Impact Study (EIS) is required under Section 102(2)(C) of NEPA. *Id.* This is the overarching federal statutory requirement that mandates an EIS for any "major Federal action significantly affecting the quality of the human environment." *Id.*; *see generally Hydropower*, U.S. FED. ENERGY REGUL. COMM'N, https://www.ferc.gov/hydropower (last visited Apr. 9, 2026).

89. *See About the Project*, SEO POWER CORP, http://www.greenvaultenergy.net/ (last visited Feb. 6, 2026); *see also* Se. Okla. Power Corp., 192 FERC 61,225, 2 (2025) (citing 18 C.F.R. § 5.11 (2025)) ("As required by the Commission's ILP regulations, applicants must submit a proposed study plan detailing the methodologies, reporting, and timelines of studies to be conducted as well as explanations as to why other studies will not be conducted. Accordingly, on December 23, 2024, Southeast Oklahoma filed a Proposed Study Plan, which Commission staff rejected because it did not comply with the Commission's regulations. As relevant here, Commission staff found that Southeast Oklahoma provided insufficient information relating to study descriptions, methodologies, and schedules, and failed to explain why certain studies requested by various stakeholders were not adopted. The Commission staff provided Southeast Oklahoma with 30 days to file an adequate study plan and warned that the ILP for the project might be terminated. should Southeast Oklahoma fail to file an adequate plan.").

90. *See generally FERC Staff Issues Draft Environmental Impact Statement for the Answers on Damn Hydroelectric Project Exemption*, U.S. FED. ENERGY REGUL. COMM'N (Sept. 12, 2025), https://www.ferc.gov/news-events/news/ferc-staff-issues-draft-environmental-impact-statement-anderson-dam-hydroelectric.

which is required for any non-federal project that proposes to occupy or use a USACE-constructed civil works project, and this Section necessitates a determination that the project will not be injurious to the public interest.[91] The project also required coordination under Section 404 of the Clean Water Act, which is mandated to prevent and monitor any discharge of dredged or fill material including equipment fuels and chemicals that can cause contamination and be released into Sardis Lake or the Kiamichi River during construction or decommissioning. FERC officially dismissed the project in April 2025 because the developer failed to provide the necessary environmental and consultative documentation required under the Integrated Licensing Process.[92]

A cost-benefit analysis would not justify building the plant *versus* the plant's negative effects on Sardis Lake and local water quantity and quality needs, in addition to the needs of Oklahoma City residents (as set forth under the agreement). Although the proposed project might help with grid reliability, especially in Texas, it would be siphoning off over 15 billion gallons of water.[93]

Another unknown impact consideration is private land investment buying up lands in the region and utilizing well drilling into the water table and aquifers to pump and sell for commercial profit and industrial usage in different regions.[94] Such developments appear to significantly impact water usage by at least 35% (based on studies of water quantities during use rather than simple storage-area data).[95] The parties to the Water Agreement need to understand and consider potential well usages in the region because the amount of water that an aquifer stores is much less and different than what it

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91. 33 U.S.C. § 408.

92. *See Oklahoma AG Celebrated Termination of Proposed Hydroelectric Plan as Inconsistent with Tribal Rights Protective of Natural Resources*, STATE ENERGY & ENV'T IMPACT CTR. (April 15, 2025), https://stateimpactcenter.org/ag-work/ag-actions/oklahoma-ag-celebrated-termination-of-proposed-hydroelectric-plan-as-inconsistent-with-tribal-rights-protective-of-natural-resources.

93. *Cf.* Mike W. Ray, *$3.1B Kiamichi Hydropower Project Would Siphon Billions of Gallons of Water from River*, SOUTHWEST LEDGER (Sept. 10, 2024), https://www.southwestledger.news/news/31b-kiamichi-hydropower-project-would-siphon-billions-gallons-water-river.

94. *See* Megan Kimble, *Company Behind East Texas Water Grab Hired Key Lobbyists Just Before Bill Delaying It Died*, HOUSTON CHRONICLE (Sept. 10, 2025), https://www.houstonchronicle.com/politics/texas/article/east-texas-water-blakemore-senate-21032382.php; *see also* Will Bostwick, *Inside the Fight for Texas's Most Precious Resource*, TEX. MONTHLY (Sept. 15, 2025), https://www.texasmonthly.com/news-politics/east-texas-water-wars-kyle-bass/.

95. *See* Bostwick, *supra* note 94 (discussing an expert at Medows Center for the Water and Environment at Texas State University that provided scientific data of water storage of an underground aquifer as irrelevant given that such aquifers have dynamic organic sediments and strata that creates pressure in aquifers that create a producible amount of artesian pressurized well water and the industrial pumping of such water by commercial wells completely depletes the pressure and overall yield of producible water faster until the aquifer fails and cannot be naturally recharged with adequate pressure).

can sustainably produce. Based upon the sustainable production margins of an aquifer, a developer cannot list an aquifer as an underground reservoir because its pressure yield determines the amount of water it can sustainably produce. When proposing any planned use of the aquifer, an environmental waters sustainability and impact study is required because large pumping developments for commercial purposes deplete the pressure of the aquifer and diminish the water it can produce. In an unsustainable destruction of the aquifer resource, especially during drought periods, commercial pumps hinder other water well pumps' use, such as drinking water and standard individuals' use.[96]

A. An Updated Water Agreement Should Provide Tribal Water Regulation

When amending the Sardis Lake Water Agreement, regulations should be consistent with *McGirt* and its progeny of cases[97] that support tribal regulation of water rights within the federally registered territorial boundaries of the Chickasaw and Choctaw Nations.[98] Section 10 of the Water Agreement states how tribes can raise issues regarding the settlement

96. *See id.*

97. *See, e.g.*, Oklahoma v. Sizemore, 142 S.Ct. 935 (2022). In Oklahoma v. Sizemore, the Court applied *McGirt* to the Choctaw Nation, rejecting state jurisdiction and regulatory authority over Choctaw Reservation opening the *Winters* and *Arizona* cases involving water rights to the Choctaw Nation. In *Winters v. United* States, the Supreme Court held that when the federal government confined tribes to reservations, it implicitly reserved the amount of water necessary to maintain a reservation as a "homeland." 207 U.S. 564 (1908). Additionally, *Arizona v. California* remains a foundational case for quantifying these rights based on "practicably irrigable acreage," which tribes now assert more strongly within McGirt-affirmed boundaries. 373 U.S. 546 (1963); *see* Leslie Sanchez et al., *Beyond "Paper" Water: The Complexities of Fully Leveraging Tribal Water Rights*, FED. RESERVE BANK OF MINNEAPOLIS (May 3, 2022), https://www.minneapolisfed.org/article/2022/beyond-paper-water-the-complexities-of-fully-leveraging-tribal-water-rights. The ruling upheld the federal government's authority to apportion water among lower basin states. A subsequent decree implementing the decision was issued in 1964. *See* 376 U.S. 340 (1964); *see* Dep't of the Interior, Statement of Findings: Choctaw Nation of Oklahoma and the Chickasaw Nation water Rights Settlement, 89 Fed. Reg 14699 (Feb. 28, 2024). The *McGirt* ruling acts as a foundation, strengthening the tribes' legal position that they, as sovereign nations, hold the senior rights to water within their jurisdictional boundaries, challenging previous state-level control. Now, 114 years after *Winters*, 46 tribes have concluded adjudications and successfully reclaimed rights to 10.7 million acre-feet of water (AF). The adjudication process spans 21 years on average, with parties spending half of that time in court before switching to negotiation. The magnitude of water entitlements tends to reflect the size of a reservation's land base, with larger reservations receiving more water. Yet, more recent settlements involve less water but more funding for tribes. In addition, 23 tribes have initiated the adjudication process but not completed it. A 2020 study estimated that in the coming decades, the total water entitlement for tribes actively undergoing adjudication will be between 1.2 and 1.6 million AF. *See* Leslie Sanchez et al., *The Economics of Indigenous Water Claim Settlements in the American West*, ENV'T RES. LETTERS, Aug. 21, 2020, at 1.

98. Chez Oxendine, *Yurok Tribe Gains Federal Authority to Set Water Quality Standards on Its Reservation*, TRIBAL BUS. NEWS (Aug. 2, 2025), https://tribalbusinessnews.com/sections/energy/15241-yurok-tribe-gains-federal-authority-to-set-water-quality-standards-on-its-reservation.

agreement, including venue and jurisdiction.[99] If a disagreement arises over the Settlement Agreement, the Amended Storage Contract Transfer Agreement, or the Settlement Act, in accordance with the law, parties must go to federal court for a judge's ruling.[100] Furthermore, parties cannot sue for monetary damages but are allowed to interpret the agreement or order compliance with the agreement.[101] In such cases, the U.S. District Court for the Western District of Oklahoma has the proper jurisdiction and authority to address disagreements.[102] Section 10.1.2 of the agreement is subject to amendment because it is inconsistent with federal law and tribal sovereignty as the terms were presented at the time.[103]

Under federal statutes regarding venue, a civil action can be brought in "a judicial district in which a substantial part of the events" gave rise to the claim or "a substantial part of property that is the subject of the action is situated."[104] As Sardis Lake is located in the Eastern District of Oklahoma, Section 10.1.2 of the Settlement Agreement overrides federal venue statutes. The venue raises questions of judicial fairness particularly in the basic ability to bring witnesses and evidence where the local federal court is versus the District of Columbia U.S. District Court. In addition, tribal courts are barred from hearing disputes related to the Settlement Agreement. Considering *McGirt*, these disputes are inconsistent with recognized tribal sovereignty over tribal lands and agreements as well as locality for basic case management needs in terms of travel of witnesses at trial and other pretrial hearings.

The Chickasaw and Choctaw Nations may face numerous procedural issues when renegotiating the agreement, including delayed access to court, detailed notice requirements, mandatory conferences, and a lack of tribal forum options in the area and region affected by the agreement's terms.[105] Parties that are asserting noncompliance or seeking interpretation must "serve written notice on the Party or parties," and the written notice must have specific provisions that have "been violated or in dispute and shall specify in detail the asserting Party's contention" and factual basis for the claim.[106] Both parties must meet within 30 days of the written notice to

99. *See Water Settlement Agreement*, *supra* note 27, § 10.

100. *Id.* § 10.1.1; *see also* § 10.

101. *Id.* §§ 9.11, 9.1.2; *see* § 9.

102. *Id.* § 10.1.2; *see*, § 10.

103. *Id* § 10.1.2.

104. 28 U.S.C. § 1391(b)(2) (2018).

105. *See, e.g.*, MURRAY & STERN, *supra* note 18; Compliance with Federal "Settlement" Procedures: Tribal water rights settlements require federal funding and congressional action, and they often face opposition from groups that object to specific provisions, creating procedural hurdles in gaining final approval. These challenges are typically exacerbated by shifting political landscapes.

106. *Water Settlement Agreement*, *supra* note 27, §3.1.2.2; *id.* § 3.1.2.2.1.

resolve the issue; if the issue is not resolved within 90 days of the original written notice, then the dispute may be taken to federal court.[107] Procedural requirements outlined in Section 10.2 can create hurdles against tribes seeking timely relief. With the Tribal Nations' use of water, under the agreement, Tribes are able to use the water but only if they comply with state laws, such as using water through existing permits or obtaining new permits.[108] However, instead of flat figures, parties involved should contribute by water usage/need to the conservation fund and evaluate specific use on an equitable basis.

B. Applying Better Standards for Future Planning of Water Use.

Using traditional Indigenous management of the water and natural resources in the water settlement area of the Kiamichi Valley allows for a cultural and spiritual emphasis on co-stewardship between Tribal Nations, state, federal, and non-tribal peoples. The concepts set out in the United Nations Declaration of the Rights of Indigenous Peoples should foster a healthy and equitable interaction and evolving plan for sustainable water use.

Planning for a sustainable future can be accomplished using Seventh Generation thinking.[109] Additionally, bonding that with traditional Indigenous governance logic that relationship, coherence, and long-view care, results in not just a shift in mindset, but a structure for how we build, govern, and sustain systems that reflect who we are as members in a community. Seventh Generation thinking is an Indigenous philosophy, originating with the Haudenosaunee Confederacy,[110] that dictates present-day decisions must consider the well-being of the next seven generations in the future. This principle emphasizes long-term sustainability, responsibility to unborn generations, and the elimination of self-interest in public decision-making, particularly regarding natural resources, but can also be applied to social and cultural contexts.[111] The core principles state: (1) "stewardship of the future," where the central idea is to make decisions that create a sustainable world for seven generations ahead, encompassing environmental

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107. *Id.* § 10.2.3.

108. *Id.* § 7.1–7.2.

109. *See* Breanne Smith, *Seven Generations Principle, Healing the Past & Shaping the Future*, THE INDIGENOUS FOUND., https://www.theIndigenousfoundation.org/articles/seven-generations-principle-healing-the-past-amp-shaping-the-future (last visited Apr. 9, 2026).

110. *See* Wertz & Laydon, *supra* note 2; *see also Who Do We Answer To? The Haudenosaunee Confederacy Responsibility to Future Generations*, LIFE WORTH LIVING, https://lifeworthliving.yale.edu/resources/the-haudenosaunee-confederacy-on-responsibility-to-future-generations# (last visited, Mar. 23, 2026).

111. Smith, *supra* note 109.

health, well-being, and cultural vitality; (2) moral responsibility, which fosters a sense of moral obligation to those who are yet to be born, extending responsibility beyond immediate needs and desires; (3) holistic community focus, where this principle encourages thinking in terms of the entire community and future generations, rather than individual or short-term gains.[112]

A similar Indigenous approach to reviewing the terms of the Water Settlement Agreement is through using Indigenous thinking systems[113] that provide an equitable system of governance based upon the following ideas: (1) relational accountability: where trust flows through relationships, not roles and titles, and where responsibility is shared, not assigned by the participants and the affected by the plan; (2) interdependence: where every system, health, housing, justice, and education has an effect on others, and where coordination is not optional but an integral part of balance in creating interdependence in a community mind frame; (3) long-view thinking: where the plans and management of the resource reviews its impact that is measured in generations and where urgency is guided by foresight, not deadlines for future sustainability and continuity of health use of the resource; (4) sovereignty as structure: the updated water agreement must be based on design, decision-making, and power that reflects Indigenous regulatory authority, not just participation and compliance; and, very importantly, (5) a healing-centered design: this ensures the plan, management, and authorities in balance must be built to protect well-being and not just to avoid harm, but actively support repair, particularly from past marginalization of both the impoverished community members and tribal citizens. Thus, the focus on helping fix water and infrastructural issues within states and communities before capitalist objectives of a few must be paramount and include the Indigenous concepts of women in relation to the sacredness of water.[114]

On January 13, 2025, the EPA reversed the October 2020 decision and provided an order more contemporaneous with the jurisdictional and regulatory relationship envisioned by the majority opinion in *McGirt*.[115] The 2025 decision replaced the previous policy with new requirements that include: the EPA administrator issuing orders that require mandatory tribal

112. *See id.*

113. *See, e.g.*, JESSE GREY EAGLE, INDIGENOUS SYSTEMS THINKING: THE OPERATING SYSTEM OF SOVEREIGNTY (2025).

114. J. Eric Reed, *Restoration of Matriarchal Roles is Essential*, ICT (Nov. 18, 2020), https://ictnews.org/opinion/restoration-of-matriarchal-roles-is-essential/.

115. *See* Letter from EPA, Off. of Adm'r, to Kevin Stitt, Governor of Okla. (Jan. 13, 2025) (EPA letter reversing the 2020 letter to comport with the *McGirt* decision regarding Indian Country), https://oklahoma.gov/content/dam/ok/en/governor/documents/Signed%20SAFETEA%20Reconsideration%20Document.pdf.

consultation where the EPA now conditions state environmental regulatory approval on specific tribal engagement and consultation meetings that encourages individual agreements between the State and Tribal Nations to better promote tribal sovereignty.[116] The EPA letter also imposes regulatory conditions that require additional reporting and comment period protocols for Oklahoma's environmental programs.[117] The logic and legal precedent reversing the October 2020 letter is "because the State's programs were generally not approved to apply in Indian country, the State's program implementation was no longer appropriate following the Supreme Court's clarification regarding the Indian reservation status of the subject lands."[118] Subsequent to the ruling in *McGirt*, several Oklahoma state court decisions have held that the reservations of other tribes in Oklahoma had also never been disestablished and remained Indian country under federal law.[119]

Beginning in November 2025 and early 2026, major issues have involved federal litigation over tribal hunting and fishing sovereignty against Oklahoma state officials. The Choctaw, Chickasaw, Cherokee, and Creek Nations are suing Governor Stitt over citations issued to tribal citizens on reservation land.[120] Focusing and planning between the parties for the Sardis Lake water agreement being used to implement long-term, multi-party water resource management and upholding treaty rights is critical. Ongoing negotiation based on theories of equality and recognition of tribal regulatory rights ensures that water from Sardis Lake and surrounding areas meets the needs of both the tribes and Oklahoma City in the coming years.[121]

Additionally, in January 2026, the Five Tribes filed federal lawsuits against Governor Kevin Stitt and the Oklahoma Department of Wildlife Conservation, challenging state citations issued to tribal members hunting on their own lands. The tribes argue these actions violate their inherent

116. *See, Id.*

117. *See, Id.*

118. *See* Letter from EPA, *supra* note 115.

119. *See, e.g.*, Spears v. State, 485 P.3d 873 (Okla. Crim. App. 2021), *cert. denied*, 142 S. Ct. 934 (2022) (Cherokee Nation Reservation); Bosse v. State, 499 P.3d 771 (Okla. Crim. Appl. 2021), *cert. denied*, 142 S. Ct. 1136 (2022) (Chickasaw Nation Reservation); Sizemore v. State, 485 P.3d 867 (Okla. Crim. App. 2021), *cert. denied*, 142 S. Ct. 935 (2022) (Choctaw Nation Reservation); Grayson v. State, 485 P.3d 250 (Okla. Crim. App. 2021), *cert. denied*, 142 S. Ct. 934 (2022) (Seminole Nation Reservation); State v. Lawhorn, 499 P.3d 777 (Okla. Crim. App. 2021) (Qua paw Nation Reservation); State v. Brester, 531 P.3d 125 (Okla. Crim. App. 2023) (Ottawa, Peoria and Miami Reservations); State v. Fuller, 547 P.3d 149 (Oka. Crim. App. 2024) (Wyandotte Reservation).

120. *See Tribes File Federal Suit Against Gov. Stitt and Wildlife Department Over Prosecution of Hunting and Fishing on Tribal Land: Chicksaw Nation, Choctaw Nation of Oklahoma and Cherokee Nation Defend Tradition, Sovereignty and Treaty Rights*, CHOCTAW NATION OF OKLA. (Nov. 18, 2025), https://www.choctawnation.com/news/news-releases/tribes-file-federal-suit-against-gov-stitt-and-wildlife-department-over-prosecution-of-hunting-and-fishing-on-tribal-land/.

121. *See generally Water Settlement Agreement*, *supra* note 27.

sovereign rights while the state claims authority to prosecute crimes within the state. These issues are contemporaneous with tribal authority regarding environmental regulation of tribal lands and waters where the tribes are asserting unlawful interference by the state and governor.[122] The lawsuit raises the issues of *McGirt*'s affirmation of tribal authority, sovereignty, and jurisdiction to regulate members' hunting and fishing rights in Indian Territory, including non-Indian fee lands where a tribal member has consent, permission, and/or a lease to hunt on non-Indian lands in the Indian Territory.[123] In the separate Muscogee Creek case, the Tribe argues that the state's attempt to ticket and prosecute tribal citizens for hunting without state licenses unlawfully infringes on treaty rights and tribal sovereignty, citing the precedent set by *McGirt*.[124]

The agreement limits Oklahoma City's water withdrawals based on lake levels to protect local recreation and wildlife. Oklahoma City is restricted to approximately 37.5 billion gallons annually, whereas they could have taken up to 88.8 billion without the agreement.[125] In February 2024, the Department of the Interior certified that all conditions for the settlement were met, effectively finalizing the legal framework for the long-term. Nevertheless, ongoing monitoring between the Five Tribes, environmentalists, and conservation groups (like the Sierra Club, Oklahomans for Responsible Water Policy, and others) continue to push for scientific research to ensure "sustainable management" as the state-tribal

122. *See* Complaint for Plaintiff, The Cherokee Nation v. Free, No. 4:25-cv-00630-CVE-JFJ (N.D. Okla. Nov. 18, 2025) (alleges Governor Stitt and the Oklahoma Department of Wildlife Conservation violated tribal sovereignty and treaty rights by appointing a special prosecutor (Russ Cochran) to cite tribal citizens for hunting/fishing without state licenses on reservation land). Note: The defendants in this suit include Wade Free (Director of the Oklahoma Department of Wildlife Conservation), Nels Rodefeld, and Special Prosecutor Russ Cochran. *See also* Stitt v. Drummond, No. 122662 (Okla. Nov. 12, 2025) (Governor Stitt sues Attorney General Drummond to block a binding legal opinion (issued in December 2025) that declared the state's tribal hunting enforcement policy illegal); Katrina Crumbacher, *Oklahoma Governor and Wildlife Sue Attorney General Over Tribal Hunting Opinion*, THE J. RECORD (Feb. 2, 2026), https://journalrecord.com/2026/02/02/oklahoma-sues-ag-tribal-hunting-opinion/; *cf.* Federal Law Preemption of Oklahoma Wildlife Code, 19 Op. Okla. Att'ys Gen. 2 (2025) (stating that the state cannot prosecute tribal members for hunting/fishing on their own reservations).

123. Complaint for Plaintiff, The Cherokee Nation, *supra* note 122.

124. The Muscogee Nation filed a separate suit regarding similar issues, with proceedings ongoing in January 2026. *See* Complaint for Plaintiff, Muscogee (Creek) Nation v. Wade Free, No. 4:26-cv-00003 (N.D. Okla. Jan. 5, 2026); *see generally* Sarah Liese (Twilla), *Muscogee Nation Wages Its Own Legal Battle Against State Officials Over Hunting, Fishing Rights*, KOSU (Jan. 8, 2026), https://www.kosu.org/news/2026-01-08/muscogee-nation-wages-its-own-legal-battle-against-state-officials-over-hunting-fishing-rights.

125. Chad Hunter, *High Court Rejects Tribal Hunting, Fishing Lawsuit*, CHEROKEE PHOENIX (Mar. 25, 2026), https://www.cherokeephoenix.org/news/high-court-rejects-tribal-hunting-fishing-lawsuit/article_81c442ac-89ac-4288-b18c-fed3c32ce250.html.

commission evaluates future water proposals.[126] While this landmark agreement was reached between the Choctaw, Chickasaw, and Oklahoma City to settle decades of conflict over water resources, tensions remain regarding the implementation and long-term control of water resources in southeastern Oklahoma, particularly Lake Sardis and the Kiamichi River Valley that are rooted in 19th-century treaties. Most importantly, the core conflict that involves these disputes revolves around tribal sovereignty within the state, specifically whether the state can regulate environment regulations, hunting and fishing licenses, company activities on tribal lands, and ultimately whether the state or tribes control the water resources in the region.

CONCLUSION: MOVING TO A BETTER FUTURE WITH AN UPDATED WATER AGREEMENT

Given the issues arising under the agreement and the Governor of Oklahoma's political posturing thereto, the best approach for State, Federal Agencies, Tribal Nations, and all residents in the affected water settlement areas in Oklahoma, is to use concepts based on theories of equality and longevity for the sustained use of the water and all natural resources in the Kiamichi Valley and southeast Oklahoma. Tribes that have regulatory authority of water, as shown in the Yurok tribe example granted by the Environmental Protection Agency and treatment in a similar manner as a state status, allows the tribe to create water quality standards within their reservation that benefits all the communities around them and maintain a sustainable use plan.[127]

Any water use plans involving the waters in the water settlement area should always include more thorough assessments and evaluations of the impact on the environment, cultural resources, and sacred sites, as required by U.S. Army Corps of Engineers permitting[128] *via* a full environmental impact statement.[129] Such requirements should the standard for an unbiased

126. Katrina Crumbacher, *Oklahoma Tribes Sue Gov. Stitt in Ongoing Fishing, Hunting Dispute*, THE J. RECORD (Nov. 19, 2025), https://journalrecord.com/2025/11/19/oklahoma-tribes-sue-gov-stitt-hunting-rights/.

127. *See* Oxendine, *supra* note 98.

128. While FERC handles the primary license termination, the USACE may require its own environmental review or input if the decommissioning involves issues described by Section 404 of the Clean Water Act (i.e., when the termination involves the discharge of dredged or fill material into waters of the United States) or Section 10 of the Rivers and Harbors Act (i.e., if the project involves structures or work in or affecting navigable waters of the United States).

129. An EIS is required for significant environmental impacts resulting from the decommissioning or removal of project works as with the loop pump electric power system proposed and terminated because of the impacts to the area's environmental sensitivity and native cultural resources as having an impact such that it required the necessity of studies the proponent for the project did not provide

oversight committee, as set out in an amended and updated water agreement; the committee should use Seventh Generation planning and other sustainable longevity models for present and future planning in regard to water use in the Settlement areas.

Failing to engage in forward-thinking planning is short-sighted and stagnant as most existing systems erase memory of the past, extract value for individual profit, and fail communities by squandering resources under a colonialized natural-resource-exploitation model rather than a plan for long-term, sustainable use. A forward-looking governance has logic rooted in kinship, coherence, and long-view care. This worldview sees us as part of a long continuum: we are here because of those who came before us. And those who come after will live with what we leave behind and is a traditional Indigenous concept of genuine success.

Start with land where the Indigenous people historically lived and worked with so that you can understand their story. Acknowledge the impacts that shape today's decisions. When you live by principles of traditional Indigenous resource management and planning, urgency changes. Short-term wins seem less important than the long-term health of relationships between people, nations, and with the land itself. Planning in this mindset and using the law and the agreement to benefit each party is not about fear of the future.

- *It's about care.*
- *It's about continuity.*
- *It's about the belief that our actions today can be a gift to those who come long after we are gone*.

for reconsideration. *See* 18 C.F.R. § 380 (FERC's regulations implementing NEPA). However, as of February 2026, FERC is proposing to amend its NEPA regulations to adopt Categorical Exclusions (CEs) for certain terminations or revocations of water power licenses that do not involve significant ground-disturbing work, which would reduce the need for a full EIS in some cases.

IT'S TIME TO TAKE OUT THE TRASH: REMOVING BARRIERS TO LANDFILL PROLIFERATION IN MISSOURI

Benjamin Albertson*

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INTRODUCTION

Landfills, though maligned, are an integral part of public health and environmental protection infrastructure. They protect us by keeping rotting garbage from leaching poisons into our air and waterways.[1] Preventing this leaching protects both human health and the environment by preventing the spread of disease and limiting the exposure of pollution to the natural environment. Both federal and state governments have created a robust permitting and construction process to ensure that the modern sanitary

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1. Rachael, *Think a Landfill is Just a Dump? Think Again.*, GRANGER WASTE SERVS., (Sept. 28, 2017), https://www.grangerwasteservices.com/think-landfill-just-dump-think/.

landfill accomplishes both objectives.[2] Still, some regard landfills with disdain and distrust. The City of Raymore, Missouri, is no different, and has successfully passed a law extending the jurisdiction of municipalities over potential landfills in its proximity.[3] Missouri only has 17 operating landfills, and they are running out of space.[4] Simply, Missouri needs more. This Note discusses this legislation and explores solutions to ensure that landfills can continue to be built without administrative roadblocks that neither protect public health nor the environment.

Part I explains the historical and legal background of landfills and how roadside dumps turned into the modern sanitary landfill. It will also briefly touch on depictions of landfills by their supporters and detractors, and how these depictions may affect public perceptions when siting new landfills. Part II discusses how the City of Raymore changed state law to prohibit the nearby siting of a landfill. This change can affect landfill proliferation in Missouri and how it may encourage others to lead similar fights resulting in fewer places to site landfills. Part III explains solutions to the Raymore Controversy, primarily taking the form of a repeal of House Bill 1751, which extended the jurisdiction of municipalities over potential landfills in their proximity. Secondarily, this Note proposes a "stop-the-clock" provision to limit changes in regulation and the law affecting landfills during construction. Finally, it explores the potential of granting eminent domain authority to landfills to limit local interference with siting. Landfills are exceedingly difficult to build, which is not a bad thing. The engineering and monitoring requirements make them safe. However, their potential risks do not mean we should pile on limits and regulations for the sake of it. Landfills are necessary for waste management, and we cannot allow municipalities to prevent their construction lest we run out of places to put them.

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2. 42 U.S.C. §§ 6901–6987; *Solid Waste Landfill Permits*, MO. DEP'T NAT. RES., https://dnr.mo.gov/waste-recycling/business-industry/permits-licenses-registrations-fees/solid-waste/landfills (last visited Mar. 27, 2026).

3. *Opposition to Threat of Landfill Development*, RAYMORE, https://www.raymore.com/government/city-departments/communications-public-relations/opposition-to-threat-of-landfill-development (last visited Mar. 27, 2026).

4. Sara Karnes, *As Locals Dump More and More Trash, Springfield's Landfill is Filling up Faster*, SPRINGFIELD NEWS-LEADER, https://www.news-leader.com/story/news/local/ozarks/2023/03/12/where-will-your-trash-go-when-theres-no-room-at-the-local-landfill/69852152007/ (last updated Mar. 12, 2023).

I. A HISTORY OF LANDFILLS

The modern sanitary landfill has only been around for about 33 years.[5] However, waste management has been in place since 3,000 B.C.[6] Archaeologists discovered remaining dump sites around Knossos, Crete, where people dug holes in the ground, filled them with trash, then covered them with dirt.[7] Waste management laws and regulations go as far back as 500 B.C. in Athens, Greece.[8] In Athens, the city forbade the disposal of trash within one mile of the city. This led to the creation of primitive dumps that kept the trash away from the denser population center.[9]

If we jump forward over 2000 years, we enter the so-called "Age of Sanitation" in England, which later spread to the United States.[10] The United Kingdom's Poor Law Commissioners released a study linking disease to unsanitary living conditions.[11] This study led to extensive investment in water treatment and sewage systems in regional facilities to handle the large volume of work required.[12] Waste management, however, did not have access to much of these funds, which led to it becoming a local problem based on municipal dumps.[13] For nearly the next century, these dumps were just holes in the ground filled with trash until they could not hold anymore.[14] Once full, cities would cover the hole and move to the next one.[15] Such municipal dumps were the norm in the United States until 1976 with the passage of the Resource Conservation and Recovery Act (RCRA),

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5. *See* John H. Turner, *Off to A Good Start: The RCRA Subtitle D Program for Municipal Solid Waste Landfills*, 15 TEMP. ENV'T. L. & TECH. J. 1, 16–17, 24, 28–29 (1996) (discussing then-newly published EPA regulations for the construction and operation of landfills).

6. URIARTE A. FILEMON JR. & URIARTE A. FILEMON, SOLID WASTE MANAGEMENT: PRINCIPLES AND PRACTICES: AN INTRODUCTION TO THE BASIC FUNCTIONAL ELEMENTS OF SOLID WASTE MANAGEMENT, WITH SPECIAL EMPHASIS ON THE NEEDS OF DEVELOPING COUNTRIES 4 (2008).

7. *Id.*

8. *Id.*

9. *Id.*

10. Andy Rihn, *A Brief History of Garbage and the Future of Waste Generation*, ROADRUNNER, https://www.roadrunnerwm.com/blog/history-of-garbage (last updated Sept. 2023).

11. POOR LAWS COMMISSIONERS, REPORT ON THE SANITARY CONDITION OF THE LABOURING POPULATION OF GREAT BRITAIN (1842).

12. Garrick E. Louis, *A Historical Context of Municipal Solid Waste Management in the United States*, 22 WASTE MGMT. & RSCH. 306, 306 (2004).

13. *Id.*

14. *The Evolution of Sanitary Landfills*, BTL LINERS, https://www.btlliners.com/the-evolution-of-sanitary-landfills (last visited Mar. 27, 2026).

15. *Id.*

which instituted new federal standards for solid waste management and created the systems that became the modern sanitary landfill.[16]

A. The Origin of the Modern Sanitary Landfill: Major Federal Laws

RCRA may have been the foundation of the modern sanitary landfill, but it only came after another major federal law, the Solid Waste Disposal Act of 1965 (SWDA).[17] SWDA provided funds to the states to collect information on their solid waste management situations. These funds also provide for a system wherein state, local, and federal governments cooperate to protect public health and the environment.[18]

In 1976, RCRA passed and established a national framework for solid waste management.[19] RCRA's framework includes defining different types of landfills, how one can be built, where it can be built, how it must be monitored, and more.[20] The most relevant effects of RCRA for this Note are the Subtitle D regulations promulgated by the Environmental Protection Agency (EPA) in 1991.[21] These regulations created significant restrictions on the construction and operation of landfills, which has had widespread effects on the numbers of landfills operating around the country.[22]

Finally, under RCRA, there are two primary types of landfills, Municipal Solid Waste Landfills (MSWLFs) and Industrial Waste Landfills.[23] This Note is concerned with MSWLFs. Additionally, the EPA has defined two important terms relating to solid waste management: (1) solid waste is "garbage, refuse, sludges, and other discarded solid materials," but nothing toxic, and (2) leachate refers to the liquid formed when water is polluted as it moves through a landfill and chemicals and other

16. *History of the Resource Conservation and Recovery Act (RCRA)*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/rcra/history-resource-conservation-and-recovery-act-rcra (last updated Jan. 22, 2026); 42 U.S.C. §§ 6901–6987.

17. *History of the Resource Conservation and Recovery Act (RCRA)*, *supra* note 16.

18. 42 U.S.C. § 6902(a).

19. *Resource Conservation and Recovery Act (RCRA) Overview*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview (last updated Sept. 5, 2025).

20. *Id.*

21. *Id.*

22. *See* 40 C.F.R. § 258; David Drilling, Mo. Dep't Nat. Res., Intro to Solid Waste Management 22 (on file with author).

23. Municipal Solid Waste Landfills are "specifically designed" to receive household and other nonhazardous wastes. Their Industrial Waste counterparts, however, focus on commercial and institutional waste and may specialize in processing construction debris or other industry specific wastes. *Basic Information About Landfills*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/landfills/basic-information-about-landfills (last updated June 25, 2025).

materials leach into it.[24] These terms are important to explain what is going into the MSWLFs discussed below, and managing leachate collection is a key aspect of MSWLF construction.

B. The History of Missouri's Solid Waste Management

After SWDA, but before RCRA, Missouri took steps to address the solid waste problem in the state with information gained from surveys done with funds from SWDA.[25] In total, the survey found 2,600 roadside and promiscuous dumps but only 457 *authorized* disposal sites.[26] Of these 457 authorized sites, 97% had polluted land, air, or water; 90% discharged leachate into the environment; 20% were below the groundwater table; 75% had no soil cover; and almost all of them allowed open burning of waste.[27] After accounting for all the compromised authorized sites, only four could be considered sanitary, less than 1% of authorized sites.[28] In response, the General Assembly passed the Missouri Solid Waste Management Law (MSWML) in 1972.[29] MSWML required local governments to "plan and implement sound solid waste management practices."[30] MSWML also required the Missouri Division of Health to engineer, permit, and inspect landfills. In 1974, these duties were taken over by the newly formed Missouri Department of Natural Resources (DNR).[31]

After RCRA passed in 1976, Missouri Senate Bill 475 amended MSWML to meet new standards. The bill also added new requirements for landfills, including, inter alia: requiring baseline groundwater sampling, leachate collection systems in newly constructed landfills, and encouraging recycling.[32] After the EPA finalized Subtitle D regulations in 1991, Missouri implemented further requirements including, inter alia: location and access restrictions, restrictions on the dumping of "bulk liquids" and hazardous

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24. 40 C.F.R. § 243.101(y); *Municipal Solid Waste Landfills*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/landfills/municipal-solid-waste-landfills (last updated Mar. 11, 2025).

25. Drilling, *supra* note 22, at 9.

26. A roadside or promiscuous dump refers to any illegal dumping site. *See* M. A. KRUTH ET AL., U.S. ENV'T PROT. AGENCY, CREATING A COUNTYWIDE SOLID WASTE MANAGEMENT SYSTEM, at v (1972) (developing a solid waste management plan in Tennessee to eliminate promiscuous dumps); Drilling, *supra* note 22, at 9.

27. Drilling, *supra* note 22, at 9.

28. *Id.*

29. SOLID WASTE MANAGEMENT PROGRAM, A SHORT HISTORY OF SOLID WASTE IN MISSOURI 2 (1999).

30. *Id.*

31. Drilling, *supra* note 22, at 14; *History of the Missouri Department of Natural Resources*, MO. DEP'T NAT. RES., https://dnr.mo.gov/about-us/history (last visited Jan. 24, 2026).

32. Drilling, *supra* note 22, at 19; *see, e.g.*, MO. REV. STAT. §§ 37.078, 260.205.14–.15 (1986).

waste, requirements the landfill is covered daily, and monitoring of groundwater.[33]

These Subtitle D requirements had extensive and lasting effects on the State of Missouri.[34] First and foremost, pre-Subtitle D, there were 125 landfills operating within the state.[35] Post-Subtitle D, that number has been reduced to a mere 17 landfills accepting municipal solid waste.[36] This dramatic decrease is largely attributable to increased cost and complexity due to the new regulations.[37] This lack of landfills can cause problems due to extended travel times to transport trash from transfer stations to landfills that are far away from their municipal sources.[38]

C. The Permitting Process in Missouri

The permit process has five steps: (1) a Preliminary Site Investigation; (2) a Detailed Site Investigation Workplan; (3) a Geologic and Hydrologic Site Characterization Report; (4) a Construction Permit; and (5) an Operating Permit.[39] Each of these steps has a specific time frame and require approval before the permit seeker can proceed further.[40] Finally, the DNR is required to issue a permit if "the permit application meets all statutory and regulatory requirements and the local governmental authority confirms the proposed facility meets all local requirements."[41]

The first step is a Preliminary Site Investigation.[42] An applicant can request an investigation and DNR's Geologic Survey Program (GSP) will visit the proposed site. GSP evaluates the site's "soils, geology, and hydro-geology" and look for geologic structures like faults or springs.[43] Essentially, the survey looks to ensure the geology of the site can safely support a landfill. The GSP then has 60 days to approve or reject the preliminary site investigation.[44]

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33. "Bulk liquids" refers to liquids that are not in a container and are prohibited in MSWLFs. 40 C.F.R. § 258.28(a); Drilling, *supra* note 22, at 21.

34. *See* Drilling, *supra* note 22, at 22 (detailing Subtitle D's effects on Missouri landfills); A SHORT HISTORY OF SOLID WASTE IN MISSOURI, *supra* note 29, at 29 (showing that Subtitle D lead many landfills to close after re-evaluating the cost of doing business in a post-Subtitle D world).

35. Drilling, *supra* note 22.

36. *Id.*

37. *Id.*

38. *Id.* at 29.

39. *Solid Waste Landfill Permits*, *supra* note 2.

40. *Id.*

41. *Id.*

42. *Id.*

43. *Id.*

44. *Id.*

Next, the applicant must create a Detailed Site Investigation Workplan, which shows how the applicant intends to "thoroughly and adequately characterize the site for hydrologic and geologic interpretations."[45] The Detailed Site Investigation Workplan explains the steps the applicant will actually take to determine whether the site's geology and hydrology can support a landfill.[46] The GSP has 30 days to approve or reject of the workplan.[47]

Subsequently, the applicant must create a Geologic and Hydrologic Site Characteristic Report, which will implement the previously approved workplan.[48] All geologic and hydrologic data collected and interpreted for this report must be done under the supervision of a geologist registered with the State of Missouri.[49] The report is then submitted to the GSP, which has 60 days to approve or reject of the report.[50]

After, the applicant must apply for a Construction Permit, which the applicant must obtain before any construction begins, including "clearing vegetation or earth work."[51] The applicant must also schedule a meeting with DNR's Waste Management Program before submitting the application.[52] The application includes a permit application fee, the completed application form, engineering plans and specifications for the facility, evidence of compliance with local zoning rules, documentation of financial responsibility, a copy of the approved site investigation report, plans for closure and post-closure, and the "[n]ames and addresses of all recorded owners of real property" within 1,000 feet of the proposed disposal area.[53]

Before the DNR can approve this application, the local municipality or jurisdiction must verify the facility meets "all applicable zoning, building, and health codes, ordinances and orders" relating to the waste disposal.[54] The DNR is legally obligated to request this verification before it issues a permit.[55] Prior to the Raymore Controversy discussed below, landfills required approval from the governing body of any municipality within one-

45. *Id.*
46. MO. CODE REGS. ANN. tit. 10, § 80-2 App'x 1 (2018).
47. *Solid Waste Landfill Permits*, *supra* note 2.
48. *Id.*
49. *Id.*
50. *Id.*
51. *Id.*
52. *Id.*
53. *Id.* (The engineering plans and facility specificiation must be approved by a Missouri registered professional engineer).
54. *Id.*
55. *Id.*

half mile of the landfill.[56] This setback was increased to one mile due to the Raymore Controversy.

Finally, the applicant must seek an Operating Permit after building all pre-operational features.[57] The operating permit is necessary before the landfill can accept any waste.[58] The operating permit includes a letter, "sent by certified mail and signed by the owner/operator and a professional engineer."[59] The letter states the pre-operational features have been completed in line with the construction permit.[60] The permit also includes any "necessary as-built drawings."[61] Before issuing the permit, the DNR will inspect the site once more to ensure construction was in line with the approved plans and permits.[62] If the permit is issued, it lasts for the life of the landfill.[63]

There are additional requirements at each of these steps relating to public awareness and involvement, but these five requirements are the most important and sufficient to show the comprehensiveness of these regulations. Building a landfill is a labor-intensive process, whose application process alone can last five years.[64] Further, Missouri's landfills are running out of space.[65] Ten of Missouri's 17 landfills are projected to be full within the next 20 years.[66] With the timescales necessary for landfill creation, 20 years is not a long time.[67] With this understanding of the difficulty involved in building a landfill, this Note will briefly touch on the public perception of landfills.

D. Public Perception of Landfills

If you search"landfill" and click on a search browser, you will see a litany of pictures depicting open air piles of garbage and refuse. As explained

56. MO. REV. STAT. § 260.205.9 (2022); *Opposition to Threat of Landfill Development*, *supra* note 3.

57. *Solid Waste Landfill Permits*, *supra* note 2.

58. *Id.*

59. *Id.*

60. *Id.*

61. *Id.*

62. *Id.*

63. *Id.*

64. Matt Flener, *Developer Confirms Plans for South Kansas City Landfill Near Jackson, Cass County Border Line*, KMBC (Feb. 14, 2023), https://www.kmbc.com/article/developer-confirms-south-kansas-city-landfill/42891654.

65. Karnes, *supra* note 4.

66. Charlene S. Fitch, Mo. Dep't Nat. Res., Remaining Airspace in Missouri Sanitary Landfills 2 (2023).

67. *Id.*

above, these depictions are outdated and misleading at best.[68] The influence these depictions have on public perception can be seen in how both supporters and detractors of landfills choose the images they use to represent landfills.[69] Still, even landfill detractors acknowledge how the development of the modern sanitary landfill offers a marked improvement over older trash dumps.[70]

Unfortunately, surveys have shown that some still view landfills as open-air piles of garbage.[71] The public's perception of landfills may be due to a lack of education or simply a lack of interest, but it might also have to do with a lack of experience.[72] If the only experience a person has with waste management in their day-to-day life is a garbage truck, they may not care how the whole process works.[73] Afterall, if it is out of sight—it is out of mind.[74] These false public perceptions animated much of the Raymore Controversy.

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68. *See* Part I.B–C (explaining the Missouri's requirements for constructing and operating a landfill); Rachael, *supra* note 1; *Dump or Landfill? Is There a Difference? A Resounding Yes!*, CANYONLANDS SOLID WASTE AUTH. (Dec. 8, 2017), https://swssd1.org/dump-or-landfill-is-there-a-difference-a-resounding-yes/ [https://web.archive.org/web/20240606042705/https://swssd1.org/dump-or-landfill-is-there-a-difference-a-resounding-yes/] (explaining the differences between landfills and dumps, including what the monitoring requirements of running a landfill).

69. *See* Andrea Davis, *5 Things You Never Knew About Today's Landfills*, GRANGER WASTE SERVS. (May 15, 2019), https://www.grangerwasteservices.com/5-things-you-never-knew-about-todays-landfills/ (same); *Landfills*, N.C. ENV'T JUST. NETWORK, https://ncejn.org/injustice/landfills [https://web.archive.org/web/20241108215535/https://ncejn.org/injustice/landfills/#whowearemenu] (last visited Feb 6, 2025) (highlighting a banner depicting a compactor on a large open-air garbage pile); Pam Reynolds, *Talking Trash: The Truth About Landfills*, CONSERVATION L. FOUND. (June 13, 2024), https://www.clf.org/blog/talking-trash-the-truth-about-landfills (depicting the uncovered working face of a landfill full of waste).

70. Reynolds, *supra* note 69.

71. Leslie Jones, *Open Dumps...A Thing of the Past. Landfills vs Open Dumps, Part 1*, WASTE AWAY GRP. (Nov. 22, 2013), https://wasteawaygroup.com/blog/open-dumps/.

72. *See* Reynolds, *supra* note 69 (noting that for many "landfills are an abstract concept," in part due to the public's experience with waste management being limited to trash trucks).

73. *Id.*

74. My own perception of landfills was that of open-air piles of garbage until I toured one during Summer of 2024. I did not care about waste management at all, and it never crossed my mind in an environmental context unless it involved recycling. It was simply a blind spot that I am not alone in having.

E. The Raymore Controversy

The City of Raymore is a 3rd Class municipality[75] with a population of 24,164 when this controversy started.[76] In 2024, Raymore's demographics are like those of the State at-large being 78.1% white, 8.8% Black, 1.1% Asian, 6.9% Latino, and 9.9% mixed.[77] Turning to Raymore's economy, things look different. Raymore's median income is over 140% that of the State at large and Raymore's poverty rate is less than half that of the State at large.[78]

In July of 2022, the mayor of Raymore learned of the intention to build a landfill in southeast Kansas City, Missouri.[79] The mayor began contacting city officials to meet and discuss the potential landfill.[80] Come November, Raymore's mayor was contacted by an attorney representing Aden Monheiser, the landfills decloper.[81] In December of 2022, Raymore passed a resolution formally opposing siting a landfill near the city.[82] During January of 2023, nearby cities, counties, and schools passed similar resolutions in opposition to the proposed landfill.[83] On January 23, State Representative Mike Haffner introduced House Bill 909 (H.B. 909), which would increase the current landfill setback requiring local approval for landfills from one-half mile to one mile.[84] H.B. 909 passed the House and was introduced in the Senate on March 22.[85] Due to opposition in the Senate, H.B. 909 failed to pass during the 2023 session.[86] Although, an amendment was added to another bill preventing the landfill from being permitted until DNR completed a one-year health, safety, and welfare study in the area

75. Missouri divides municipalities into one of five categories: village, 4th Class, 3rd Class, Constitutional Charter/Home Rule, and Special Charter. The classification is based on population and limits what form of government a municipality can have. Special Charters are an antiquated category that stopped being granted in 1875, though seven Missouri municipalities still operate under them. As for Raymore, 3rd Class municipalities have 3,000–29,999 people and can be governed by different combinations of Mayors, Managers, Councils, and Commissions. MO. SEC'Y OF STATE, 2023-2034 OFFICIAL MANUAL 803, 818 (2024).

76. *Id.*

77. *City of Raymore*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/fact/table/MO,raymorecitymissouri/INC110224 (last visited Jan. 24, 2026) [hereinafter *Missouri-Raymore Census*].

78. *Id.*

79. *Opposition to Threat of Landfill Development*, *supra* note 3.

80. *Id.*

81. *Id.*

82. *Id.*

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

surrounding Raymore.[87] However, Governor Parsons vetoed it "in an effort to help ensure the financial stability of Missouri beyond [his] Administration and the current General Assembly. Further, [the landfill] is a local responsibility with minimal statewide impact."[88]

This veto did not discourage the people of Raymore, and they redoubled their efforts to stop the fill.[89] In December of 2023, three bills were pre-filed in the House and Senate to increase the municipality setback to one mile, including House Bill 1751 (H.B. 1751).[90] In January 2024, the bills were formerly introduced and referred to the committee.[91] On March 7, the House passed H.B. 1751, which was then introduced in the Senate.[92] The Senate passed H.B. 1751 on April 17, and Governor Parsons signed it on May 6.[93] After 651 days, Raymore had stopped the fill, adding yet another hurdle for managing solid waste disposal in Missouri.[94]

II. THE DANGERS OF THE RAYMORE CONTROVERSY

The Raymore Controversy may seem relatively innocuous. After all, H.B. 1751 only changed 12 words, and what difference does an additional half-mile setback really make?[95] On its face, H.B. 1751 does not do much, but it sends a message, and it killed the proposed landfill south of Kansas City, Missouri. H.B. 1751 plays at being harmless, but in reality, it codifies and legitimizes NIMBYism despite the problems a landfill could solve.[96] As a term, NIMBY derogatorily implies opponents of local siting proposals are "selfish and short-sighted."[97] Others have found so-called NIMBYs to have

87. *Id.*
88. *Id.*
89. *Id.*
90. *Id.*
91. *Id.*
92. *Id.*
93. *Id.; Governor Parson Signs HB 1751 into Law*, MO. GOVERNOR MICHAEL L. PARSON, https://governor.mo.gov/press-releases/archive/governor-parson-signs-hb-1751-law (last visited Mar. 31, 2026) [https://web.archive.org/web/20250102190951/https://governor.mo.gov/press-releases/archive/governor-parson-signs-hb-1751-law].
94. *Opposition to Threat of Landfill Development*, *supra* note 3; H.B. 1751, 102nd Gen. Assemb., 2nd Reg. Sess. (Mo. 2024); MO. REV. STAT. § 260.205.9 (2022).
95. *Compare* H.B. 1751, 102nd Gen. Assemb., 2nd Reg. Sess. (Mo. 2024), *with* H.B. 909, 102 Gen. Assemb., 1st Reg. Sess. (Mo. 2023). MO. REV. STAT. § 260.205.9 (2022).
96. Emeka Duruigbo, *Fracking and the NIMBY Syndrome*, 26 N.Y.U. ENV'T L.J. 227, 232, 239–40 (2018) (exaplaining that NIMBYism (an abbreviation of Not In My Back Yard) is a phenomenon wherein landowners and host communities will act to prevent potential controversial industrial or non-industrial projects the landowners or communities deem undesirable).
97. Gary A. Abraham, *Fanning the Flames of NIMBY: A Book Review of the Promise and Peril of Environmental Justice*, 6 BUFF. ENV'T L.J. 115, 117 (1998).

understandable and even positive concerns justifying their resistance to projects such as fracking.[98]

The communities in Duruigbo's article faced development of a local fracking operation that carries a host of environmental concerns with it.[99] These concerns were largely born by residents who would not receive the economic benefits of such development.[100] Unlike those communities, the people of Raymore are not fighting against a potentially environmentally disastrous fracking operation that would benefit only a few. They are fighting against a necessary public health infrastructure project with widespread benefits and minimal local costs, and they are doing so because they feel somebody else should deal with it. Much of Missouri may be geologically unfit for landfills due to the increased difficulty of maintaining a safe, sanitary landfill in certain regions.[101] H.B. 1751 increases the amount of land unfit for landfills but due to political, not geological reasons.[102]

There are 1,268 sub-county governments in Missouri that would be able to enforce the one-mile setback.[103] These sub-county governments cover 4.8% of Missouri's total land area.[104] The average size of a municipality in Missouri is 3.18 square miles.[105] The original half-mile setback prevented landfills from being placed in an additional 1,579 square miles. By increasing the setback to a full mile, an additional 2,095 square miles that would have been available to landfills is now potentially closed off to them.[106] This area amounts to an additional 5.3% of Missouri's land area closed off to landfills, removing a total of 10.1% of the State's area just due to municipalities and

98. Duruigbo, *supra* note 96, at 239–40.

99. *Id.* at 240–41.

100. *See id.* at 233, 240–41 (exploring the distribution of the benefits and dangers of fracking and how it affects local opposition to fracking development).

101. *See* MO. GEOLOGICAL SURV. & WATER RES., SANITARY LANDFILLS 3 (describing important factors to consider when siting a landfill, particularly regarding site geology and explaining that siting a landfill in the southeastern quarter of the state may require extensive remedial work) (on file with author).

102. *Opposition to Threat of Landfill Development*, *supra* note 3.

103. U.S. DEP'T OF COM.: U.S. CENSUS BUREAU, G22-CG-ISD, INDIVIDUAL STATE DESCRIPTIONS 2022, at 176 (2022).

104. This was calculated using a list of Missouri's cities and their land area, which was added together and divided by Missouri's total land area from the U.S. Census. *Missouri Land Area City Rank*, USA.COM, http://www.usa.com/rank/missouri-state--land-area--city-rank.htm (last visited Mar. 25, 2025) [https://web.archive.org/web/20240727161547/http://www.usa.com/rank/missouri-state--land-area--city-rank.htm]; *Missouri-Raymore Census*, *supra* note 77.

105. This was calculated using the same data set as the area coverage from the previous footnote. *See Missouri Land Area City Rank*, *supra* note 104.

106. These areas were calculated assuming the footprint of all cities was a square. This assumption is likely to lead to an underestimate as opposed to more irregular or circular shapes. Because this assumption will likely result in an underestimate, it should result in making the problem appear less severe than it actually is.

their setbacks.[107] Because the City of Raymore wanted to push the necessary infrastructure of a landfill on somebody else, there has been a major decrease in available land. Further, the setback is particularly dangerous because it arbitrarily limits possible siting locations and increases the difficulty of siting landfills without good cause. More than that, it is plainly unfair to allow an affluent community to buy its way out of the potential negative externalities of necessary public infrastructure. This unfairness is especially poignant when the community goes outside the proper channels of public participation by changing state law solely for their benefit.

Statewide laws should serve the people of the State broadly—H.B. 1751 does not. It may appear to apply broadly, but its most sinister effect is empowering other municipalities to try to recreate the Raymore Controversy. Raymore is an affluent municipality, but it is not even in the top 50 richest municipalities in Missouri.[108] However, it could still leverage enough political capital to fight the landfill. Raymore's success may inspire other more affluent municipalities to similarly fight landfills. Such behavior needs to be nipped in the bud. Missouri has a duty to its people to provide for safe, efficient waste management, but Missourians also have a duty to each other not to act as a roadblock to safe, efficient waste management. The City of Raymore has failed to live up to that duty.

III. SOLUTIONS TO THE RAYMORE CONTROVERSY

To address the potential procedural quagmire associated with House Bill 1751 (H.B. 1751), and any future bills inspired by its success, three solutions are proposed: the repeal of H.B. 1751; a "stop-the-clock" law; and applying eminent domain-like power to waste management companies. The repeal of H.B. 1751 is rather straightforward. Reverting the law to its pre-2024 state would address the immediate concern of allowing municipalities to have an outsized influence on the siting of landfills necessary to meet local need. Also, it may have a discouraging effect on other municipalities seeking to try the same thing were a landfill proposed at the setback limit near them. The "stop-the-clock" law is intended to not just resolve the Raymore Controversy, but to stymie potential future Raymore Controversies. The law would require that a potential landfill only comply with those laws and regulations in place when the landfill begins the

107. This was calculated with an increase to account for the additional setback. It used the same data set as the initial area calculation. *Missouri Land Area City Rank*, *supra* note 104.

108. *Missouri-Raymore* Census, *supra* note 77; Andrew DePietro, *Here Are the Richest Cities in Missouri, From the Latest Census Data*, FORBES (Oct. 18, 2023), https://www.forbes.com/sites/andrewdepietro/2023/10/18/here-are-the-richest-cities-in-missouri-from-the-latest-census-data/.

permitting process. The eminent domain-like power is intended to put a hard limit on a local municipality's ability to interfere with the construction of a landfill. Subpart A of this Part explores potential environmental justice and other consequences that may arise if H.B. 1751 is repealed. Subpart B explores what consequences may arise if a "stop-the-clock" law is passed to protect a landfill from laws or regulations put in place during its permitting process. Subpart C explores the potential of granting landfills eminent domain authority to prevent local interference with landfills.

A. Repealing H.B. 1751 and Potential Consequences for Environmental Justice

The basic premise of repealing H.B. 1751 is quite simple; H.B. 1751 added an additional hurdle to the proliferation of landfills, and the legislature should remove that hurdle. Raymore officials based their opposition to the landfill on potential harm to public health, the economy, and the environment.[109] H.B. 1751 does not address these harms; it merely allows Raymore to push them off on somebody else, someone who likely lacks the resources to change the law in their favor. Further, the requirements of Subtitle D and Missouri's own regulations promulgated pursuant to Subtitle D already address these harms.[110]

H.B. 1751 is not the result of a sincere desire to ensure that landfills are safe for human health and the environment. It merely exists to prevent the City of Raymore from having to live near a landfill. Raymore's insincerity is evident because H.B. 1751 does not address any of the harms Raymore names. It seems to fail to achieve its objective as a result, but that is not the case. H.B. 1751 accomplishes the true objective of Raymore mentioned above, killing the landfill.[111] Therefore, H.B. 1751 should be repealed because it fails to accomplish its named objective and serves only to impede landfill proliferation.

A potential repeal of H.B. 1751 does raise some concerns, most notably potential environmental justice concerns.[112] Environmental justice is founded on the principle that efforts should be made to ensure that communities and populations are not disproportionately exposed to environmental harms.[113]

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109. *Opposition to Threat of Landfill Development*, *supra* note 3.

110. Drilling, *supra* note 22, at 21.

111. *See* Section I.E.

112. Emily Sims, *Backyards to Junkyards: Exposing Alabama's Environmental Injustice*, 14 ALA. C.R. & C.L. L. REV. 27, 27–28, 51–53 (2023).

113. *See* DAVID SCHLOSBERG, DEFINING ENVIRONMENTAL JUSTICE: THEORIES, MOVEMENTS, AND NATURE 4–5 (2007) (exploring the gap between environmental justice theories and movements due to disparate definitions and concepts of justice).

Environmental justice issues affect communities, which includes low-income and minority populations.[114] Unfortunately, environmental justice issues are not foreign to landfill siting concerns.[115] Alabama has had multiple civil actions raised alleging the Alabama Department of Environmental Management discriminated based on race in its failure to act on environmental justice concerns during siting decisions.[116]

A key aspect to addressing potential environmental justice concerns is engaging with the affected communities.[117] The Environmental Protection Agency's strategy for working with these communities is ensuring there is *meaningful engagement*. This includes timely opportunities for community engagement, seeking and encouraging involvement by potentially affected persons, and providing technical assistance to ensure *meaningful and informed* participation.[118] Frankly, this proposal seems to fly in the face of meaningful and information participation because repealing H.B. 1751 appears to tell the people of Raymore that their input and concerns do not matter. It could be, except for one key detail. Restoring the half-mile setback to landfills does not inhibit the public from participating in the landfill process. A key part of the required process is multiple public meetings allowing members of the public to voice concerns or seek information about the nature of the landfill—a process Raymore officials did not allow to take place.[119]

There is an additional aspect of environmental justice the Missouri Department of Natural Resources (DNR) should implement to make the current public participation more effective: the DNR should provide education opportunities on landfills to residents as part of the permitting process.[120] Additional educational opportunities could help people to understand what is involved in the landfill permitting process. It would also allow for more well-informed feedback, which furthers the goals of

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114. *Id.* at 4.

115. Sims, *supra* note 112, at 27–28.

116. *Id.* at 31–47.

117. *Learn About Environmental Justice*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/environmentaljustice/learn-about-environmental-justice (last visited Mar. 31, 2026) [https://web.archive.org/web/20250109224510/https://www.epa.gov/environmentaljustice/learn-about-environmental-justice].

118. *Id.*

119. *See Solid Waste Landfill Permits*, *supra* note 2.

120. *Environmental Justice in Your Community*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/environmentaljustice/environmental-justice-your-community (last visited Mar. 31, 2026)[https://web.archive.org/web/20250123034801/https://www.epa.gov/environmentaljustice/environmental-justice-your-community].

environmental justice by ensuring that residents are not facing down corporate interests with as much of an information asymmetry.[121]

Still, repealing H.B. 1751 seems to remove local input, and removing local input is contrary to the very essence of environmental justice. These proposed solutions do not remove the input during the DNR's landfill permitting process. It merely prohibits cities who have the money and political power to do so from forcing necessary, if unattractive, infrastructure onto those without the resources to fight. Someone must live near the landfill. Affluent cities should not be allowed to use their wealth to push the perceived negative externalities of landfills on those less fortunate. By ensuring that wealthier communities are not able to skirt the system of public participation that is already in place, it levels the playing field for those communities without the resources to push necessary infrastructure onto someone else. Though it may seem counterintuitive, the proposed solutions are better for environmental justice concerns by requiring everyone to voice their opinion on a proposed landfill in the same way; by using the public participation systems built into the permitting process.

Thus, while environmental justice concerns appear to be implicated by repealing H.B. 1751, the laws and regulations currently in place provide multiple opportunities for concerned members of the public to voice their concerns.[122] Although this is beneficial, providing additional education opportunities would help make public participation more effective. The Raymore Controversy did not expose a major flaw in the permitting process that Raymore's officials were able to exploit. Instead, it showed that some actors can circumvent the public participation process built into the permitting process, undermining Missouri's waste management system.

B. A "Stop-the-Clock" Law Prevents Mid-Construction Interference with Landfills

Just reinstating the old law is not enough. Additional laws should be put in place to protect landfills from the interference of new, unexpected procedures during the permitting process. The proposed "stop-the-clock" law is quite similar to "grandfathering" provisions found in many statutes. "Grandfathering" provisions let someone continue to act even if a new law says it cannot be done anymore.[123] "Grandfathering" does not accurately

121. *See* Subodh P. Kulkarni, *Environmental Ethics and Information Asymmetry Among Organizational Stakeholders*, 27 J. BUS. ETHICS 215, 224–25 (2000) (exploring how information asymmetry can influence firms to act in environmentally unjust ways).

122. *Solid Waste Landfill Permits*, *supra* note 2.

123. Heidi Gorovitz Robertson, *If Your Grandfather Could Pollute, So Can You: Environmental "Grandfather Clauses" and Their Role in Environmental Inequity*, 45 CATH. U. L. REV. 131, 131–32

communicate the purpose of the proposed "stop-the-clock" provision, hence the new terminology.

The proposed "stop-the-clock" provisions would require landfills to only follow the regulations and laws governing construction that were in place at the time the permitting began. That is not to say when the landfill breaks ground, but when it begins the permitting or surveying process with DNR. If it were limited to landfills that had already broken ground, it would not have protected the landfill at issue in the Raymore Controversy. Essentially, all permitting and construction requirements would be "frozen" in time at the time the process begins. The "stop-the-clock" provision would provide stability to those seeking to construct and operate a landfill and could encourage additional investment and proliferation of landfills around the state. Knowing that a landfill will not be randomly halted due to new regulations or laws brought about by an unhappy local municipality would make these investments more secure. After all, it takes years just to get through the permitting process, which provides ample opportunity for municipalities to interfere.[124]

One could argue that this proposal is nothing more than a normal "grandfathering" provision, but that misunderstands the purpose and effect of the proposed law. A "grandfathering" provision allows an entity that is already doing something to continue to do so, which implies the pre-existence of said entity when the law is made. The provision could be included in any future law affecting landfill development, which allowed landfills currently under construction to only comply with current law. That provision could and likely would be left out, however, because cities trying to replicate the Raymore Controversy's success will not want to exclude the proposed landfill from the new laws they are proposing. Also, if the "stop-the-clock" provision is its own law, it could provide a kind of inertia against repeal, even in future legislative efforts by municipalities just by virtue of being existing law.[125] It is one thing to change the law, and an entirely different question to repeal complete sections of it altogether.

Some concerns may arise due to this proposed legislation. Chief among them is that it could allow harmful practices to persist if new data or regulations show that the current methods of landfill construction are

(1995) (explaining that "grandfathering" comes from laws limiting voting in the wake of the Civil War to only those whose grandfathers had been allowed to vote.).

124. Flener, *supra* note 64.

125. *See* Michael J. Klarman, *Majoritarian Judicial Review: The Entrenchment Problem*, 85 GEO. L.J. 491, 505 n.66 (1997) (explaining how the difficulty of passing legislation increases when that legislation repeals existing law).

inadequate to prevent environmental harm.[126] For example, if the proposed "stop-the-clock" law was in place in 1994, when Missouri fully implemented requirements of Subtitle D, then a landfill that began the permitting process in 1993 would have avoided the "dry tomb" requirements of Subtitle D. This would have posed a major risk to public health and the environment in the vicinity.[127] Entrenching such harm would obviously be disastrous. Subtitle D and Missouri regulations promulgated pursuant to it were vital for creating the modern sanitary landfills that exist today.

The year is not, however, 1994. While new methods may emerge, modern sanitary landfills are engineering marvels with many systems in place to prevent harm to human health and the environment.[128] Simply put, the risk posed by a modern sanitary landfill only following current regulations seems miniscule.

Limiting how new laws can affect a landfill during construction could also discourage other municipalities from trying to recreate the Raymore Controversy. Knowing new laws cannot directly affect the permitting process may encourage disgruntled municipalities to attempt a more diplomatic approach through the public participation activities required under the landfill permitting process.[129]

C. Giving Landfills Eminent Domain Will Limit Local Interference with Landfill Siting

A third option lies in giving landfills the power of eminent domain, also known as expropriation.[130] Eminent domain is "the power of a governmental entity to take private property for a public use without the owner's consent."[131] Historically, eminent domain has been used to "facilitate

126. *See* Robertson, *supra* note 123, at 134–35 (exploring how grandfather clauses allowing existing polluters to continue do so to the detriment of effective environmental action).

127. Subtitle D's "dry tomb" approach required landfills to be lined with plastic sheeting and compacted soil to prevent leachate from reaching and harming the environment. Protected from the "dry tomb" requirements, a pre-Subtitle D landfill would be much more likely to leach pollutants into the surrounding environment. This leaching could pose major public health effects if the leachate reached groundwater. *See* Drilling, *supra* note 22, at 21 (listing some of Subtitle D's requirements); G. FRED LEE & ANNE JONES-LEE, IMPACT OF MUNICIPAL AND INDUSTRIAL NON-HAZARDOUS WASTE LANDFILLS ON PUBLIC HEALTH AND THE ENVIRONMENT 2 (1994) (explaining the "dry tomb" approach of Subtitle D regulations).

128. Drilling, *supra* note 22, at 20–21.

129. *Solid Waste Landfill Permits*, *supra* note 2.

130. Christopher Serkin, *Exacting Assessments: Sheetz and the Problem of Stategraft*, 2024 WIS. L. REV. 641, 644 (2024) (arguing that legislative exactions, "obligations imposed on property owners as a condition for developing their property," should not be subject a heightened constitutional review).

131. Rex Realty Co. v. City of Cedar Rapids, 322 F.3d 526, 528 (8th Cir. 2003) (quoting ACCO Unlimited Corp. v. City of Johnston, 611 N.W.2d 506, 528 (Iowa 2000) (citation omitted)).

transportation, supply water, construct public buildings, and aid in defense readiness."[132] The power of eminent domain, however, does not solely belong to the government.[133] As far back as the 1890s, private companies have been legislatively endowed with eminent domain authority.[134] Originally, this authority was given to common carriers like railroads.[135] In the 20th Century, this authority was extended to natural gas companies allowing them to build pipelines by acquiring easements with eminent domain granted to them by the Federal Energy Regulatory Commission (FERC).[136] Essentially, there is a long history of allowing the taking of private property for public use, even if the land is being given to a private company to develop.[137]

In Missouri, eminent domain has been used to allow local governments to use land for public services, such as landfills.[138] In *Appelbaum*, the Missouri Supreme Court held that "a body with the power of eminent domain is not subject to the zoning regulations of another body."[139] In *Appelbaum*, St. Louis County approved a trash incinerator and landfill in the Village of Bel-Ridge.[140] Multiple residents sued, alleging the incinerator and landfill violated Bel-Ridge's "zoning ordinance and residential character."[141] Under Article VI, Section 18 of the Missouri Constitution, St. Louis County was authorized to acquire land by eminent domain to build an incinerator if it was "found necessary for the protection of public health."[142] Simply put, the Village of Bel-Ridge lacked the power to enforce their zoning ordinances against St. Louis County.[143] A new law could give waste management companies that same power.

While eminent domain normally broadcasts the image of a government seizing an unwilling landowner's land, this proposal restricts such a broad use of that power.[144] Waste management companies should not be able to

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132. *History of the Federal Use of Eminent Domain*, U.S. DEP'T JUST., https://www.justice.gov/enrd/condemnation/land-acquisition-section/history-federal-use-eminent-domain (last visited Mar. 31, 2026).

133. *Id.*

134. Roberts v. N. Pac. R. Co., 158 U.S. 1, 17 (1895).

135. *Id.*

136. FEDERAL ENERGY REGULATORY COMMISSION, AN INTERSTATE NATURAL GAS FACILITY ON MY LAND? WHAT DO I NEED TO KNOW? 8 (2015).

137. *History of the Federal Use of Eminent Domain*, *supra* note 132.

138. Appelbaum v. St. Louis Cnty., 451 S.W.2d 107, 113 (Mo. 1970).

139. Anthony P. Farrell, *Obstacles to the Formation of Solid Waste Landfills in Missouri*, 2 MO. ENV'T. L. & POL'Y REV. 134, 136 (1995); *Appelbaum*, 451 S.W.2d at 113.

140. *Appelbaum*, 451 S.W.2d at 108–09.

141. *Id.* at 109.

142. *Id.*

143. *Id.* at 112–13.

144. *History of the Federal Use of Eminent Domain*, *supra* note 132.

declare an area a landfill and exercise unrestricted eminent domain. These companies should be able to use a form of eminent domain like natural gas pipelines can use pursuant to an action authorized by FERC.[145]

FERC allows natural gas companies to acquire right-of-way easements for pipelines, compressor stations, and storage field locations.[146] The landowner still owns the land, and the landowner is compensated for the easement with a court-determined payment.[147] A major difference between eminent domain power given to these pipelines and what is proposed here is the consent of the landowner. If FERC determines the best route is through your backyard, you will be compensated, but you still lose some control over your land.[148] Waste management companies should not wield such broad power, but they should be able to acquire land from willing landowners even if a nearby municipality does not like it. Thus, eminent domain authority would allow landfills to be placed where there are landowners willing to sell without interference from local municipalities.

Giving waste management companies a form of eminent domain allows them to place a landfill where landowners are willing to sell. Regardless of the municipality's resistance, this would once again remove a barrier to landfill proliferation. Further, this proposal has support from Missouri's own legal past due to cases like *Appelbaum*.[149] Essentially, the proposed legislation would codify *Appelbaum* in such a way as to remove local municipalities' ability to interfere with the proliferation of landfills. As with the repeal of H.B. 1751, this proposal would not remove the requirements of public engagement from the permitting process, it would merely remove the "veto" local municipalities have for adjacent landfills. The mere repeal of H.B. 1751 and this proposed eminent domain law may have some conflict, but the municipal "veto" can still exist if it were limited to the original half-mile setback. Further, this proposal is not wholly unique or even novel. It is rooted in the long history of eminent domain allowing even private companies to use eminent domain to put land to public use.[150]

Finally, this third proposal may raise similar environmental justice concerns as the proposed repeal of H.B. 1751. These concerns are real, but if the half-mile setback and its functional "veto" are maintained, the communities would still have a strong and effective voice to ensure their concerns are heard. Also, drawing a hardline at the half-mile setback and not

145. FEDERAL ENERGY REGULATORY COMMISSION, *supra* note 136, at 8.

146. *Id.*

147. *Id.*

148. *Id.*

149. Appelbaum v. St. Louis Cnty., 451 S.W.2d 107, 113 (Mo. 1970).

150. FEDERAL ENERGY REGULATORY COMMISSION, *supra* note 136; Roberts v. N. Pac. R. Co., 158 U.S. 1, 17 (1895).

allowing the veto to extend beyond it would appear to limit the community's voice. Still, this hardline should be maintained, but so should the public participation requirements already built into the permitting process. Ensuring the public participation requirements are followed would provide meaningful engagement, even if the end result is not necessarily what the community would want.

Overall, these three proposals—the repeal of H.B. 1751; a "stop-the-clock law"; and the application of a modified eminent domain for waste management companies—could help ensure Missouri has the proper infrastructure as more landfills fill up. These proposals would remove the roadblocks to landfill proliferation and would stymie future roadblocks before they arise. There are some environmental justice concerns, but these can be accounted for by robustly applying the currently required public participation in the permitting process. Thus, these proposals can go far in ensuring Missouri's waste management infrastructure will meet the needs of the state as it continues to grow.

CONCLUSION

Landfills are an extremely important piece of public health infrastructure, which are unfairly maligned in the media and by public officials. Unfortunately, the State of Missouri only has 17 landfills, and they are running out of space. Modern sanitary landfills are highly regulated engineering marvels that protect human health and the environment through strict requirements for those who construct, operate, and monitor them. The last thing landfills need is additional construction requirements that do nothing to make landfills safer. H.B. 1751 does nothing to make landfills safer; it only creates additional roadblocks to their construction based on Raymore's NIMBYist fears of having to bear the burden of modern infrastructure. Local municipalities cannot be allowed to change the law to prevent landfills from being built nearby. Thus, H.B. 1751 should be repealed, and the half-mile setback should be reinstated.

However, just repealing one bad law is not enough. Additional protections for landfills must be put in place. The "stop-the-clock" provision would protect landfills from onerous or changing regulations and laws meant purely to delay or prevent construction such as in the case of the Raymore Controversy. Additionally, giving landfills a form of eminent domain, overseen by the Missouri Department of Natural Resources (DNR), would allow them to build landfills where they are needed, even if a particular city does not support it. Together, these additional policies would prevent interference with partially constructed landfills outside of the public

participation requirements. This ensures that landfills can be built as needed without hurdles.

These policies do raise some environmental justice concerns, but the proposed solutions do not remove any of the public participation required by the DNR's current permitting process. State laws should apply broadly to ensure everyone has a voice. The proposed solutions do nothing to take that away and ensure that affluent communities cannot use their wealth to tip the scale.

Landfills need to be built. Missouri's legislature must repeal H.B. 1751 and institute the proposed solutions to protect landfills in their design and construction phase. These proposed solutions will ensure that a vital piece of public health infrastructure can continue to serve as our need for landfills continues to grow.