

Cultural Burning Can Mitigate Climate Change and Produce Income for Native American Tribes

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INTRODUCTION

Cultural burning is important to Indigenous people’s lifeways, tying together land management, environmental stewardship, cultural perpetuation, and food production. Cultural burning also quantifiably mitigates climate change and therefore can generate carbon credits which can be sold. For Aboriginal and Torres Strait Islander people, using cultural burning to generate carbon credits by way of the Australian savanna burning program annually provides \$50 million AUD (\$33 million USD) in revenue, achieves a reduction of more than one million tons of greenhouse gas (GHG) emissions, and provides jobs, training, and cultural enrichment to Indigenous communities.¹ A similar program is not only feasible in the United States but crucially important. It would generate much-needed revenue

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1. *Fighting Fire with Fire*, THE NATURE CONSERVANCY AUSTRALIA. (Feb. 28, 2023), <https://www.natureaustralia.org.au/what-we-do/our-priorities/climate-change/climate-change-stories/fighting-fire-with-fire/>.

for Native American Tribal Nations and their citizens, bolster the nation's efforts to reduce wildfire risk and severity, and combat climate change using nature-based solutions.

I. THE IMPORTANCE OF CULTURAL BURNING

Cultural burning is the practice by Indigenous peoples around the world of intentionally lighting small, controlled, low-temperature fires.² Cultural burning is a traditional land management technique successfully used for thousands of years to improve the health of the vegetation, hunt game, and improve productivity. The benefits of cultural burning include thinning forests and encouraging new growth; reducing fuel loads, wildfire risk, and severity; breaking down nutrients for richer soil; clearing out invasive species or diseases and improving habitat and biodiversity. Cultural burning has a profound cultural significance. It is part of the fabric of many Indigenous societies, a key part of spending time connected to the land and passing down oral traditions and knowledge. The Southern Paiute consider fire an important tool for maintaining the land, which is viewed as a close relative.³ The Seminole of Florida traditionally used fire to improve access to culturally important plants and to ease passage through swamps.⁴

European colonial governments made cultural burning illegal as it was at odds with their traditional fire management model of suppression. The prohibition of cultural burning also fit within a larger cultural genocide aimed at Native Americans, which sought to persecute and dispossess Native Americans and separate them from their cultural practices and land.⁵ In 1850, the U.S. Congress banned cultural burning in the Act for the Government and Protection of Indians.⁶ Canada's Brush Fire Act, which purported to prevent wildfires sparked by locomotives, had the same practical effect of banning cultural burning and the ceremonies associated with this ancient practice.⁷

2. *Indigenous Fire Practices Shape Our Land*, NAT'L PARK SERV., <https://www.nps.gov/subjects/fire/indigenous-fire-practices-shape-our-land.htm> (Last updated Sept. 5, 2023).

3. Jonathan W. Long et al., *The Importance of Indigenous Cultural Burning in Forested Regions of the Pacific West, USA*, FOREST ECOLOGY AND MGMT., Sept. 2021, at 5, https://www.fs.usda.gov/psw/publications/jwlong/psw_2021_long003.pdf.

4. Robyn Broyles, *Seminole Tribe of Florida Using Water and Fire to Restore Landscapes While Training Wildland Firefighters*, U.S. DEP'T OF THE INTERIOR INDIAN AFFS. (Mar. 1, 2017, 12:00 AM), <https://www.bia.gov/news/seminole-tribe-florida-using-water-and-fire-restore-landscapes-while-training-wildland>.

5. Shamiran Mako, *Cultural Genocide and Key International Instruments: Framing the Indigenous Experience*, INTERNATIONAL JOURNAL ON MINORITY AND GROUP RIGHTS 19, 2012, at 177, 181, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2087175.

6. Cal. Stats. ch. 133 (1850); Kimberly Johnston-Dodds, *Early California Laws and Policies Related to California Indians*, CALIFORNIA RESEARCH BUREAU, Sept. 2002, at 29, <https://www.courts.ca.gov/documents/1B.pdf>.

7. Jeremiah Rodriguez, *Gov't Disregard of Indigenous Prescribed, Cultural Burns 'Created This Catastrophe': Advocates*, CTV NEWS (July 27, 2021), <https://www.ctvnews.ca/climate-and-environment/gov-t-disregard-of-indigenous-prescribed-cultural-burns-created-this-catastrophe-advocates-1.5525057>.

In Australia, Aboriginal and Torres Strait Islander people have practiced cultural burning, also known as fire-stick farming, for over 10,000 years and perhaps up to 50,000.⁸ Beginning with the British invasion in 1788, Aboriginal and Torres Strait Islander people were gradually dispossessed, and their land became occupied by European settlers who imposed a policy of fire suppression.⁹ The changes in land management from regular burning to complete suppression dramatically affected the ecosystem.¹⁰ The 1851 Black Thursday Bushfires devastated 5 million hectares in the state of Victoria, then one of the most heavily settled regions of Australia.¹¹ Some Australian farmers, having witnessed the benefits of fire-stick farming, continued the burning practices of Aboriginal and Torres Strait Islander peoples until the passage of the Land Conservation Act 1970, which banned regular burning under the pretense of protecting the bush from human involvement.¹²

Recent studies show a direct link between the passage of the 1970 Land Conservation Act in Australia and the proliferation of dense, fire-prone forests in areas previously dominated by grass and herb species, resulting in irregular but catastrophic fires.¹³ One 2022 study found that the end of cultural burning led to denser, more fire-prone forests.¹⁴ The authors concluded that Australia's current fire crisis, epitomized by the devastating 2019 bushfires, can "trace its origins back to the colonial suppression of Indigenous cultural burning and subsequent attempts to suppress landscape fire."¹⁵

The 1850 ban on cultural burning on the landscape in the United States has had similar effects. Fire suppression has led to a "fire-deficit," when fuel accumulates, and fires,¹⁶ when they do occur, have a much higher probability of causing massive damage. There has been a "well-documented fire deficit and increase in forest biomass across Western U.S. forests from pre-colonization baselines due to fire suppression."¹⁷

8. Mark Constantine et. al., *A Dive Into The Deep Past Reveals Indigenous Burning Helped Suppress Bushfires 10,000 Years Ago*, THE CONVERSATION (April 16, 2023), <https://www.unsw.edu.au/newsroom/news/2023/04/a-dive-into-the-deep-past-reveals-indigenous-burning-helped-supp>; Christopher N. Johnson, *Fire, people and ecosystem change in Pleistocene Australia*, 64 AUSTRALIAN JOURNAL OF BOTANY, Aug. 28, 2016, at 643, 643-651, <https://www.publish.csiro.au/BT/BT16138>.

9. Michael-Shawn Fletcher et. al., *How 1970s Conservation Laws Turned Australia Into A Tinderbox*, PHYS.ORG (November 1, 2022), <https://phys.org/news/2022-11-1970s-laws-australia-tinderbox.html>.

10. *Id.*

11. *Id.*

12. *Id.*

13. Laming et. al., *The Curse of Conservation: Empirical Evidence Demonstrating That Changes in Land-Use Legislation Drove Catastrophic Bushfires in Southeast Australia*, FIRE, Oct. 26, 2022, at 2-3, <https://www.mdpi.com/2571-6255/5/6/175>.

14. *Id.*

15. *Id.*

16. Crystal A. Kolden, *We're Not Doing Enough Prescribed Fire in the Western United States to Mitigate Wildfire Risk*, FIRE, May 29, 2019, at 3, <https://www.mdpi.com/2571-6255/2/2/30>.

17. John T. Abatzoglou et. al., *Projected Increases in Western US Forest Fire Despite Growing Fuel Constraints*, COMM'NS EARTH & ENV'T, Nov. 2, 2021, at 3, <https://www.nature.com/articles/s43247-021-00299-0>.

The resulting landscape changes from open meadows and grassland maintained with regular, low-intensity fires to dense, woody forests have caused increasingly frequent and destructive fires. The three most costly fires in the United States recorded between 1980 and 2023 occurred just in the past six years.¹⁸ In the United States, the 2018 fire season burned 8.7 million acres, destroyed 18,500 buildings, killed 106 people, and cost an estimated \$28.8 billion USD.¹⁹ Similarly, Australia's catastrophic 2019/2020 wildfires burned 60 million acres, killed thirty-four people, impacted or killed an estimated 3 billion animals, even driving some species to extinction, and cost Australia an estimated \$78–88 billion AUD (\$50–57 billion USD).²⁰

The climate-fire feedback loop exacerbates the trend of increasingly destructive wildfires: more carbon emissions drive hotter and drier conditions, making forests more prone to fires and those fires longer and hotter.²¹ The longer and hotter the fires are, the more carbon the fires release, contributing further to the GHG emissions driving climate change. Larger, hotter fires also destroy carbon sinks and prevent forests from regrowing,²² threatening attempts to tackle climate change. For example, in California, wildfires destroyed almost all forest carbon offsets in a 100-year reserve which was set aside as a buffer to insure all California's forestry carbon projects against fire damage for the next hundred years.²³

II. CULTURAL BURNING AS A SOURCE OF REVENUE: THE AUSTRALIAN EXAMPLE

As is usual in land management and many other areas, modern Western science is only now beginning to understand the verifiable and impressive benefits of Indigenous knowledge, such as cultural burning by way of its sanitized cousin—prescribed burns.²⁴ Cultural burning and prescribed burns both prevent the

18. *Billion-Dollar Weather and Climate Disasters*, NAT'L CTRS. FOR ENV'TAL INFO. [https://www.ncei.noaa.gov/access/billions/events/US/1980-2023?disasters\[\]=wildfire](https://www.ncei.noaa.gov/access/billions/events/US/1980-2023?disasters[]=wildfire) (last accessed Oct. 3, 2023); *Facts + Statistics: Wildfires*, INS. INFO. INST., <https://www.iii.org/fact-statistic/facts-statistics-wildfires> (last accessed Jan. 26, 2024).

19. *Billion-Dollar Weather*, *supra* note 18.

20. Michael Slezak, *3 Billion Animals Killed or Displaced in Black Summer Bushfires*, *Study Estimates*, ABC NEWS (July 27, 2020 8:10 PM), <https://www.abc.net.au/news/2020-07-28/3-billion-animals-killed-displaced-in-fires-wwf-study/12497976>; Kieran Pender, *How the Long Recovery from Bush Fires Could Decide Australia's Election*, NEW YORK TIMES (May 16, 2022) <https://www.nytimes.com/2022/05/16/world/australia/cobargo-bushfires-election.html>; Paul Reed & Richard Denniss, *With Costs Approaching \$100 Billion, The Fires Are Australia's Costliest Natural Disaster*, THE CONVERSATION (Jan. 16, 2020), <https://theconversation.com/with-costs-approaching-100-billion-the-fires-are-australias-costliest-natural-disaster-129433#>.

21. James McCarthy et. al., *The Latest Data Confirms: Forest Fires Are Getting Worse*, WORLD RES. INS. (Aug. 29, 2023), <https://www.wri.org/insights/global-trends-forest-fires>.

22. See Nancy Averett, *Climate Change, Megafires Crush Forest Regeneration*, EOS (April 28, 2023), <https://eos.org/articles/climate-change-megafires-crush-forest-regeneration>.

23. Camilla Hodgson, *Wildfires Destroy Almost All Forest Carbon Offsets in 100-Year Reserve, Study Says*, FIN. TIMES (Aug. 4, 2022), <https://www.ft.com/content/d54d5526-6f56-4c01-8207-7fa7e532fa09>.

24. Henry Michel & Donald V. Gayton, *Linking Indigenous Peoples' Knowledge and Western Science in Natural Resource Management*, S. INT. FOREST EXTENSION & RSCH. P'SHIP, 2002, at 7, 11,

accumulation of fuel, reducing the number and severity of wildfires and leading to a reduction of emissions of up to 60 percent.²⁵ A recent study of prescribed burning in Mediterranean countries found that the emissions reductions gained from prescribed burns can offset the carbon emissions produced by prescribed burning itself.²⁶ Prescribed burns and cultural burning can also stabilize and preserve carbon storage in the soil.²⁷

The potential for cultural burning to reduce carbon emissions provides an opportunity to monetize this practice for the cultural and social benefit of Indigenous peoples and communities. In Australia, Indigenous organizations frequently have significant land holdings in the form of freehold title or under non-exclusive title, which acknowledges their traditional ownership (Native Title). Despite holding significant real estate interests, many Aboriginal and Torres Strait Islander people remain severely economically and socially disadvantaged.²⁸ Savanna burning carbon projects have proved transformative for Aboriginal and Torres Strait Islander people in many ways, allowing them to leverage their cultural burning practices as a carbon farming method and sell the resulting quantified emissions reductions as carbon credits on the voluntary carbon market (VCM).

This program began with the Western Arnhem Land Fire Abatement (WALFA) project in 2005 after years of preparation, capacity building, and research.²⁹ The program aimed to reduce fire occurrence, intensity, and extent and, therefore, reduce emissions through cultural burning principles, including burning in the early dry season.³⁰ The WALFA project was operational as of 2005 and achieved dramatic results: a mean annual emissions reduction of 37.7 percent (116,968 tCO₂-e) from the baseline over the first seven years of operation.³¹ A number of nonprofit groups supported these early efforts. This included The Nature Conservancy, which helped Aboriginal and Torres Strait Islander communities plan, prepare for, and register

<https://rem-main.rem.sfu.ca/forestry/publications/PDFs.of.Papers/Science.and.Trad.Mgmt.02.pdf>; See *Indigenous Knowledge*, THE WHITE HOUSE, <https://www.whitehouse.gov/ostp/ostps-teams/climate-and-environment/indigenous-knowledge/> (last accessed Oct. 6, 2023).

25. *New Study Finds Prescribed Burning Can Actually Reduce the U.S. Carbon Footprint*, THE NAU REVIEW (April 15, 2010), <https://news.nau.edu/new-study-finds-prescribed-burning-can-actually-reduce-the-u-s-carbon-footprint/#:~:text=They%20found%20prescribed%20burns%20can,percent%20in%20certain%20forest%20system.>

26. Terhi Vile'n & Paulo M. Fernandes, *Forest Fires in Mediterranean Countries: CO₂ Emissions and Mitigation Possibilities Through Prescribed Burning*, 48 ENV'TAL MGMT. 565 (2011).

27. Chrissy Sexton, *Controlled Burns Reduce Carbon Emissions from Soil*, EARTH.COM, <https://www.earth.com/news/controlled-burns-reduce-carbon-emissions-from-soil/> (last accessed Oct. 6, 2023).

28. Jeremy Russell Smith et al., *Managing Fire Regimes in North Australian Savannas: Applying Aboriginal Approaches to Contemporary Global Problems*, 11 FRONTIERS IN ECOLOGY AND ENVIRONMENT, 2013, at e55-e56, <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1890/120251>.

29. Geoffrey J. Lipsett-Moore et al., *Emissions Mitigation Opportunities for Savanna Countries from Early Dry Season Fire Management*, 9 NATURE COMM'NS, 2018, at 2, <https://www.nature.com/articles/s41467-018-04687-7>.

30. Geoffrey, *supra* note 28.

31. Geoffrey, *supra* note 28.

savanna-burning carbon projects,³² and the Aboriginal Carbon Foundation (ACF), which pioneered a nationally accredited training program for Indigenous rangers.³³

Crucially, in 2012, the Australian Government formally endorsed the project-specific methodology used in the WALFA project to determine emissions reductions.³⁴ The determination approved the use of the Early Dry Season Savanna Burning Methodology (Savanna Burning Methodology) to produce carbon credits under the Carbon Credits (Carbon Farming Initiative) Act 2011 (“Carbon Credits Act”), which provides a framework for the certification and generation of carbon credits.³⁵ In the Carbon Credits Act, credits may be certified and created on a project-specific basis.³⁶ The quantity of offsets generated is calculated based on the baseline projection of what emissions would have been without a carbon offset project.³⁷ Credits certified under the scheme may then be either sold to designated large emitters who are required to reduce their emissions under Australia’s safeguard mechanism,³⁸ sold to Australian governmental entities to achieve their own carbon targets, or sold domestically or overseas to companies voluntarily seeking to reduce their carbon emissions.³⁹ Since credits can be sold to the Australian federal government, participants have price security, while more lucrative prices are sought from private buyers.⁴⁰

The Australian Government amended the Carbon Credits Act in 2014 to create the Emissions Reduction Fund (ERF). The ERF maintains a register of eligible carbon credit projects through which entities may obtain long-term public contracts to sell carbon credits to the Australian Government. The availability of government contracts funneled public funds to savanna burning projects, which rapidly proliferated. By January 2018, seventy-two savanna burning projects were registered with the ERF, fifty-two of which had contracts with the Australian Government.⁴¹

32. *Fighting Fire with Fire*, THE NATURE CONSERVANCY AUSTRALIA (Feb. 28, 2023), <https://www.natureaustralia.org.au/what-we-do/our-priorities/climate-change/climate-change-stories/fighting-fire-with-fire/>.

33. Firesticks and Aboriginal Carbon Foundation, *Cultural Fire Credit Philosophy and Guidelines*, ABORIGINAL CARBON FOUND., 2022, at 1.1 <https://www.abcfoundation.org.au/wp-content/uploads/Cultural-Fire-Credit-Philosophy-and-Guidelines-2022.pdf>.

34. *Carbon Credits Methodology Determination 2013* (Cth) (Austl.), <https://www.legislation.gov.au/Details/F2013L01165>.

35. See Andrew Macintosh & Lauren Waugh, *An Introduction to the Carbon Farming Initiative: Key Principles and Concepts*, ANU CENTRE FOR CLIMATE L. & POL’Y, 2012, https://www.researchgate.net/publication/254410219_An_introduction_to_the_Carbon_Farming_Initiative_Key_principles_and_concepts.

36. See Sophie Power, *Australia’s Climate Safeguard Mechanism: A Quick Guide*, PARLIAMENT OF AUSTRALIA (Dec. 3, 2018), https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1819/Australias_climate_safeguard_mechanism.

37. See *id.*

38. See *id.*

39. *Id.*

40. *About the Emissions Reduction Fund*, CLEAN ENERGY REGUL., <https://www.cleanenergyregulator.gov.au/ERF/About-the-Emissions-Reduction-Fund/How-does-it-work> (last visited Nov. 2, 2023).

41. About the Emissions Reduction, *supra* note 39.

The 2019/2020 bushfires spurred interest in cultural burning and Indigenous land management as a method to mitigate fire risk.⁴² The Australian Government launched a Royal Commission—the highest form of public inquiry—into the bushfires. The Bushfires Royal Commission devoted significant time to investigating Australia’s cultural burning history. The Bushfire Commission produced a background paper on cultural burning, recommending that Australian governments at all levels engage with Traditional Owners (those recognized as having traditional and cultural associations with the land) to further explore how Indigenous land and fire management could improve natural disaster resilience along with other opportunities to leverage Indigenous knowledge.⁴³ The strengthened public and government support of Indigenous cultural burning programs was the impetus for numerous states making funding available for cultural burning programs.⁴⁴ Funding also became available through the National Bushfire Recovery Fund and the Black Summer Bushfire Recovery Grants Program.⁴⁵ The infusion of public and government support catalyzed savanna burning programs in Australia.

Savanna burning programs have provided significant socioeconomic benefits for Indigenous Australian communities. By 2020, savanna programs generated \$15 million AUD (\$10 million USD) income for Indigenous land managers annually.⁴⁶ By February 2023, savanna burning carbon projects generated \$50 million AUD (\$33 million USD) for Indigenous organizations annually and reduced more than one million tons of emissions.⁴⁷ Savanna burning carbon projects have provided jobs, training, and cultural enrichment to Indigenous communities.⁴⁸ The Kimberley Land Council is one Indigenous Australian non-governmental organization that has benefited economically from practicing cultural burning.⁴⁹ The Kimberly Land Council was the first Indigenous group in Australia to register carbon businesses and has produced over one million Australian Carbon Credit Units (ACCUs), providing much-needed income for remote communities.

42. Isabella Higgins, *Indigenous Fire Practices Have Been Used to Quell Bushfires for Thousands of Years, Experts Say*, ABC NEWS (Jan. 8, 2020 11:01 AM), <https://www.abc.net.au/news/2020-01-09/indigenous-cultural-fire-burning-method-has-benefits-experts-say/11853096>.

43. *The Royal Commission in National Natural Disaster Arrangements, Report*, Oct. 28, 2020, at 21, 43, <https://www.royalcommission.gov.au/natural-disasters/report>.

44. See generally *Cultural Fire Grants*, VICTORIA STATE GOV, <https://www.environment.vic.gov.au/grants/cultural-fire-grants> (last visited Nov. 2, 2023).

45. *\$2 Million for Indigenous Fire Management*, AUSTL. GOV’T (Mar. 19, 2021), <https://www.indigenous.gov.au/news-and-media/announcements/2-million-indigenous-fire-management>; *Cultural Burning: Fighting Fire with Fire*, AUSTL. GOV’T NAT’L EMERGENCY MGMT. CENTER (Sep. 23, 2022), <https://nema.gov.au/stories/cultural-burning-fighting-fire-with-fire>.

46. *Indigenous Fire Revolution*, THE NATURE CONSERVANCY AUSTL. (Feb. 18, 2020) <https://www.natureaustralia.org.au/newsroom/indigenous-fire-revolution/>.

47. *Fighting Fire*, *supra* note 31.

48. *Id.*

49. See *Kimberley Aboriginal People are Using Traditional Fire Management to Develop Carbon Businesses*, KIMBERLEY LAND COUNCIL, <https://www.klc.org.au/savanna-burning-carbon-projects> (last accessed Nov. 2, 2023).

The ACF,⁵⁰ founded in 2010, developed the “Core Benefits Verification Framework” to provide independent, Indigenous verification of the environmental, social, and cultural values associated with a carbon project.⁵¹ Carbon credits generated from verified projects achieve a higher sale price as a premium product associated with positive social and cultural impact, and purchasers are assured their purchase benefits Aboriginal and Torres Strait Islander communities. Separate from the Savanna Burning Methodology, the ACF and the Firesticks Alliance have developed a Cultural Fire Credit, which is focused on cultural maintenance and revitalization and is not a carbon credit.⁵²

III. CAN A FIRE CREDIT WORK IN THE UNITED STATES?

Australia’s savanna burning program has created a suite of environmental, cultural, and social benefits for Aboriginal and Torres Strait Islander communities and organizations by linking Indigenous land management to the generation of a commodity, carbon credits. These credits can then be traded in compliance or voluntary markets in Australia and internationally.

New methods of generating revenue are badly needed for Native people in the U.S. Tribal governments lack many of the public finance tools available to state and local governments and have limited options to generate revenue while maintaining many of the same responsibilities.⁵³ Added to that, the median income for Native Americans is two-thirds the median income of non-Hispanic whites,⁵⁴ and the average Native American household has 8 cents of wealth for every dollar of the average white American household.⁵⁵

However, there are significant opportunities for Native American organizations to exercise stewardship over these trust lands and adjacent lands.⁵⁶ Tribal Nations have access to significant land resources (albeit greatly reduced through land cessations under exploitative treaties and destructive government policies, like the General Allotment Act), with 56 million acres of land held in trust by the United

50. See generally *What ABCF Offers Aboriginal Farmers*, ABORIGINAL CARBON FOUND., <https://www.abcfoundation.org.au/wp-content/uploads/AbCF-Services.pdf>, (last visited Nov. 3, 2023).

51. *Core Benefits Verification Framework*, ABORIGINAL CARBON FOUND., <https://www.abcfoundation.org.au/what-we-do/core-benefits-verification-framework> (last accessed Nov. 3, 2023).

52. *Carbon Credits*, *supra* note 33.

53. Matthew Gregg, *Separate But Unequal: How Tribes, Unlike States, Face Major Hurdles To Access The Most Basic Public Finance Tools*, BROOKINGS (Dec. 3, 2021), <https://www.brookings.edu/articles/separate-but-unequal-how-tribes-unlike-states-face-major-hurdles-to-access-the-most-basic-public-finance-tools/>.

54. Adam Creppelle, *Federal Policies Trap Tribes in Poverty*, 48 HUM. RTS. MAG., at 2 (Jan. 6, 2023), https://www.americanbar.org/groups/crsj/publications/human_rights_magazine_home/wealth-disparities-in-civil-rights/federal-policies-trap-tribes-in-poverty/?login.

55. National Indian Council on Aging, Inc., *Native Households Make 8 Cents for Every Dollar a White Household Has*, NCOA (Apr. 5, 2021), <https://www.nicoa.org/native-households-make-8-cents-for-every-dollar-a-white-household-has/>.

56. Cynthia R. Harris, *Reasserting Tribal Forest Management Under Good Neighbor Authority*, THE REGUL. REV. (Dec. 7, 2020), <https://www.theregreview.org/2020/12/07/harris-reasserting-tribal-forest-management-good-neighbor-authority/>.

States for various Native American tribes and individuals.⁵⁷ The U.S. government could integrate cultural burning carbon offset projects under existing natural resource management frameworks. For example, under the Tribal Forest Protection Act,⁵⁸ Tribal Governments may propose projects to the U.S. Forest Service or the Bureau of Land Management (BLM) that address resource threats,⁵⁹ such as fire. A prospective cultural burning program meets this need. Similarly, Good Neighbor Authority under the Farm Bill allows the Forest Service to enter into agreements with state and Tribal forestry agencies to carry out forest management work. However, the exclusion of Tribes from the 2018 Farm Bill's revenue retention provision temporarily stifled the utility of this mechanism.⁶⁰ In April 2023, BLM introduced a proposed rule that would authorize BLM to issue conservation leases to qualified entities, including Tribal governments, for restoration and protection purposes, including to generate carbon offset credits.⁶¹

Some Tribes have already recognized significant success with carbon offset projects, albeit not yet any related to cultural burning. The Yurok tribe, with traditional lands in the contemporary state of California, has been particularly effective at selling forest carbon offsets to generate funds used for land buybacks and to buy back cultural artifacts.⁶²

With its attendant reduction in wildfire severity, cultural burning is badly needed in the United States. In the summer of 2023, wildfire smoke blanketed many major U.S. cities.⁶³ Calls to increase cultural burning and Indigenous land management have been steadily increasing,⁶⁴ and federal lawmakers have prioritized nature-based solutions.⁶⁵ There is also increased support for prescribed burns,⁶⁶ and

57. *Native American Ownership and Governance of Natural Resources*, U.S. DEPT. OF INTERIOR NATURAL RES. REVENUE DATA, <https://revenue.data.doi.gov/how-revenue-works/native-american-ownership-governance/> (last visited Nov. 3, 2023).

58. 25 U.S. Code § 3115a.

59. *Id.*; see, e.g., Cynthia R. Harris, *supra* note 55.

60. Cynthia R. Harris, *supra* note 55.

61. Conservation and Landscape Health, 88 C.F.R. 19583 (April 3, 2023), <https://www.federalregister.gov/documents/2023/04/03/2023-06310/conservation-and-landscape-health>.

62. Carolyn Kormann, *How Carbon Trading Became a Way of Life for California's Yurok Tribe*, THE NEW YORKER (Oct. 10, 2018), <https://www.newyorker.com/news/dispatch/how-carbon-trading-became-a-way-of-life-for-californias-yurok-tribe>.

63. See Corey Williams, *Air Quality Plummets in Parts of the U.S. Again Due to Wildfire Smoke from Canada*, PBS NEWSHOUR (Jun. 28, 2023), <https://www.pbs.org/newshour/nation/air-quality-plummets-in-parts-of-the-u-s-again-due-to-wildfire-smoke-from-canada>.

64. Alaa Elassar, *California once Prohibited Native American Fire Practices. Now, it's Asking Tribes to Use Them to Help Prevent Wildfires*, CNN (Apr. 3, 2022), <https://www.cnn.com/2022/04/03/us/california-native-american-fire-practitioners-wildfires-climate/index.html>.

65. *FACT SHEET: Biden-Harris Administration Announces Roadmap for Nature-Based Solutions to Fight Climate Change, Strengthen Communities, and Support Local Economies*, THE WHITEHOUSE (Nov. 8, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/08/fact-sheet-biden-%E2%81%A0harris-administration-announces-roadmap-for-nature-based-solutions-to-fight-climate-change-strengthen-communities-and-support-local-economies/>.

66. Tatum McConnell, *California Needs More Fire*, SIERRA CLUB (Nov. 5, 2022), <https://www.sierraclub.org/sierra/california-needs-more-fire-prescribed-burn>.

for Tribes to assist with fire management.⁶⁷ In April 2023, the Federation of American Scientists published Wildland Fire Policy Recommendations.⁶⁸ Eight of the twenty-three recommendations were related to cultural burning or Indigenous land management.⁶⁹ The recommendations range from calls to Congress to directly fund Tribal rangers and cultural burning to reducing existing barriers to more widespread cultural burning, including fostering qualification programs and reducing legal risks.⁷⁰ In its report to Congress, the Wildland Fire Mitigation and Management Commission called for similar policies. The Commission stated, “it is critical to dramatically increase both the frequency and scope of beneficial fire to mitigate wildfire impacts to both landscapes and communities.”⁷¹ The report made several recommendations focused on increasing the amount of cultural burning occurring and reducing risks and impediments to cultural burning.⁷² Some recommendations include calls for a compensation or claims fund to protect cultural burning practitioners, directing agencies to develop a strategic plan for prescribed fire at a national scale, acknowledging cultural burning in federal law, and requiring the Bureau of Indian Affairs to acknowledge that federally recognized Tribes may develop fire programs on Tribal trust lands.⁷³

IV. ENABLING FACTORS IN THE UNITED STATES

The need for cultural burning programs, as a force to generate revenue for Indigenous governments and communities and ameliorate the impacts of wildfire, is as present in the United States as in Australia. Australia had three key factors which contributed to the economic and social success of the savanna burning programs: (1) cultural burning practices could be linked to a reduction in GHG emissions, verified by an adopted methodology; (2) significant government funding helping establish and support the program; and (3) benefits to Indigenous people from the sale of carbon credits. These three enabling factors are all achievable, or already exist, in the United States.

A. Cultural Burning Produces a Quantifiable Reduction in GHG Emissions in the United States

There are strong indicators that cultural burning could significantly reduce carbon emissions in U.S. prairies and grasslands, analogous to Australia’s northern

67. William Tripp & Tony Marks-Block, *Facilitating Prescribed Fire in Northern California through Indigenous Governance and Interagency Partnerships*, 4(3) FIRE 37, Jul. 16, 2021, at 15-16, <https://www.mdpi.com/2571-6255/4/3/37>.

68. *Wildland Fire Policy Recommendations*, FED’N OF AM. SCIENTISTS (Apr. 24, 2023), <https://fas.org/publication/wildland-fire-policy-recommendations/>.

69. *Id.*

70. *Id.*

71. *On Fire: The Report of the Wildland Fire Mitigation and Management Commission*, U.S. DEP’T OF AGRIC., Sept. 2023, at 55, <https://www.usda.gov/sites/default/files/documents/wfmmc-final-report-09-2023.pdf>.

72. *Id.* at 55-63.

73. *Id.*

savannas. Fire can also reduce carbon emissions from forests. Studies indicate that prescribed fire can reduce wildfire severity and carbon emissions from Western Forests,⁷⁴ can increase soil carbon,⁷⁵ and can offset carbon emissions.⁷⁶ A pilot program is currently underway in British Columbia, advised by Indigenous Australian fire practitioner Victor Steffensen, to explore whether Indigenous-led fire management programs there can be supported through carbon markets.⁷⁷ While the climate, ecology, and vegetation in British Columbia are in specific ways distinct from the Australian savanna, they bear many similarities to forests of the Western United States. Experts believe the area holds significant promise for developing verified carbon credits and a recognized carbon credit framework is currently under development.⁷⁸

A methodology similar to the Savanna Burning Methodology already exists in the United States which can produce verifiable carbon offsets from cultural burning.⁷⁹ In the United States, the nonprofit Climate Forward has already developed the Avoided Wildfire Emissions Forecast Methodology (AWE Methodology). Cultural burning practitioners could use this methodology to generate carbon credits in the United States.⁸⁰ The AWE Methodology focuses on the beneficial use of fuel treatments—including cultural burning and prescribed fire—to reduce both the extent and severity of wildfires, resulting in a net reduction in GHG emissions.⁸¹ The AWE methodology was jointly developed by several public agencies and nonprofit organizations, including the California Department of Forestry and Fire Protection, and the Nature Conservancy, which also provided critical assistance with the development of Australia’s cultural burning program.⁸² The AWE methodology could enable the generation of carbon credits through cultural burning on any private or public lands in the Western United States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming).⁸³

74. Christine Wiedinmyer & Matthew D. Hurteau, *Prescribed Fire as a Means of Reducing Forest Carbon Emissions in the Western United States*, 44 ENVIRON. SCI. TECHNOL. 6, Feb. 11, 2010, at 1926, <https://pubs.acs.org/doi/abs/10.1021/es902455e>.

75. Chrissy Sexton, *Controlled Burns Reduce Carbon Emissions from Soil*, EARTH.COM (Dec. 23, 2021), <https://www.earth.com/news/controlled-burns-reduce-carbon-emissions-from-soil/>.

76. Adam Pellegrini et al., *Fire Effects on the Persistence of Soil Organic Matter and Long-Term Carbon Storage*, 15 NATURE GEOSCIENCE, at 5 (2022), <https://www.nature.com/articles/s41561-021-00867-1>.

77. William Nikolakis, *Diffusion of Indigenous Fire Management and Carbon-Credit Programs: Opportunities and Challenges for “Scaling-Up” to Temperate Ecosystems*, 5 FRONTIERS IN FORESTS & GLOBAL CHANGE, SEPT. 16, 2022, at 8, [HTTPS://WWW.FRONTIERSIN.ORG/ARTICLES/10.3389/FFGC.2022.967653/FULL](https://www.frontiersin.org/articles/10.3389/ffgc.2022.967653/full).

78. *Id.* at 1; *See Project Overview*, GATHERING VOICES, <https://www.gatheringvoices.com/tsilhqotin1> (last visited Nov. 8, 2023).

79. Nikolakis, *supra* note 76, at 10.

80. *See* Climate Forward, *Avoided Wildfire Emissions Forecast Methodology (Public Comment Draft)*, Jun. 2022, at 1-2, https://climateforward.org/wp-content/uploads/2022/06/CF-Forecast-Methodology-AWE_Public-Comment-Final.pdf.

81. *Id.*

82. *Id.*; *Fighting Fire with Fire*, *supra* note 27.

83. *See id.*

The AWE Methodology is part of The Reserve, a registered Offset Project Registry in the VCM, meaning Native American organizations using the AWE Methodology could generate registered carbon offsets in California, a compliance jurisdiction.⁸⁴ While the VCM is global and carbon offsets need not be produced in a compliance market, operating in a compliance market has significant benefits. Compliance markets are far larger than voluntary markets and offer additional pathways for funding carbon projects.⁸⁵ For example, the compliance market and the purchase of credits by the Australian government through the ERF injected \$2.5 billion into the program.⁸⁶

B. Funding

Tribes engaging in cultural burning to create carbon credits may also harness funding from federal and state sources of funding. Cultural burning straddles a number of different grant-eligible subjects, including climate change, nature-based solutions, sustainability, economic development, community resilience, land management, environmental justice, and climate justice.

A number of potentially applicable federal and state grants support the development of a cultural burning for carbon credits scheme. For example, Washington currently offers Tribal carbon offset assistance program grants,⁸⁷ which could arguably cover a cultural burning program. Cultural burning also helps to create resilience and mitigates hazards by reducing the severity of wildfires. As such, it could be eligible for a Federal Emergency Management Agency grant.⁸⁸

Funding and new laws are also available specifically to protect practitioners from liability for cultural burning programs. California established a Prescribed Fire Liability Claims Fund Pilot and allocated \$20 million to cover losses in the event that a prescribed or cultural burn escapes control.⁸⁹ In 2021, California passed SB 332, which minimized prescribed and cultural burn practitioners' exposure to liability, and AB 642, which defined "cultural fire practitioner" and "cultural fire."⁹⁰

84. *Carbon Credits*, *supra* note 33.

85. *The Untapped Power of Carbon Markets in Five Charts*, BLOOMBERG NEF, <https://about.bnef.com/blog/the-untapped-power-of-carbon-markets-in-five-charts/#:~:text=Despite%20the%20hype%20of%20voluntary,to%20%242%20billion%20in%202021> (last visited Nov. 10, 2023).

86. Nikolakis, *supra* note 76, at 11.

87. *Tribal carbon offset assistance program grants*, DEP'T OF ECOLOGY STATE OF WASH, <https://ecology.wa.gov/About-us/Payments-contracts-grants/Grants-loans/Find-a-grant-or-loan/Tribal-Carbon-Offset-Assistance-Program> (last visited Nov. 9, 2023).

88. *Funding Nature Based Solutions*, FEMA, <https://www.fema.gov/emergency-managers/risk-management/climate-resilience/nature-based-solutions/funding> (last visited Nov. 9, 2023); *Promoting Nature-Based Hazard Mitigation Through FEMA Mitigation Grants*, THE NATURE CONSERVANCY, <https://www.nature.org/content/dam/tnc/nature/en/documents/Promoting-Nature-Based-Hazard-Mitigation-Through-FEMA-Mitigation-Grants-05-10-2021-LR.pdf> (last visited Nov. 9, 2023).

89. *Prescribed Fire Liability Claims Fund Pilot*, CAL. WILDFIRE & FOREST RESILIENCE TASK FORCE, <https://wildfiretaskforce.org/prescribed-fire-liability-claims-fund-pilot/#:~:text=This%20claims%20fund%20is%20intended,insurers%20back%20into%20the%20market> (last visited Nov. 10, 2023).

90. S.B. 332, 2021 Leg., Reg. Sess. (Cal. 2021); A.B. 642, 2021 Leg., Reg. Sess. (Cal. 2021).

However, it must be understood that many Native American Tribes, including potential project managers and those with knowledge of cultural burning, are currently impoverished or struggling to pay their bills. Applying for grants or lobbying for new policies to support cultural burning programs is time-consuming work, which requires resources that are not always available to Tribes. The Bureau of Indian Affairs, BLM, and other federal departments will need to take this into account when designing programs to encourage cultural burning. In addition, the nonprofit sector will need to provide technical expertise and assistance, in the same way that the Nature Conservancy assisted Indigenous communities in Australia.⁹¹

Once established, the high cost of carbon credits would help sustain cultural burning carbon offset projects in the United States. A 2022 Ernst & Young report predicts that rising demand and a race to quality means that high-quality carbon credits will be scarce and expensive, indicating that the value of carbon credits as an asset is set to increase.⁹²

C. Ensuring Indigenous People Benefit

Important to maintaining this high price for carbon credits is verifying that Indigenous people receive the credit and benefits from the application of cultural burning as a land management technique. In Australia, the adoption of the Core Benefits Verification Framework ensured that carbon credits produced using traditional Indigenous cultural burning practices could be demarcated from other carbon credits produced by non-Indigenous people using prescribed fire.⁹³ As with the methodology adopted in Australia, the AWE Methodology does not require the use of cultural burning practices or the involvement of Indigenous peoples. Consequently, a complementary verification system will be needed to ensure that the benefits of the application of cultural burning go where they belong—to the Indigenous peoples who invented the practice and who have suffered devastating ecological and social impacts from the policy of fire suppression.⁹⁴

A critical criterion for achieving just economic, social, and cultural outcomes from a prospective cultural burning project is respecting the rights of Indigenous peoples to give or withhold consent and protecting Traditional Ecological Knowledge (TEK).⁹⁵ A history of exploitation of Native American's TEK has left

91. See Firesticks and Aboriginal Carbon Foundation, *supra* note 32 at 6, 27.

92. Ernst & Young, *Essential, Expensive and Evolving: The Outlook for Carbon Credits and Offsets*, Nov. 10, 2023, at 5, https://assets.ey.com/content/dam/ey-sites/ey-com/en_au/topics/sustainability/ey-net-zero-centre-carbon-offset-publication-20220530.pdf.

93. *Core Benefits Verification Framework*, *supra* note 51.

94. See Kari Marie Norgaard, *The Politics of Fire and the Social Impacts of Fire Exclusion on the Klamath*, 36 HUMBOLDT J. OF SOC.RELS. 77, 2014, at 96, https://www.jstor.org/stable/humjsocrel.36.77?seq=1#page_scan_tab_contents.

95. See Allison Jolley, *Cultural Burning and TEK: How can FAC Practitioners Leverage Indigenous Connections to Fire Without Exploiting Them?*, FIRE ADAPTED COMMUNITIES LEARNING NETWORK (Sep. 12, 2019) <https://fireadaptednetwork.org/cultural-burning-and-tek-how-can-fac-practitioners-leverage-indigenous-connections-to-fire-without-exploiting-them/>; See generally *Protection of Tribal/Indigenous Knowledge*, NAT'L PARK SER., <https://www.nps.gov/subjects/tek/protection-knowledge.htm> (last accessed Nov. 10, 2023).

many Native Tribes rightfully suspicious of cooperating with federal agencies, and this would hinder efforts to establish cultural burning projects.⁹⁶ Adherence to guidance promulgated by the UN and the National Congress of American Indians,⁹⁷ as well as developing new project-specific guidelines to respect TEK must be a key pillar in any United States-based cultural burning carbon credit program. If this can be achieved, cultural burning credits developed in programs that respect TEK and funnel benefits to Native American communities could achieve a much higher price than traditional carbon credits. In the savanna burning sector in Australia, Indigenous projects are the largest and highest performing, and they achieve the highest prices per carbon credit in the industry.⁹⁸ One of the key reasons for the higher prices is the co-benefits associated with carbon projects run by indigenous communities, such as training, cultural maintenance, and the promotion of indigenous land management.

CONCLUSION

Indigenous land management is needed now more than ever due to the impacts of climate change. Tribal Governments can seek to harness state and federal government assistance to explore the economic viability of cultural fire credits and use the current economic and environmental climate to develop these programs to generate funds. With the advent of biodiversity and nature repair credits, carbon credits may just be the beginning.

Selling carbon credits in the VCM represents a revenue generation opportunity for Native Americans and Tribal Governments to generate funds, improve economic sustainability, support land buybacks, and reestablish sovereignty. With wildfires raging and a government intent on enhancing nature-based solutions, the time is now to act and develop a cultural burning fire credit in the United States.

96. Terri Hansen, *Breaking a Sacred Trust: On the Exploitation of Traditional Native Knowledge*, PACIFIC STANDARD (Sep. 20, 2018), <https://psmag.com/social-justice/breaking-a-sacred-trust?fbclid=IwAR3JbuBHG1VT05P1as4LcSKliqn8pLBOFnfUAlaiPwTs4QvLdKiI5pc9px0>.

97. THE UNITED NATIONS FORUM ON INDIGENOUS ISSUES, BACKGROUNDER - TRADITIONAL KNOWLEDGE, <https://social.desa.un.org/sites/default/files/migrated/19/2019/04/Traditional-Knowledge-backgrounder-FINAL.pdf>; *Resolution #PDX-11-036 Traditional Ecological Knowledge and Climate Change*, NAT'L CONG. OF AM. INDIANS (2011), <https://www.ncai.org/resources/resolutions/traditional-ecological-knowledge-and-climate-change>.

98. Australian Government Indigenous Land and Sea Corporation, *Discussion Paper: Indigenous Participation in the Carbon Industry*, 2022, at 2.1, <https://www.ilsc.gov.au/wp-content/uploads/2022/05/Indigenous-participation-in-the-carbon-industry.pdf>.