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The Effects of Climate Change on American Indian and Alaska Native Tribes

Daniel Cordalis and Dean B. Suagee

Climate change will affect American Indian tribes differently than the larger American society. Tribal cultures are integrated into the ecosystems of North America, and many tribal economies are heavily dependent on the use of fish, wildlife, and native plants. Even where tribal economies are integrated into the national economy, tribal cultural identities continue to be deeply rooted in the natural world. As global warming disrupts biological communities, the survival of some tribes as distinct cultures may be at risk. The loss of traditional cultural practices because important plants and animals are no longer available may prove to be too much for some tribal cultures to withstand on top of the external pressures they have faced during recent generations.

In some tribal communities, especially those in Alaska, the impacts of climate change have been evident for some time. *The Fourth Assessment Report of the UN Intergovernmental Panel on Climate Change Working Group II* recognizes that American indigenous communities are among the most sensitive to climate change in North America and that “indigenous communities in northern Canada and Alaska are already experiencing constraints on lifestyles and economic activity from less reliable sea and lake ice (for travelling, hunting, fishing and whaling), loss of forest resources from insect damage, stress on caribou, and more exposed coastal infrastructure from diminishing sea ice.” www.ipcc.ch/ipccreports/ar4-wg2.htm. Responding to these impacts, Cheyenne Elder Henrietta Mann, speaking at the National Museum of the American Indian in Washington, D.C., issued an American Indian “Call to Consciousness” on global climate change that calls “upon all the peoples of the world to awaken and respond to our collective human responsibility to the seventh generation.” Jose Barreiro, *A Call to Consciousness on the Fate of Mother Earth*, 8:3 NATIONAL MUSEUM OF THE AMERICAN INDIAN MAGAZINE 34, 36 (Fall 2007). This article will discuss how tribal governments fit into this collective human responsibility.

American Indian tribes have a unique legal status in our federal system of government. Tribes retain inherent sovereign powers that predate the formation of the United States and which are recognized in a complex body of federal law that includes treaties, acts of Congress, executive branch poli-

cies and regulations, and federal court decisions. *See generally*, COHEN’S HANDBOOK OF FEDERAL INDIAN LAW, (Nell Jessup Newton, et al., Lexis/Nexis, Mathew Bender, 2005 ed.). Although federal Indian law is complex, there are several background principles which generally inform potential tribal roles in addressing climate change. Tribes retain inherent sovereign powers and broad jurisdictional authority over their members and activities on their lands. Congress has broad powers in the arena of Indian affairs, and state authority over tribes and reservation lands is limited by operation of federal law. The United States has a trust responsibility to tribes, which includes fiduciary obligations to tribes for the management of tribal trust lands and resources. The federal trust responsibility has evolved over history and includes a duty to protect the sovereignty of each tribal government. 25 U.S.C. § 3601. In the modern era, as tribes have increasingly assumed governmental functions formerly performed by the Bureau of Indian Affairs and Indian Health Service, the relationship between the federal government and the tribes is often described as a government-to-government relationship. *See* Exec. Order No. 13,175, 2, 65 Fed. Reg. 67,249 (Nov. 6, 2000). Tribes also typically have reserved rights in water and natural resources within their reservations, and many tribes have off-reservation hunting, fishing and/or gathering rights secured by treaties or statutes.

In response to the challenge of climate change, many non-tribal people and organizations have called for action at all levels of government. In the United States, it is a common practice to view “all levels” as federal, state, and local and not to think about how Indian tribal governments might fit into the mix. For example, the U.S. Environmental Protection Agency (EPA) Web page on climate change includes a topic on state and local governments but none on tribal governments. *See* www.epa.gov/climatechange/.

The framework of climate change law that is emerging in the United States has not yet solidified. Rather, there are only miscellaneous federal laws that relate to climate change. In the absence of comprehensive federal climate change legislation, many regional, state, and local efforts have emerged. *See generally* GLOBAL CLIMATE CHANGE AND U.S. LAW (Michael B. Gerrard, ed., ABA Section of Environment, Energy, and Resources (SEER) 2007).

The law of climate change in the United States is currently evolving at the intersection of two areas of law—energy law and environmental law. *See* John C. Dernbach, *U.S. Policy*, in CLIMATE CHANGE AND U.S. LAW at 61, 65. Both of these sub-

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ject matters are characterized by a federalist framework in which the federal government is prominent in some ways and the states in others. In the realm of environmental law, many of the federal statutes have been amended to authorize EPA to treat tribes like states. See generally Dean B. Suagee, *Indian Country Environmental Law*, in ENVIRONMENTAL LAW PRACTICE GUIDE (Michael B. Gerrard, ed., Matthew Bender 1998); COHEN'S HANDBOOK, Ch. 10. A number of tribes have taken on roles in this environmental regulation framework. In the realm of energy law, there is a long history of extracting fossil fuel resources from many Indian reservations, and there is some history of tribal governments performing regulatory roles comparable to the states. In the context of extractive resource development, there is a body of federal law recognizing tribal regulatory authority, including provisions in the Energy Policy Act of 2005 (EPAAct 2005) authorizing Tribal Energy Resource Agreements through which a tribe can take over some of the approval functions otherwise assigned to the secretary of the interior. 25 U.S.C. § 3504. See Thomas H. Shipps, *Tribal Energy Resource Agreements: A Step Toward Self-Determination*, 22 NAT. RES. & ENVT. 55 (ABA SEER Summer 2007). In the context of the electric utility industry, there are a few tribal electric utilities, and a growing number of tribes are showing interest in creating their own utilities or otherwise becoming involved on the supply side of electric power.

With growing awareness of the need to deal with climate change and calls for action at all levels of government, a number of questions should be asked about the role of tribal governments: What opportunities do tribes have under existing federal and state law to contribute to efforts to deal with climate change? What can tribal governments do through the exercise of their inherent sovereign powers? What should be done to include the tribes in federal policies that seek to engage states and local governments? When states and local governments take action, what can they do to include the tribes? At a more basic level, why should tribes have a place at the table when the issues are debated? Such questions should be considered not just by tribal leaders and tribal advocates, but also by those who shape, or who seek to shape, policy at the federal, state, and local levels. This article does not try to answer all of these questions. Rather, it offers some observations on why tribes need to be at the table. It also notes a few of the steps that some tribes and intertribal organizations have taken to help deal with global warming, and it offers some suggestions on how tribes could fit into the mix, both within the framework of federal law and through the exercise of tribal sovereignty.

Impacts of Climate Change on Native Americans

The predicted environmental impacts of global warming can be expected to cause severe distress for tribal communities in various regions of the country. In the Pacific Northwest, where salmon are a fundamental part of tribal cultures, salmon populations have drastically declined over the past century

due to dams, loss of habitat, pollution, deforestation, and other factors. The impacts of climate change will put additional stresses on salmon populations, as ocean water temperature rises and streamflow patterns change in response to reduced mountain snowpack and earlier spring snowmelt. JONATHAN M. HANNA, NATIVE COMMUNITIES AND CLIMATE CHANGE: PROTECTING TRIBAL RESOURCES AS PART OF NATIONAL CLIMATE POLICY 5–8 (University of Colorado Law School Natural Resources Law Center 2007), www.colorado.edu/law/centers/nrlc. Off-reservation treaty fishing rights will be of little practical value if there are no salmon runs left.

In the Southwest, where water rights have been litigated, negotiated, and legislated for more than a century, climate change can be expected to exacerbate conflicts, given the predictions of water shortages. For example, by 2050, streamflow in the Colorado River is predicted to be reduced by perhaps as much as 45 percent due to reduced snowpack in the mountains of its watershed. Brad Udall, *Recent Research on the Effects of Climate Change on the Colorado River*, INTERMOUNTAIN WEST CLIMATE SUMMARY 2, 6 (May 2007); see also P.C.D. Milly, et al., *Global Pattern of Trends in Streamflow and Water Availability in a Changing Climate*, 438 NATURE 347 (2005). All of the tribes in Arizona and several more in New Mexico, Colorado, Utah, Nevada, and California have reservation lands within the Colorado River watershed. These tribes, under the *Winters* doctrine, have implied federally reserved water rights. *Winters v. United States*, 207 U.S. 564 (1908). Many of the tribes in the Colorado River watershed have established water rights either through litigation or through federal legislation. Whether or not their water rights have been formally quantified, water is critical for the agriculture, industry, community development, and tourist-oriented development sectors of tribal economies. Given the predicted scale of impending water shortages, there can be no guarantees that settled tribal water rights will not be subject to reopening.

In addition to conflicts over legal rights to water resources, scarcity of water will likely affect the ecosystems of the Southwest in ways that will stress tribal communities. Some impacts are being witnessed on the Navajo Reservation, which encompasses about 25,000 square miles of land in the Southwest. Sand dunes cover approximately one-third of this land. U.S. Geological Survey, *Navajo Dunes* (2003), http://esp.cr.usgs.gov/info/sw/swdunes/navajo_dunes.html. The dunes have been stabilized by vegetation, but mobilization has been observed in recent years in some areas, causing significant damage to many homes on the Navajo reservation. Dune movement is causing transportation concerns as well, as wind storms deposit sand along roadways, impairing sight and creating hazards for drivers. Most of the active dunes had been vegetated with Russian thistle (tumbleweeds), an invasive species that dies and detaches during dry and windy periods; dunes with native vegetation appear to be more stable, but dune movement may also be contributing to the loss of native plants as habitat diminishes. Dunes can be an indicator for climate change, as mobilization depends on precipitation, soil-moisture balance, and wind patterns. The pro-

longed drought in the Southwest, as well as a regional drying across the Navajo Nation, makes widespread sand dune mobilization more likely under projected circumstances. The loss of vegetation also holds consequences for sheep and cattle, livestock that are raised by many Navajo and Hopi tribal members. Dune vegetation is a primary grazing source for the animals, and without stable dunes the grazing economy is at risk.

Alaska may be experiencing the impacts of global warming more than any other place on Earth, and Alaska Native tribes are among the first American populations to feel the effects of global climate change. Erosion and flooding affect 86 percent of Alaska Native villages to some extent, with the greatest effects felt along the coast. GENERAL ACCOUNTING OFFICE, ALASKA NATIVE VILLAGES: MOST ARE AFFECTED BY FLOODING AND EROSION, BUT FEW QUALIFY FOR FEDERAL ASSISTANCE, GAO-04-142 (Dec. 2003) [hereinafter GAO 2003 REPORT]. Increased variability in wind speed, ice formation, temperature, and currents in the Bering and Chukchi Seas have been observed along the barrier island chain for a number of decades, changing the climate patterns to which the native villagers had been accustomed. Sea ice formation is occurring later in the fall due to warmer temperatures and high winds. The ice that builds up is often thinner, making it dangerous to cross and more susceptible to early breakup in the spring. Precipitation patterns have changed, with little snowfall in the fall and early winter, but heavy amounts in the late winter and spring. The lack of snow makes it difficult for polar bears and ringed seals to make dens for giving birth or, in the case of male polar bears, to seek protection from the weather. The lack of ringed seal dens may affect the numbers and condition of polar bears, which prey on ringed seals and often seek out their dens. Hungry polar bears may be more likely to approach villages and encounter people. Caleb Pungowiyi, *Native Observations of Change in the Marine Environment of the Bering Strait Region*, www.arctic.noaa.gov/essay_pungowiyi.html.

Other significant biological changes taking place in the Bering Strait region directly affect Alaska Natives and their subsistence activities: bird migrations are occurring earlier; warm, dry summers bring new insects to the tundra; the tree-line has moved westward; bushes are becoming taller and denser, some willows are as big as houses where they used to be small; and the chum salmon population crashed in the 1990s and has not rebounded. *Id.*

These changes raise questions about the future availability of resources for subsistence cultures—people who hunt, fish, trap, and gather much of their food—which remain vitally important in Alaska Native villages. The value villagers place on the process of harvesting subsistence resources is immeasurable, as these practices are fundamental in establishing a sense of family and community. Climate change is threatening the continued viability of these traditional cultures.

The Inupiaq village of Shishmaref is experiencing a particularly dramatic encounter with climate change. Located on a barrier island just north of the Bering Strait that the Inupiaq call Kigiktaq, Shishmaref is a native village that depends

heavily on a subsistence lifestyle. Over the last several decades, rising temperatures have caused thinner ice buildup along the coast and the melting of the permafrost on which the town was built. The village, continuously inhabited for nearly 400 years, faces total destruction as storm surges that are no longer being diffused by sea ice erode the vulnerable ground on which the town was built. Since 2001, the island has lost an average of 23 feet of shoreline a year due to storms. Edward W. Lempinen, *In Arctic Alaska, the Warming Climate Threatens an Ancient Culture* (American Academy for the Advancement of Science, 2006), www.aaas.org/news/releases/2006/1206alaska.shtml. Three other villages—Kivalina, Koyukuk, and Newtok—are also in “imminent danger from flooding and erosion” that is at least partly related to the warming climate and may have to move. GAO 2003 REPORT, at 2. The potential costs of moving villages in coastal Alaska are likely in the billions of dollars. Currently sources of funding do not appear to exist.

Alaska Native tribes are among the first American populations to feel the effects of global climate change.

Steps That Intertribal Organizations Are Taking

A number of intertribal organizations, including the National Congress of American Indians (NCAI), Council of Energy Resource Tribes (CERT), National Tribal Environmental Council (NTEC), National Tribal Air Association (NTAA), and Intertribal Council on Utility Policy (COUP), have taken public positions on climate change. For instance, NCAI, the oldest and largest national intertribal organization, adopted resolutions in 2006 and 2007 calling, variously, on Congress and the president to “move forward on a national, mandatory program to reduce climate change pollution and promote the development and adoption of renewable energy within a time-frame that prevents irreversible harm to public health, the economy and the environment” and to include tribes in pending climate change legislation. www.ncai.org. NTEC and its sister organization NTAA have been helping tribes engage in the details of the emerging climate change legal regimes. As an outgrowth of their experience in dealing with air pollution, these organizations publicized the formation of the Climate Registry in 2007. As of November 2007, three tribes—Campo Kumeyaay Nation, Pueblo of Acoma, and South Ute Indian

Tribe—are members of this organization, along with forty U.S. states, four Canadian provinces, and one Mexican state. www.theclimaterestory.org/TCR_States.pdf. CERT, originally formed to advance tribal efforts to take control over the extraction of nonrenewable energy resources, has become increasingly involved in renewable energy and energy efficiency. www.certreearth.com. Finally, Intertribal COUP, a regional organization based in the northern Great Plains, has taken a leadership role in tribal wind power development and climate change offsets credit. www.intertribalcoup.org. In August 2005, COUP acquired a majority ownership interest in *NativeEnergy*, a privately held for-profit corporation engaged in renewable energy credits and carbon dioxide (CO₂) offsets. www.nativeenergy.com. *NativeEnergy* offset the emissions associated with the film and book *An Inconvenient Truth* (2006).

Actions That Tribes Could Take

Some 162 Alaska Native tribes and corporations have passed resolutions calling on the federal government to enact legislation to reduce CO₂ emissions. www.narf.org/nill/triballaw/climate/index.htm. Such resolutions, however, do not create tribal programs. A few tribes, including the Gila River Indian Community and the Tulalip Tribes, are undertaking specific climate change initiatives. Some state and regional initiatives have taken steps to include tribal representatives, e.g., in the Western Climate Initiative, and “observer” status has been offered to tribes. See www.westernclimateinitiative.org.

A large number of tribes are engaged in the deployment of renewable energy technologies. Although many of these projects, such as the 50-megawatt wind power farm on the Campo Reservation in Southern California, were primarily motivated by nonclimate change concerns (e.g., diversifying a tribe’s revenue sources), their ability to reduce greenhouse gas emissions is also valuable. See www.geenergyfinancialservices.com/press_room/press_releases/prs_2005_1228.pdf.

In theory, tribes, like states and local governments, can establish climate change programs that set targets for greenhouse gas emissions and that use regulatory and market mechanisms to displace fossil fuel consumption through energy efficiency and renewable energy. In practice, however, tribes must cope with judicially imposed limits on their sovereign powers. In the realm of market mechanisms, energy markets typically operate at an order of magnitude beyond the influence of most tribes, although tribes can learn how to make use of market mechanisms fashioned at the federal and state levels. Some tribes are major factors in regional economies, and tribal programs such as green or renewable energy purchasing standards could have more than symbolic effects.

Whether or not tribal governments have adopted policies or programs explicitly dealing with climate change, many tribes do have programs addressing energy efficiency, which could be reconfigured as key components of tribal climate change programs. The two main federal residential energy assistance programs for low-income households—the Low Income Home Energy Assistance Program administered by

the Department of Health and Human Services and the Weatherization Assistance Program administered by the Department of Energy (DOE)—both include tribal set-asides, and tribes typically operate these programs directly (rather than with federal funds passed through the states).

These two programs, however, only scratch the surface of the energy-efficiency potential. Energy-efficiency programs can hold U.S. CO₂ emissions to 2005 levels, a wedge of displaced fossil fuel consumption equivalent to 688 million metric tons of carbon per year by 2030. AMERICAN SOLAR ENERGY SOCIETY, TACKLING CLIMATE CHANGE IN THE U.S.: POTENTIAL CARBON EMISSIONS REDUCTIONS FROM ENERGY EFFICIENCY AND RENEWABLE ENERGY BY 2030 (Charles F. Kutscher, ed., 2007). There should be a comprehensive review of other federal energy-efficiency programs to determine the extent to which tribal communities are being reached and what could be done to improve the situation. For example, federal law has provided support for states to adopt and implement residential building codes to promote energy efficiency in new construction, but the program overlooks the fact that tribal governments rather than states have authority to enact building codes applicable to trust lands within reservations. 42 U.S.C. § 6833. Some tribes might want to adopt green building standards such as the Leadership in Energy and Environmental Design (LEED) system for tribal buildings, but they could use federal help in wielding this kind of policy tool.

The “Indian Energy” title of EPAAct 2005, Pub. L. No. 109-58, title V, offers some prospects for helping tribes to emphasize energy efficiency and renewable energy. See generally Dean B. Suagee, *The “Indian Energy” Title of the 2005 Energy Policy Act – An Overview*, 4:1 ABA NATIVE AMERICAN RESOURCES COMMITTEE NEWSLETTER 5 (ABA SEER May 2007), available at www.abanet.org/enviro/committees/nativeamerican/newsletter/. In addition to numerous provisions authorizing grants, loan guarantees, and technical assistance, Section 502 of EPAAct 2005 “established” an Office of Indian Energy Policy and Programs in DOE. In fact, for about a decade DOE has had a Tribal Energy Program in the Office of Energy Efficiency and Renewable Energy (EERE). See www.eere.energy.gov/tribalenergy. In September 2007, DOE announced the formal creation of the office, the appointment of a director, and the availability of \$2 million in grants for clean energy projects on tribal lands. See www.energy.gov/news/5493.htm.

Looking beyond whatever assistance the federal government provides, tribes can enact and implement their own climate change programs in the exercise of their sovereignty, perhaps drawing upon the examples of state and local government initiatives. A tribal climate change program might contain several kinds of components, including regulatory mechanisms, market incentives, and policies for tribal government agencies. Emissions reductions targets, even if based on rough estimates of historical data, would allow for evaluation of success and recalibration of targets. A tribal program might start with governmental operations, in effect leading by example, seeking to minimize CO₂ emissions from vehicle fleets, buildings, land use decisions, and purchasing programs.

Tribes that become owners of renewable-energy-generating facilities (e.g., wind farms, concentrating solar power, distributed photovoltaics, biomass power plants) for sale into the grid could probably get their net CO₂ emissions below zero. Tribes can also create governmental institutions and enterprises to facilitate such investments.

Regulatory mechanisms that tribes could feature in a climate change program include building codes to promote energy efficiency and solar design techniques and land use regulation designed to reduce reliance on motor vehicles by promoting mixed-use “walkable” neighborhoods. Although tribal authority to regulate land use on fee lands within reservations is subject to challenge, *see* COHEN’S HANDBOOK § 4.02[3][c], land use planning to reduce motor vehicle use can be based on tribal authority over trust lands coupled with the ability to control the siting of community facilities and federally assisted housing.

A tribal climate change program might also include the dedication of tracts of tribal land for biological carbon sequestration. For tribes whose reservations include areas of privately owned land as part of the legacy of the allotment era of federal Indian policy, a climate change program might include a component for the reacquisition of tribal lands. For example, the program could create arrangements for entities that need to offset their CO₂ emissions to help tribes buy land to be dedicated to sequestration.

This article suggests some ideas for tribal programs, and certainly tribal leaders and their staff and lawyers will generate many other ideas for living up to our collective human responsibility to the seventh generation. Responsibility to the seventh generation is a cultural value common among American Indian and Alaska Native tribes. People working on climate change are likely to find that some of the ideas offered by tribal representatives are truly inspirational. 🌳

Carbon Accounting

(Continued from page 44)

the project area would have undertaken the project without the project generating any carbon offsets credits. If the owner would have done so, then the project does not satisfy the additionality requirement.

A forestry project’s secondary effects on carbon consumption, referred to as “leakage,” must also be considered in evaluating the amount of carbon sequestered. Often these secondary effects are negligible by comparison to the amount of carbon sequestered as a result of project management. For example, the effect of emissions associated with the use of fertilizer in an afforestation project is a secondary effect, even though, when compared to the carbon sequestered by the project, the secondary effect may be a relatively small reduction in project carbon sequestration. On the other hand, some secondary effects of forestry projects may not be so insignificant, specifically, “activity shifting leakage.” For example, if the forestry project prohibits tree harvesting in a large swath of forest, logging firms may simply shift their activities to adjacent areas outside the project zone, thus zeroing out any net carbon sequestration. By contrast, afforestation projects are unlikely to pose this leakage problem. A farmer’s decision to plant trees on his or her land is unlikely to cause a forest elsewhere to be removed.

Finally, evaluation of any forest management project requires assessment of the reversibility or permanence of the project. This is one of the more vexing of the carbon accounting issues associated with valuing a forestry-based carbon sequestration project. Forests can be destroyed by fire or disease, illegal logging, or farmers, or even squatters seeking land, releasing back to the atmosphere the carbon that had been sequestered in a project area. More fundamentally, trees will eventually die, and most of the carbon sequestered in a dead tree—if left to decay—will return to the atmos-

phere. Even if tree carbon is converted to forest products, such as lumber used for housing or furniture, the carbon will only be stored while the lumber or furniture remains intact. Moreover, large quantities of carbon in the trunks, root system, and debris that remains after logging will decay, releasing carbon into the atmosphere. Unless dying trees are systematically replaced within a project area, the carbon offset will eventually be completely reversed. The cost of preventive measures to reduce the risk of loss and to replace trees and maintain “carbon equilibrium” within the project area in perpetuity must be factored into the cost of a project. The economics of this analysis are quite complex and have been the subject of many studies. *See, e.g.,* R. Stavins and K. Richards, *The Cost of U.S. Forest-Based Sequestration* (Pew Center on Global Climate Change, January 2005).

We are not suggesting that attorneys counseling clients on carbon sequestration projects must become experts on the economic and ecological esoterica that permeates this field. Rather, we recommend that attorneys operating in this field acquire sufficient familiarity—as they would in representing clients in any other transactional setting—with the issues to be able ask the right questions (to be capable of “issue spotting” as we used to call it in law school). Which accounting standards will apply to the project and does the project meet those standards? What happens if the forestry project is destroyed by fire or disease? Who pays to replace the trees? Is there an insurance vehicle to cover such liability? Attorneys operating in this field must be prepared to ask these types of questions and sufficiently sophisticated to be able to understand the answers. Make no mistake: there is no substitute for having expert consultants to assist. But the lawyer on such deals cannot cede all authority to consultants. 🌳