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Indigenous Adaptation in the Face of Climate Change

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The impacts of climate change are now clear. Within the United States, localities and regions are increasingly considering adaptation strategies in the face of the negative impacts of climate change.² Adaptation efforts are most critical at the local level.³ Because uncertainty remains as to how exactly climate change may impact a particular locality, adaptive governance provides the necessary flexibility to regulate in the face of such uncertainty.⁴

Tribes are not immune from the impacts of climate change. Though many tribal communities contribute little, if anything, to the problem of climate change, they are uniquely vulnerable to its impacts given their locations and connection to land.⁵ As a result, tribes, just like other local and regional governments, are increasingly looking at adaptive strategies to increase resiliency in the face of climate change.⁶ In some instances, “Natives are at the forefront of these changes and have been forced to adapt.”⁷

This article takes a closer look at tribal adaptation plans in the hopes of identifying emerging trends. The first section briefly introduces the concept of adaptation and then explores factors, such as human rights, environmental justice, sovereignty, and traditional environmental knowledge, which tribes may want to take into consideration when developing adaptation plans. The second section examines the existing adaptation plans of four tribes: the Confederated Salish and Kootenai Tribes, Jamestown S’Klallam Tribe, Nez Perce Tribe, and Swinomish Indian Tribal Community. The final

² Maxine Burkett, *Indigenous Environmental Knowledge and Climate Change Adaptation*, in *Climate Change and Indigenous Peoples: The Search for Legal Remedies* 96, (Randall S. Abate & Elizabeth Ann Kronk eds Edward Elgar Publishing, 2013) (citation omitted).

³ *Id.* at 97.

⁴ *Id.* at 109.

⁵ See generally Randall S. Abate & Elizabeth Ann Kronk, *Commonality Among Unique Indigenous Communities: An Introduction to Climate Change and its Impacts on Indigenous People*, in *Climate Change and Indigenous Peoples: The Search for Legal Remedies* (Randall S. Abate & Elizabeth Ann Kronk eds Edward Elgar Publishing, 2013).

⁶ Terri Hansen, *8 Tribes that are Way Ahead of the Climate-Adaptation Curve*, INDIAN COUNTRY TODAY (October 15, 2013).

⁷ *Id.*

section of the article identifies some trends that can be extrapolated from the examination of these existing adaptation plans. Although the article is largely descriptive, the hope is that other tribes developing their own adaptation plans can consider these factors and potential trends. Moreover, the identified emerging trends may be helpful to non-tribal communities engaged in adaptation management. Finally, this article may serve as a first step toward a normative discussion of what constitutes best practices in developing tribal adaptation plans.

I. CLIMATE CHANGE ADAPTION AND ITS IMPLEMENTATION IN INDIAN COUNTRY⁸

As mentioned above, tribal governments are not immune to the impacts of climate change and have been working to develop their own adaptation strategies. Before exploring the specific adaptation strategies of various tribes, however, this section provides a brief introduction into what adaptation is generally. Following this brief introduction, the section considers factors that tribal communities may want to consider in developing their own adaptation strategies. The purpose of this section is to provide a foundation from which existing tribal adaptation plans may be compared later in the article.

A. Brief Introduction to Adaptation

Today, strategies to cope with climate change can generally be categorized into one of two groups: adaptation⁹ or mitigation.¹⁰

⁸ “Indian country” is a legal term of art defined at 18 U.S.C. § 1151 to mean:

Except as otherwise provided in sections [1154](#) and [1156](#) of this title, the term “Indian country”, as used in this chapter, means

(a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation,

(b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and

(c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

⁹ The World Health Organization defines adaptation as: “Adjustment in natural or

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Policymakers in the 1990s and early 2000s largely focused on mitigation policies.¹¹ For a variety of reasons, however, mitigation efforts proved largely unsuccessful in abating the impacts of climate change. As a result, “[a] comprehensive national strategy that successfully reduces greenhouse gas emissions to levels thought to be adequate to arrest climate change ... quite clearly is not around the political corner.”¹²

Accordingly, advocates, scientists and politicians are increasingly considering adaptive strategies to cope with climate change.¹³ Adaptation

human systems to a new or changing environment. Adaptation to climate change refers to adjustment in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, public and private adaptation, and autonomous and planned adaptation.” *Climate Change and Human Health*, WORLD HEALTH ORG., <http://www.who.int/globalchange/publications/cchhsummary/en/> (last visited May 30, 2013). The Intergovernmental Panel on Climate Change defines adaptive practices as “actual adjustments, or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed or expected changes in climate.” W. Neil Adger et al., *Assessment of Adaptation Practices, Options, Constraints and Capacity*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY 717, 720 (M.L. Perry et al. eds., 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter17.pdf> (last visited May 28, 2013).

¹⁰ Mitigation has been defined as “options for limiting climate change by, for example, reducing heat-trapping emissions such as carbon dioxide, methane, nitrous oxide, and halocarbons, or removing some of the heat-trapping gases from the atmosphere.” U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 10-11 (2009), available at <http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf>.

¹¹ J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363, 368 (2010).

¹² *Id.* at 369.

¹³ *Id.* (“[T]he cold war between mitigation and adaptation is finally thawing. Climate change is already happening, and more is yet to come no matter what, thus a consensus is building that mitigation needs adaptation, and vice versa, even if they fundamentally are different and sometimes competing policy thrusts.”); Judith V. Royster, *Climate Change and Tribal Water Rights: Removing Barriers to Adaptation Strategies*, 26 TUL. ENVTL. L.J. 197, 199 (2013). Ultimately, although increased attention is being paid to adaptation strategies, “[m]itigation and adaptation are both essential parts of a comprehensive climate change response strategy.” U.S. Global Change Research Program, Global Climate Change Impacts in the United States 11 (2009), available at

efforts differ from mitigation efforts in several respects. One of these differences is that “adaptation strategies are apt to be localized, and they may present opportunities for relatively quick action at the local level.”¹⁴ Professor Robin Kundis Craig explains: “[c]limate change adaptation ... requires continually evolving strategies to cope with continually changing locally and regionally specific socio-ecological conditions.”¹⁵ The localized nature of adaptive strategies is an important facet when considering the role that tribal governments play in developing such strategies, as is discussed below.

Professor J.B. Ruhl, who has written widely on the subject of climate change adaptation, explains the goals of adaptation planning: “First, it is to effectively and equitably manage the harms and benefits of climate change while mitigation does its work. Second, it is to supply interim strategies to put us in a position to resume long-term planning for sustainable development when climate change is ‘over.’”¹⁶ Ultimately, however, adaptation should not be the sole focus of any community; in part, this is because some communities are more vulnerable to climate change and less able to adapt. For example, scholars caution against policies focusing only on adaptation.¹⁷ Caution may be warranted because such policies have a tendency to hit the poor the hardest, as the poor generally have the most difficulty adapting due to lack of resources.¹⁸ Successful adaptation is a

<http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf>. This is because “[n]either approach is effective alone. Mitigation alone only stabilizes or reduces the impacts of climate change, but adaptation by itself accepts the inevitability of climate change’s adverse effects.” *Royster* at 199. JESL EDITORS – this short cite does not look correct. Can you please revisit? EKW

¹⁴ Shelley Ross Saxer & Carol M. Rose, *A Prospective Look at Property Rights*, 20 GEO. MASON L. REV. 721, 724 (2013).

¹⁵ Robin Kundis Craig, *The Social and Cultural Aspects of Climate Change Winners*, 97 MINN. L. REV. 1416, 1419 (2013).

¹⁶ Ruhl, *supra* note 11, at 376.

¹⁷ Rebecca Tsosie, *Indigenous People and Environmental Justice: The Impact of Climate Change*, 78 U. COLO. L. REV. 1625, 1660 (2007); *Environmental Justice: Factors and Influences*, VA. NAT. RESOURCES LEADERSHIP INST., 3 (Aug. 2010), <http://www.virginia.edu/ien/vnrl/docs/briefs/EnvInjustice2011.pdf>.

¹⁸ *Id.* (“[W]hether burdens have a greater effect on minority groups or those living in poverty, the costs are most often endured by the poorest members (socially, economically,

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product of socioeconomic factors, as well as physical, environmental factors.¹⁹ Ultimately, in the United States, because “poor and marginalized communities without sufficient financial and social resources will face significant adaptation challenges,”²⁰ Professor Alice Kaswan concludes that “equity considerations should play a vital role in emerging U.S. adaptation initiatives.”²¹

In order to ensure that indigenous communities engage in successful adaptation, it is helpful to utilize an integrated method of adaptation that takes into consideration ecological, social and economic factors.²² Yet communities cannot be treated the same by adaptation planners, because such actions would result in inequity,²³ and because there is wide diversity amongst tribal communities.²⁴ Furthermore, in the case of tribal communities, it is also crucial that sovereignty, the right to self-determination, human rights, environmental justice, the unique connection to

politically) of our society.”). *See also*, Yee Huang, *New CPR Report Proposes Strategies for Climate Change Adaptation in the Puget Sound*, Center for Progressive Reform, available at <http://progressivereform.org/printPage.cfm?idBlog=77ABD13E-EA05-5FCC-D0511A780F5683DD> (“Ultimately, “[c]atastrophe is bad for everyone. But it is especially bad for the weak and disenfranchised.”).

¹⁹ Alice Kaswan, *Domestic Climate Change Adaptation and Equity*, 42 ENVTL. L. REP. NEWS & ANALYSIS

11125, 11126 (2012) (“Although the relevant factors vary by the type of climate change impact at issue, sensitivity is determined by such features as elevation, the quality of the housing stock, underlying health conditions, and proximity to other hazards. The capacity to cope is a function of such factors as a community’s financial and social resources, access to health care, and geographic mobility. In other words, the extent of adverse consequences is not only a function of geographic location and physical attributes, but of socioeconomic conditions.”).

²⁰ *Id.* at 11125.

²¹ *Id.*

²² *Id.* at 11138. (“An integrated ecological, social and economic approach to adaptation planning, like that suggested by Rob Verchick and by Manuel Pastor and his co-authors in the disaster planning context, is essential to equitable adaptation efforts.”) (citation omitted).

²³ *Id.* at 11139. (“Adaptation policies that attempt to treat everyone the same, regardless of underlying demographic characteristics, will result in substantial inequality given underlying differences.”).

²⁴ For example, at the time of writing, there are 566 federally recognized tribes. 79 Fed. Reg. 4748-02 (Jan. 29, 2014). Each of these tribes possesses its own government, culture and traditions.

land and the environment, and traditional environmental knowledge possessed by many tribal communities be taken into consideration.

There are two types of response orientation to adapting to climate change: proactive²⁵ or reactive.²⁶ For the most part, the adaptation strategies discussed below are proactive. For many Arctic indigenous populations, however, reactive strategies are necessary. For example, several indigenous villages in Alaska are already in imminent danger of flooding and erosion, including Kivalina, Koyukuk, Newtok and Shishmaref. As a result, these communities are actively considering relocation, and, in the case of Newtok, have already begun relocation efforts.²⁷ In this regard, use of adaptive strategies in Alaska may differ from the Lower 48 where the impacts are not yet so dramatic. It is likely that there is more opportunity for proactive development of adaptation strategies in the lower 48 states.

Finally, it is important to note that adaptation strategies include the possibility of relocation. When indigenous communities face relocation, like the Newtok and Kivalina communities currently face, additional legal challenges arise because of their status as indigenous communities. Professor Kaswan points out:

Even community relocation is no panacea, however; it requires substantial resources, identifying an appropriate relocation site, and, for communities [such as many indigenous communities] whose cultural identities are tied to a geographical place, the risk of cultural disruption. . . . The political decision over whether to protect or retreat has

²⁵ Ruhl, *supra* note 11, at 382. (“Proactive strategies anticipate climate change impacts to design measures that will reduce harm or harness benefits in the future, such as crop and livelihood diversification, seasonal climate forecasting, community-based disaster risk reduction, famine early warning systems, insurance, water storage, supplementary irrigation, and so on.”) (citation omitted).

²⁶ *Id.* at 383. (“[R]eactive strategies design responses based on observed climate change impacts as they occur through measures such as emergency response, disaster recovery, and migration.”) (citation omitted).

²⁷ U.S. GEN. ACCOUNTING OFFICE, ALASKA NATIVE VILLAGES: MOST ARE AFFECTED BY FLOODING AND EROSION, BUT FEW QUALIFY FOR FEDERAL ASSISTANCE 3 (2003), available at <http://gao.gov/new.items/d04142.pdf>.

significant social justice implications. How will adaptation planners choose which areas to protect and which to abandon? ... Differences in political power are also likely to determine who receives protection and who must leave.²⁸

Moreover, relocation is very expensive. For example, it is estimated that it will cost between \$95 and \$400 million to relocate the Native Village of Kivalina.²⁹ Given this expense and other challenges associated with relocation, it may be that indigenous communities try to avoid relocation whenever possible. The complexities articulated above are only intensified by the fact that many indigenous people have unique connections to their land and environment, as discussed below.

At the end of the day, “[c]limate change will require people to develop new strategies for avoiding and recovering from its harms and capturing and harnessing its benefits.”³⁰ Adaptation inevitably results in winners and losers, as resources are reallocated in the face of climate change.³¹ Accordingly, to help ensure that tribes are not climate change losers, the next subsection discusses factors that should be considered in a discussion of adaptive strategies for indigenous communities.

B. Indigenous Adaptation

With a generalized background in climate change adaptation now in hand, this portion of the article considers what adaptation strategies utilized by indigenous peoples might include and looks at what some tribal communities are actually considering in their adaptation planning.³² As indigenous communities consider and implement adaptive strategies, a question arises as to who will be responsible for crafting such adaptive

²⁸ Kaswan, *supra* note 19, at 11134 (citations omitted).

²⁹ *Id.* at 11138 (citing Randall S. Abate, *Public Nuisance Suits for the Climate Justice Movement: The Right Thing and the Right Time*, 85 WASH. L. REV. 197, 207 (2010)).

³⁰ Ruhl, *supra* note 11, at 381.

³¹ *Id.* at 366.

³² Notably, this article does not argue that indigenous communities should focus all of their attention on adaptation policies. Rather, this article advances factors that should be incorporated into discussions focused on indigenous adaptation.

strategies.³³ In Indian country, it is not uncommon for up to three different sovereigns to play a role in regulating and adjudicating the tribal community – the tribe, the federal government, and the relevant state government.³⁴ Ideally, as explained below, tribal governments should be primarily responsible for making decisions related to climate change adaptation. However, given the uncertainty of the ultimate decision maker, this section develops factors that should be taken into consideration by any decision maker acting within indigenous communities. Specifically, some factors that tribes may want to take into consideration include: international human rights norms, environmental justice, tribal sovereignty, the unique connection that many indigenous communities possess with their land and environment, and traditional environmental knowledge.

Human Rights

Tribes developing adaptive strategies may want to consider the international human rights framework. Because the negative impacts of climate change have the potential to impact human rights, especially of indigenous communities, numerous scholars have called on governments to assist indigenous peoples with adaptation.³⁵ Professor Rebecca Tsosie

³³ Royster, *supra* note 14, at 199-200 (“Given that adaptation strategies are a necessary part of the response to climate change, an issue arises as to whether strategies within Indian country will be developed and chosen by the federal government on a national scale or developed and chosen by each tribe to meet the particular needs of each reservation.”).

³⁴ See generally COHEN’S HANDBOOK OF FEDERAL INDIAN LAW chs. 5, 6 (Nell Jessup Newton, et al. eds., Lexis Nexis 2012).

³⁵ Ruhl, *supra* note 56, at 407, n.163 (citing See Randall S. Abate, *Climate Change, the United States, and the Impacts of Arctic Melting: A Case Study in the Need for Enforceable International Environmental Human Rights*, 43A STAN. J. INT’L L. 3, 71-72 (2007); James D. Ford, *Supporting Adaptation: A Priority for Action on Climate Change for Canadian Inuit*, 8 SUSTAINABLE DEV. L. & POL’Y 25 (2008); Donald M. Goldberg & Tracy Badua, *Do People Have Standing? Indigenous Peoples, Global Warming, and Human Rights*, 11 BARRY L. REV. 59, 61 (2008); Jesse Hohmann, *Igloo as Icon: A Human Rights Approach to Climate Change for the Inuit?*, 18 TRANSNAT’L L. & CONTEMP. PROBS. 295 (2009); Margueritte E. Middaugh, *Linking Global Warming to Inuit Human Rights*, 8 SAN DIEGO INT’L L.J. 179, 207 (2006); E. Rania Rampersad, *Indigenous Adaptation to Climate Change: Preserving Sustainable Relationships Through an Environmental Stewardship Claim & Trust Fund Remedy*, 21 GEO. INT’L ENVTL. L. REV. 591, 613 (2009); Rebecca Tsosie, *Indigenous People and Environmental Justice: The Impact of Climate Change*, 78 U. COLO. L. REV. 1625, 1676

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concluded that an international human rights approach is appropriate to address the impacts of climate change on indigenous peoples because domestic solutions will not adequately address such impacts.³⁶

Notably, a human rights approach may require a different method, as some indigenous communities may consider such rights, like those related to subsistence, to be communal rights.³⁷ In considering the application of human rights norms to indigenous adaptation, it is important to distinguish sovereignty from self-determination, as indigenous communities may have rights based in both. “[S]overeignty is a substantive legal status while self-determination is a political right that stems from an underlying moral claim.”³⁸

In considering what law applies to their adaptive efforts and specifically thinking about international human rights, tribes may want to consider the United Nations Declaration on the Rights of Indigenous People (UNDRIP).³⁹ UNDRIP addresses international expectations regarding the basic rights enjoyed by indigenous peoples. Although not a binding legal document, the UNDRIP is helpful in providing a baseline as to what the United Nations and its member states believe are the rights (or should be) of indigenous peoples. Of particular importance here are the UNDRIP’s statements with regards to indigenous self-determination, property, and redress. UNDRIP Article 3 states, “[i]ndigenous peoples have the right to

(2007); Erika Zimmerman, Comment, *Valuing Traditional Ecological Knowledge: Incorporating the Experiences of Indigenous People into Global Climate Change Policies*, 13 N.Y.U. ENVTL. L.J. 803, 846 (2005)).

³⁶ Tsosie, *supra* note 18, at 1651 (“Thus, if there is to be any greater understanding of the need to protect indigenous cultures, it must come from some authority outside domestic law. This is the prospective role of international human rights.”).

³⁷ For example, some international human rights documents seem to recognize that indigenous populations may rely on communal ownership. See e.g. *International Labour Organization Indigenous and Tribal Peoples Convention*, Geneva, 27 June 1989, 72 ILO Official Bull. 59; 28 ILM 1382 (1989), Art. 14; UNDRIP, New York, 2 October 2007, A/61/L.67/Annex, Arts. 3, 26, 28.

³⁸ Tsosie, *supra* note 18, at 1663.

³⁹ Declaration on the Rights of Indigenous Peoples, G.A. Res. 61/295, Annex, U.N. Doc. A/Res/61/295 (Oct. 2, 2007), available at http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf [hereinafter UNDRIP].

self-determination.”⁴⁰ UNDRIP Article 10 states, “[i]ndigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, the option to return.”⁴¹ UNDRIP Article 26 states, “[i]ndigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired...States shall give legal recognition and protection to these lands, territories and resources.”⁴² And, finally, UNDRIP Article 28 states that,

Indigenous peoples have the right to redress, by means that can include restitution or, when this is not possible, just, fair and equitable compensation, for the lands, territories and resources which they have traditionally owned or otherwise occupied or used, and which have been confiscated, taken, occupied, used or damaged without their free, prior and informed consent.⁴³

Furthermore, indigenous communities must be given an opportunity to actively participate in the dialogue on adaption. This is consistent with the general guideline that communication regarding adaptation is essential for any community, indigenous or non-indigenous, to adapt.⁴⁴ The right to participate is also consistent with UNDRIP and the general international human rights framework.

⁴⁰ *Id.* at art. 3.

⁴¹ *Id.* at art. 10.

⁴² *Id.* at art. 26.

⁴³ *Id.* at art. 28.

⁴⁴ Kaswan, *supra* note 19, at 11141 (“Communication is key to effective adaptation and, given the diversity of population, community and demographic-specific strategies are necessary. ... In addition to identifying language needs, adaptation planners need to identify culturally appropriate modes of communication considering newspapers, radio, television, e-mail, social media, or door-to-door outreach. ... Given the importance of community-specific information to designing appropriate substantive adaptation measures and communication strategies, adaptation planning processes require bottom-up participatory mechanisms.”) (citations omitted).

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Environmental Justice

Tribes developing adaptation strategies may also want to consider environmental justice because indigenous communities are “environmental justice” communities.⁴⁵ “[T]he term ‘environmental justice’ has been used to highlight the distributional impacts of the dominant society’s environmental decision-making process on disadvantaged communities, including poor and racial minorities.”⁴⁶ “Even before climate change came into the picture, an environmental justice theme emerged around the inequitable burdens the poor and people of color have sustained in terms of disproportionate exposure to pollutants, proximity to industrial sites and contaminated lands, and limited access to environmental amenities.”⁴⁷ In this regard, environmental justice is certainly applicable to indigenous people, who have contributed little if anything to the problem of climate change but are disproportionately bearing its negative impacts.⁴⁸

Climate change and its impacts on indigenous peoples are environmental justice issues, as “[t]he disproportion between tribal contributions to global warming and the negative impacts on tribes qualifies

⁴⁵ SARAH KRAKOFF, *Tribal Sovereignty and Environmental Justice*, JUSTICE AND NATURAL RESOURCES: CONCEPTS, STRATEGIES, AND APPLICATIONS 179 (Kathryn M. Mutz, Gary C. Bryner, and Douglas S. Kenney eds., Island Press 2002) (“First, virtually all Indian tribes clearly fit into Getches and Pellow’s definition of groups who come to the table with ‘palpable and endemic disadvantage,’ stemming from a long history of discrimination, exclusion, and deliberate attempts to destroy their cultural and political communities. Second, the obvious disproportionate environmental harms borne by Native peoples have meant that they are *already* a part of the discussion – to let them continue to be so without a conscious articulation of the role of tribal sovereignty would be counterproductive to determining appropriate remedial strategies.”). Therefore, for Native nations, meaningful participation includes an acknowledgement of their sovereignty. Therefore, courts considering claims brought by Native nations, like the one brought by Kivalina, must consider tribal sovereignty in order to effectively view the matter from an environmental justice lens. In *Kivalina*, the district court, as previously discussed, failed to consider the Nation’s sovereignty, especially in its discussion of the Nation’s standing in the matter. And, as a result, Kivalina was deprived of an environmentally just outcome.

⁴⁶ Tsosie, *supra* note 18, at 1627.

⁴⁷ Ruhl, *supra* note 11, at 407.

⁴⁸ Sarah Krakoff, *American Indians, Climate Change, and Ethics for a Warming World*, 85 DENV. U. L. REV. 865, 865 (2008).

this as an environmental justice issue.”⁴⁹ Ultimately, assuming the tribal community is a full participant in the development of its adaptation plan, it may be possible that “[a]daptation law can play a significant role in furthering climate justice.”⁵⁰

Tribal Sovereignty

Another factor to be considered when developing tribal adaptive strategies is tribal sovereignty. Notably, “[t]ribal self-determination mandates that adaptation strategies in Indian country be decided by the governing tribes.”⁵¹ Tribal self-determination and sovereignty demand that indigenous communities are the decision makers in adaptation planning, as explained above under international human rights law. Moreover, adaptive measures, more so than mitigation measures, can be developed on a local level, which calls for increased participation by local governments – here indigenous governments.

Federally recognized tribes in the United States differ from other communities that may be impacted by climate change because of their status as sovereigns. Tribes’ legal rights flow as an initial matter from their sovereignty and their related historical management of the land and resources. Tribes exist as entities separate from state and federal governments. A myriad of historical legal developments led to this separateness.⁵² Although the nature of tribal sovereignty has changed since

⁴⁹ *Id.*

⁵⁰ Kaswan, *supra* note 19, at 11127. Environmental justice and climate justice are related concepts, but slightly different. As Professor Judith Royster explains, “[j]ust as the environmental justice movement focused attention on the disproportionate environmental harms visited on minority and low-income communities in the United States, the related concept of climate justice focuses on the inequitable effects of climate change worldwide. While environmental justice is concerned with environmental quality, climate justice is concerned with the ‘equitable distribution of the benefits of climate change adaptation.’” *Climate Change and Tribal Water Rights: Removing Barriers to Adaptation Strategies*, 26 TUL. ENVTL. L.J. 197, 198 (2013). In this regard, climate justice is linked to climate change adaptation.

⁵¹ Royster, *supra* note 14, at 200.

⁵² American Indian tribes are extra-constitutional, meaning that tribes exist apart from the American Constitution. Ann Tweedy, *Connecting the Dots Between the Constitution, The*

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the founding of the United States of America, tribal sovereignty remains in place today.⁵³

Consistent with the necessity to recognize indigenous sovereignty to prevent injustice as well as international human rights norms, any adaptation policy applicable to indigenous peoples must provide for broad participation by the indigenous community. Generally, scholars have noted that community participation is necessary for successful climate change adaptation.⁵⁴ Such participation from indigenous communities is particularly important for the reasons already discussed. Also, consistent with the variety in indigenous governments and cultures, climate change impacts are variable,⁵⁵ and therefore, any adaptation plans should address the individual needs of the indigenous community being impacted. Allowing for

Marshall Trilogy, and the United States v. Lara: Notes Toward a Blueprint for the Next Legislative Restoration of Tribal Sovereignty, 42 U. MICH. J.L. REFORM 651, 656 (Spring 2009) (citing Gloria Valencia-Weber, *The Supreme Court's Indian Law Decisions: Deviations from Constitutional Principles and the Crafting of Judicial Smallpox Blankets*, 5 U. PA. J. CONST. L. 405, 417 (2003)). In the early 19th century, the U.S. Supreme Court affirmed the separateness of Native nations. In *Cherokee Nation v. Georgia*, the U.S. Supreme Court held that American Indian tribes were “domestic dependent nations,” highlighting their separateness from both state and federal governments. 30 U.S. 1 (1831). In *Worcester v. Georgia*, the U.S. Supreme Court further clarified the separateness of American Indian tribes, finding that the laws of the states shall have “no force or effect” within the exterior boundaries of American Indian tribal territory. 31 U.S. 515 (1832). Although the breadth of tribal sovereignty has certainly changed in the intervening decades, today, the majority of matters handled by tribal courts include issues of property and family law. Nell Jessup Newton, *Tribal Court Praxis: One Year in the Life of Twenty Indian Tribal Courts*, 22 AM. INDIAN L. REV. 285, 308 (1998). This is consistent with the general policy of the American federal government to leave issues related to American Indian tribal members solely within the inherent tribal sovereignty of tribal governments. See generally *Worcester v. Georgia*, 31 U.S. 515 (1832) (holding that the laws of Georgia did not have any effect within the Cherokee Nation’s territory); *Santa Clara Pueblo v. Martinez*, 436 U.S. 49 (1978) (holding that tribes have the power to determine tribal membership). Moreover, Congress has indicated its recognition of tribal sovereignty through passage of the Indian Self-Determination and Educational Assistance Act and by subsequently amending various federal statutes to allow for increased tribal governance. 25 U.S.C. § 450 (2006).

⁵³ *Santa Clara Pueblo v. Martinez*, 436 U.S. 49, 60 (1978).

⁵⁴ Ruhl, *supra* note 11, at 406.

⁵⁵ *Id.* at 415.

indigenous participation also helps ensure that these crucial differences are considered during adaptation planning.

Notably, however, consideration of tribal sovereignty alone cannot ensure justice for tribal communities considering climate change adaptation. Professor Rebecca Tsosie explains that “the problem of climate change cannot be resolved through recognition of Native sovereignty, because the environmental harms are largely occurring beyond the boundaries of their lands.”⁵⁶ Accordingly, wherever possible, tribes should work cooperatively with surrounding governments to develop effective adaptation strategies. Cooperation on a government-to-government basis also strengthens the foundation of tribal sovereignty.

Connection to Land

Finally, adaptation planning for indigenous communities should also take into consideration the unique cultural and spiritual connection that many indigenous communities have with their land and environment. Professor Rebecca Tsosie explains that the importance of land is particularly vital to many indigenous communities:

There is no other place that indigenous people can go and still continue to practice their unique lifeways and cultural practices. Geographical location is essential to indigenous identity. History has demonstrated time and again that the forcible removal of indigenous communities from their traditional lands, resources, and lifeways results in immeasurable harm.⁵⁷

Beyond legal connections to the land,⁵⁸ many indigenous peoples also have a strong spiritual and cultural connection to the land upon which they

⁵⁶ Tsosie, *supra* note 18, at 1644.

⁵⁷ *Id.* at 1645. Professor Tsosie goes on to explain that “Indigenous peoples and the lands that sustain them are closely linked through ancient epistemologies that organize the universe quite differently than Western epistemology does.” *Id.* at 1677.

⁵⁸ For example, tribes may have legal connections to the land because they are constrained to a reservation, allotment or dependent Indian community. 18 U.S.C. § 1151.

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reside or to their traditional homelands. For many indigenous peoples, their spirituality is intimately connected to the Earth and their environment.⁵⁹ As the effects of climate change ravage their environment, indigenous peoples may experience both a physical and spiritual loss connected with the negative impact on the environment. As an example of this connection, the Swinomish Climate Change Initiative Climate Adaptation Action Plan, detailed below, discusses the link between tribal culture and community health. Similarly, because of the close spiritual connection that many indigenous peoples have with the environment, their culture and traditions are also intimately connected to the larger environment.⁶⁰ It is commonplace in many indigenous communities for annual traditions and customs to be tied to certain environmental occurrences. As climate change threatens to dramatically change the environment, culture and tradition may also therefore be threatened.

Traditional Environmental Knowledge

Related to this strong connection to land and place that many indigenous communities possess is traditional environmental knowledge or TEK.⁶¹ TEK “is used to describe a system of knowledge, practice, and belief that describes the relationship of living beings and their environment. This system has evolved through tradition as well as adaptive processes over time and has been passed from generation to generation by cultural

As a result of the status of the land as a reservation, allotment or dependent Indian community, the tribe or individual Indian occupying the land will have certain legal rights. *See generally* COHEN’S HANDBOOK OF FEDERAL INDIAN LAW § 3.04 (Nell Jessup Newton, et al. eds, LexisNexis 2012). Should the tribe or individual abandon the land, the legal rights may also be abandoned depending on their nature. *See generally id.*

⁵⁹ Not every indigenous person has a close connection with his or her environment.

⁶⁰ Tsosie, *supra* note 35, at 1666 (“[M]any sources of international law concerning indigenous human rights recognize that the cultural survival of indigenous peoples is centrally linked to the integrity of their land base.”) (citing Armstrong Wiggins, *Indian Rights and the Environment*, 18 YALE J. INT’L L. 345, 347-348 (1993)).

⁶¹ Notably, there is no singular TEK. For example, there are currently 566 federally recognized tribes in the United States alone, and, each tribal nation may have its own TEK. 79 Fed. Reg. 4748 (Jan. 29, 2014). Furthermore, the author rejects the stereotype that all indigenous people live in harmony with nature, as this stereotype essentializes tribes and tribal people.

transmission.”⁶² Accordingly, because of the strong connection many indigenous communities have to a particular land and place, such communities have developed TEK related to a particular place.

Professor Maxine Burkett has considered the incorporation of TEK into climate change adaptation planning. Professor Burkett explains:

Integration of [TEK], in the adaptation context, describes at least two different phenomena. It describes the indigenous methods used to respond to historical extremes that climate forecasts portend with greater frequency and severity – such as floods and drought – and suggests proven adaptations. It can also describe a lens, or worldview, with which decisions should be made that might facilitate long-range, multigenerational adaptive governance.⁶³

Increasingly, various entities from the United Nations to prominent non-governmental organizations are looking at the possibility of incorporating TEK into adaptation plans.⁶⁴ Professor Burkett further explains:

The increased interest in indigenous practices reflects a growing recognition of the way in which indigenous communities’ relationship to the physical space they inhabit, generally speaking, may provide better guidance for increasing resilience in a changing global environment. The tight physical and spiritual connection indigenous peoples cultivate with their land results in excellent observation and interpretation of changes to the land, sea and sky. Furthermore, this observation and interpretation has occurred over time, producing a ‘chronological landscape-specific precision and detail’ that is lacking in Western scientific

⁶² Burkett, *supra* note 2 at 100-101.

⁶³ *Id.* at 96.

⁶⁴ *Id.* at 98.

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models, which operate at much broader spatial and temporal scales.⁶⁵

Accordingly, because TEK traditionally differs from Western or scientific knowledge, it may be a valuable addition to adaptation planning.⁶⁶

Because of the reasons explained by Professor Burkett – flexibility, knowledge based on close connection to the land, better guidance for increased resiliency – tribes working to develop adaptation plans may wish to incorporate their own TEK into such plans.

II. EXAMINING TRIBAL ADAPTATION STRATEGIES

Having now examined what climate change adaptation is generally and what factors tribal communities might wish to consider when developing their own adaptation plans, this section moves beyond the theoretical to a look at what tribes are actually doing. The section describes the climate change adaptation plans of four tribes: Confederated Salish and Kootenai Tribes, Jamestown S’Klallam Tribe, Nez Perce Tribe and the Swinomish Indian Tribal Community. Following this section, the next section identifies trends that may be emerging in tribal adaptation plans based on the descriptions below.

A. Confederated Salish and Kootenai Tribes⁶⁷

The Confederated Salish and Kootenai Tribes (CSKT), located within Montana, have adopted an adaptation plan titled the “Climate Change

⁶⁵ *Id.* at 99.

⁶⁶ Professor Burkett explains that TEK differs from Western or scientific knowledge in three ways. “Indigenous peoples develop and cultivate environmental knowledge through hands-on experience rather than formal education. In addition, the knowledge is embedded in culture and is unique to specific locations. As a result, it is dynamic and diverse within and between societies and generations. Finally, it is holistic. It is a way of life and a worldview.” *Id.* at 101.

⁶⁷ The discussion of the Confederated Salish and Kootenai Tribes Climate Change Strategic Plan is largely taken from a forthcoming article written by the author, *Tribes as Innovative Environmental “Laboratories”*, which is scheduled for publication in the Colorado Law Review in Spring 2015.

Strategic Plan”.⁶⁸ On November 29, 2012, the CSKT adopted Resolution No. 13-52 acknowledging the impact of climate change on the Tribes’ reservation, the Flathead Reservation, and declaring the “intent and commitment” of the Tribes to address the effects of climate change on the Reservation.⁶⁹ “The Northwest has already observed climate changes including an average increase in temperature of 1.5°F over the past century. ... Locally, all models predict warmer temperatures, lower snowpack, and more frequent and severe droughts and floods.”⁷⁰ For the Tribes, the changes in water and its impact on the fisheries that the Tribes rely on are some of the most important effects of climate change.⁷¹ Although each of the Tribes, including Salish, Pend d’Oreilles, Kalispel, and Spokane Indians, located on the Flathead Reservation is culturally distinct, they all share a strong knowledge of the natural environment and respect for all creation.⁷²

Through Resolution No. 13-52, the CSKT Tribal Council called on the Tribes “[t]o develop appropriate policies and strategies for addressing effects and projected impact of climate change on the Tribe and the

⁶⁸ Confederated Salish and Kootenai Tribes of the Flathead Reservation, CLIMATE CHANGE STRATEGIC PLAN, 3 (Sept. 2013), *available at* <http://www.cskt.org/NRD/docs/CSKT%20Climate%20Change%20Adaptation%20Plan%20FINAL%2009%2010%202013.pdf> (“The Confederated Salish and Kootenai Tribes (CSKT) include the Salish, Kootenai, and Pend d’Oreilles Tribes. As the first to organize a tribal government under the Indian Reorganization Act of 1934, the Tribes are governed by a tribal council. The Tribal Council has ten members. The council elects from within a Chairman, Vice Chairman, Secretary and Treasurer. The Tribal Council represents the Arlee, Dixon, Elmo, Hot Springs, Pablo, Polson, Ronan, and St. Ignatius districts in Montana. CSKT employs nearly 1,400 people. As of 2012, there were about 7,900 enrolled tribal members. Approximately 5,300 tribal members live on the Flathead Reservation and 2,600 tribal members live off the Reservation. The 2010 population of the Reservation was 28,324, and eight percent increase over the 2000 census, but non-Indians outnumbered Indians by two-to-one.”).

⁶⁹ *Id.* at i.

⁷⁰ *Id.* at 2.

⁷¹ *Id.* at 22-23 (“All models predict warmer temperatures, lower snowpack, more frequent and severe droughts and floods.”). Anticipated climatic impacts also include increased storm events, decreased snow pack, changes in hydrology, changes in the forest and vegetation, increased wildlife, decreased air quality, and changes to wildlife in addition to impacts on fish. *Id.* at 24-26.

⁷² *Id.* at 6.

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Reservation” and “[t]o develop potential programmatic and/or regulatory actions and changes consistent with said policies....”⁷³ Notably, the Resolution called for the incorporation of Traditional Ecological Knowledge⁷⁴ into the Climate Change Strategic Plan and also recognized that climate change may result in cultural impacts, as well as negative social, environmental and economic consequences.⁷⁵ The focus on culture in the Strategic Plan is consistent with the Tribes’ overall use of cultural considerations for natural resources in land use planning.⁷⁶ The Strategic Plan later explains that TEK is uniquely related to cultural resources and that both must be protected.⁷⁷ In fact, the Strategic Plan places a special emphasis on the importance of protecting tribal culture and TEK, as Section 2.3 focuses extensively on both, in addition to providing excerpts of tribal elder observations related to climate change.⁷⁸

⁷³ *Id.* at ii.

⁷⁴ The Climate Change Strategic Plan defines “Traditional Ecological Knowledge” as “considerations related to your planning areas (Forestry, Water, Air, etc.) concerning climate change. TEK refers to the evolving knowledge acquired by indigenous and local peoples over hundreds of thousands of years through direct contact with the environment. This knowledge is specific to a location and includes the relationships between plants, animals, natural phenomena, landscapes and timing of events that are used for lifeway’s, including but not limited to hunting, fishing, trapping, agriculture, and forestry.” *Id.* at xi. The Tribes’ Strategic Plan incorporates TEK by including elder observations, which “indicate that the climate has noticeably changed within their lifetime and as stated prior, the knowledge they gained from parents, grandparents, and great grandparents goes back at least three generations.” *Id.* at 36.

⁷⁵ *Id.* at i-ii.

⁷⁶ *Id.* at 14. The Tribes go on to explain that these cultural considerations refer to: “Cultural traditions rely on abundant populations of native fish and wildlife, healthy plant communities, clean air and water. Undisturbed spiritual sites, prehistoric and historical campsites, dwellings, burial grounds and other cultural sites are important too, because they, in the words of the Flathead Culture Committee, ‘reaffirm the presence of our ancestors, how we are alive today only because of them. These places are part of the basis of our spiritual life.’ They provide young people with a connection to ancestors and native traditions.” *Id.* at 16.

⁷⁷ *Id.* at 17.

⁷⁸ *Id.* at 27-36. Based on an examination of the entire Strategic Plan, the Tribes do not dedicate similar space in the Plan to any other resource category being considered. Accordingly, one can conclude that the protection of cultural resources are especially important to the Tribes.

As a result of Resolution No. 13-52, the Tribes eventually adopted their Climate Change Strategic Plan in September 2013.⁷⁹ The Tribes' Strategic Plan aligns with local regional, state and city efforts to address the impacts of climate change.⁸⁰ The Plan includes a discussion of the characteristics and history of the Tribes, the climate impacts, the planning focus, vulnerability and risk assessment, goals and actions, and an implementation plan. The Strategic Plan focuses on nine sectors that may be affected by climate change: forestry, land, fish, wildlife, water, air, infrastructure,⁸¹ people,⁸² and culture.⁸³ The Plan also provides priority levels for each of the areas examined and the Tribes rated the priority for culture as high.⁸⁴ In relation to the high priority placed on culture, the Strategic Plan concludes that, "[p]rotecting land-based cultural resources is essential if the Tribes are to sustain Tribal cultures."⁸⁵

Ultimately, the Tribes' Strategic Plan develops goals and actions related to each of the nine sectors considered.⁸⁶ Where possible, the Tribes incorporate TEK into their goals and actions. For example, the forestry goals include developing a greenhouse to grow native and cultural plant species.⁸⁷ Similarly, the land goals include engaging in practices to promote the growth of native plants.⁸⁸ In terms of obtaining the cultural goals, the Tribes task the Tribal Council and CSKT Elders Advisory Council, who possess TEK, with this responsibility.⁸⁹

⁷⁹ *Id.* at i-ii.

⁸⁰ Specifically, the Tribes acknowledged the Western Climate Initiative (a collaboration of several governors of Western states), the Montana Climate Change Action Plan, and the Missoula County Climate Action. *Id.* at 19. Although the Tribes mention that these regional, state and local county actions align with the Tribes' Strategic Plan, it is clear that the Tribes do not view these other climate change plans as being binding on the Tribes.

⁸¹ "The focus of the infrastructure sector is housing and power." *Id.* at 42.

⁸² "The focus of the people sector is social services, safety, tribal health, and human resources." *Id.*

⁸³ *Id.* at 36.

⁸⁴ *Id.* at 53.

⁸⁵ *Id.* at 18.

⁸⁶ *Id.* at 54-66.

⁸⁷ *Id.* at 54.

⁸⁸ *Id.* at 57.

⁸⁹ *Id.* at 66.

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In a foreword written by Joe Durglo, Chairman of the Council of Confederated Salish and Kootenai Tribes, he explains the Tribes' reasoning behind adopting the Strategic Plan:

Our people have long lived by an idea that we know best how to govern ourselves. . . . Our lands and resources are the basis of our spiritual life. That's been our way since time began. By preparing for further environmental changes, we can mitigate threats to our way of life. Our traditions rely on abundant populations of native fish and wildlife, healthy plant communities, clean air, water, undisturbed spiritual sites, prehistoric and historic campsites, dwellings, burial grounds, and other cultural sites because these areas reaffirm the presence of our ancestors. These resources also provide our future leaders with a connection to their ancestors and native traditions. . . . Our survival is woven together with the land. . . . These recent efforts are a continuation of the work our elders have done for years in observing and considering climate changes to our lands. As is our practice, we look ahead to prepare for coming challenges and apply the values taught by our ancestors.⁹⁰

Moreover, the Salish-Pend d'Oreille Culture Committee explained that, "Indigenous people of the world have a special moral stature on this issue [of climate change] and may have a special role to play in coming together to advocate for action."⁹¹ Also, the CSKT Climate Change Strategic Plan concluded that:

Climate change is expected to impact the Flathead Reservation. These impacts may substantially affect ways of life that have been at the core of Tribal Culture for generations. As such, the significance of these impacts merits special focus, especially related to the connection between

⁹⁰ *Id.* at iii.

⁹¹ *Id.* at 2.

traditions and issues of community resilience and sovereignty.⁹²

In the Executive Summary of the Strategic Plan, the Tribes acknowledged that the Plan is an “early step” in the Tribes’ efforts to combat the impacts of climate change and much future work will be required.⁹³ Having taken the initial step of developing the Strategic Plan, the Tribes established several steps of an implementation plan to effectuate the Strategic Plan.⁹⁴

B. Jamestown S’Klallam Tribe

The Jamestown S’Klallam Tribe (JSK) and its ancestors have occupied the Olympic Peninsula of Washington State for centuries.⁹⁵ Over the last two centuries, “the Jamestown S’Klallam people have successfully navigated a variety of societal changes, all while maintaining a connection to the resource-rich ecosystems of the region.”⁹⁶ The Tribe is now facing another change because of the impacts of climate change, but “[c]hanging climate and its associated impacts are not entirely new to the Tribe, which has successfully adapted to past climate variations.”⁹⁷ In light of the negative impacts of climate change on the JSK tribal community, the Tribe engaged in adaptation planning “[t]o protect and preserve culturally important resources and assets; ensure continued economic growth; and promote long-term community vitality”⁹⁸

⁹² *Id.* at 18.

⁹³ *Id.* at 1.

⁹⁴ *Id.* at 67.

⁹⁵ Jamestown S’Klallam Tribe, CLIMATE CHANGE VULNERABILITY ASSESSMENT AND ADAPTATION PLAN 7 (S. Petersen & J. Bell eds., 2013), *available at* http://www.jamestowntribe.org/programs/nrs/nrs_climchg.htm.

⁹⁶ *Id.* Later in the JSK Adaptation Plan, the Tribe goes on to explain that “[t]he Tribe has been responding and adapting to a changing climate for thousands of years. Preparing for continued and accelerated change is not something new, but a continuation of the holistic natural resource and culturally driven approach that has kept the Jamestown S’Klallam Tribe a vibrant and growing community.” *Id.* at 52.

⁹⁷ *Id.* at 7.

⁹⁸ *Id.*

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In August 2013, the JSK adopted its Climate Vulnerability Assessment and Adaptation Plan (JSK Adaptation Plan).⁹⁹ The JSK Adaptation Plan begins with a discussion of the Tribe and resilience, then explains the impacts of climate change on the Tribe, and concludes by discussing the three key areas of concern: Group 1 (very high priority areas of concern),¹⁰⁰ Group 2 (high priority areas of concern),¹⁰¹ and, Group 3 (medium priority areas of concern).¹⁰²

In its Adaptation Plan, the Tribe identifies several impacts of climate change that are threatening its homeland's eco-system. These impacts include: increasing temperatures, changing precipitation patterns, sea level rise and coastal flooding, ocean acidification and temperature increases, forest habitat changes, and negative impacts to human health, such as shifting tribal demographics, storm events, and air pollution.¹⁰³ Furthermore, in relation to human health, the JSK Adaptation Plan concludes that "[p]opulation-wide changes to tribally valued plants and animals have the potential to disrupt cultural, spiritual, socioeconomic, and nutritional health."¹⁰⁴

The Tribe also established vulnerability rankings in its Adaptation Plan, which factored in exposure, sensitivity, and adaptive capacity.¹⁰⁵ The vulnerability rankings correspond to the overall group ranking. According to the Tribe, "*Climate exposure* is the extent and magnitude of a climate or weather event. *Sensitivity* is the degree to which that area of concern is susceptible to a climate impact. *Adaptive capacity* is [sic] the ability of the

⁹⁹ *Id.* at 1.

¹⁰⁰ "*Very high priority areas of concern* are those areas sharing high community value, with a large magnitude of expected impacts, persistence, hazardous timing, and limited potential for adaptation." *Id.* at 29 (emphasis in original).

¹⁰¹ "*High priority areas of concern* include the important economic resources of the Casino and the Longhouse Market, as well as Highway 101, the critical transportation link between the community and surrounding area." *Id.* at 29 (emphasis in original).

¹⁰² "*Medium priority areas of concern* include very specific impacts with a generally high potential for adaptation." *Id.* at 29 (emphasis in original).

¹⁰³ *Id.* at 9-25.

¹⁰⁴ *Id.* at 24.

¹⁰⁵ *Id.* at 26-27.

area of concern to adjust to or respond to the changing conditions.”¹⁰⁶ Once the vulnerability rankings were assessed, the vulnerabilities were ranked so that the Tribe could prioritize based on its limited resources.¹⁰⁷ Following this ranking, the vulnerabilities included in Group 1 are: salmon, clams and oysters, shellfish biotoxins, wildfire, and cedar harvests.¹⁰⁸ Most of the Group 1 vulnerabilities ranked particularly high in cultural importance.¹⁰⁹ Those vulnerabilities included in Group 2 were: casino and longhouse market, transportation Highway 101, and the Blyn tribal campus water supply.¹¹⁰ And, finally, those vulnerabilities included in Group 3 were: Jamestown Beach water supply, NR Lab & Planning Department buildings, and the Blyn tribal campus wastewater tanks.¹¹¹

For each of the areas identified, the JSK Adaptation Plan explains why the area of concern is important, the potential impacts of climate change on that area of concern, and actions that the Tribe can take to increase resilience.¹¹² The JSK Adaptation Plan defines “resilience” as “[t]he capacity to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.”¹¹³

As noted above, those areas that are “very high priority areas of concern” within Group 1 generally have substantial cultural significance to the Tribe. For example, salmon is included in Group 1 and

[s]almon species are an iconic cultural resource for many coastal tribes of the Pacific Northwest. Traditionally, salmon provided the foundation for almost all aspects of cultural life for the Jamestown S’Klallam Tribe and was an important trade good with more interior tribes of the Pacific Northwest. Salmon continue to represent an important tribal cultural

¹⁰⁶ *Id.* at 26 (emphasis in original).

¹⁰⁷ *Id.* at 28.

¹⁰⁸ *Id.* at 29.

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.* at 30-33.

¹¹³ *Id.* at 54.

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connection to the waters of the Usual & Accustomed area and also provide a valuable economic and nutritional resource for the tribe.¹¹⁴

Because the climate change-related stressors negatively impacting salmon are not limited to tribal territory, the JSK Adaptation Plan calls on the Tribe to coordinate with the federal government, state government, private industry, and private landowners to try to increase the resiliency of salmon.¹¹⁵

As with the CSKT adaptation plan and as demonstrated by the foregoing discussion, JSK references “culture” as a reason adaptation planning is important. Specifically, the Tribe explains that a “persisting idea of an ecosystem-wide homeland” is culturally essential to the JSK community,¹¹⁶ and, therefore, the ecosystem-wide homeland must be protected as much as possible from the impacts of climate change.

In addition to considering cultural impacts, the JSK Adaptation Plan also acknowledges the importance of TEK. In evaluating the extent of the impacts of climate change on the tribal community, the JSK Adaptation Plan explains that “[t]he scenarios created for this project are meant to assist in adaptation planning and should be combined with local knowledge, such as patterns of flooding and existing storm impacts, in order to identify areas or infrastructure at most risk from sea level rise.”¹¹⁷ Similarly, in considering methods to increase the resiliency of areas of concern, the JSK Adaptation Plan indicates that the Tribe should partner with “traditional harvesters to gather on-the-ground observations.”¹¹⁸ The JSK Adaptation Plan therefore explicitly acknowledges the role of TEK in adapting to the impacts of climate change.

¹¹⁴ *Id.* at 30. The JSK Adaption Plan goes on to detail the cultural significance of other areas of concern identified in Group 1, such as clams and oysters, shellfish biotoxins, wildfire and cedar harvests. *Id.* at 33-42.

¹¹⁵ *Id.* at 32-33 tbl.3.

¹¹⁶ *Id.* at 7.

¹¹⁷ *Id.* at 17.

¹¹⁸ *Id.* at 42 tbl.7.

At the end of the JSK Adaptation Plan, the Tribe identifies four next steps to help the Tribe increase its preparedness for climate change. The four next steps are:

1) Prioritizing adaptation strategies for implementation and identify individuals or departments responsible for implementation; 2) building community support for climate preparedness; 3) incorporating climate preparedness into the Tribal Government operations and policies and 4) collaborating with surrounding communities, the county, and other key stakeholders to monitor key changes to local and regional climate that are likely to affect the Tribe.¹¹⁹

The Tribe goes on to explain that these next steps should include consideration of cultural concerns¹²⁰ and also work to increase tribal resiliency.¹²¹

C. Nez Perce Tribe

Recognizing the impacts of climate change to the Clearwater River Subbasin, the Nez Perce Tribe (NPT) adopted its Clearwater River Subbasin Climate Change Adaptation Plan in 2011.¹²² NPT defines “climate change adaptation” as an “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.”¹²³ The Tribe’s Adaptation Plan focuses on the Clearwater River Subbasin, which is “approximately 9,350 square miles

¹¹⁹ *Id.* at 52.

¹²⁰ *Id.* at 46. “Culture” is specifically a value listed that the Tribe should consider when determining value to the Tribe. *Id.*

¹²¹ The second step is really designed to increase tribal resiliency to climate change. *Id.* at 52-53.

¹²² Nez Perce Tribe Water Resources Division, *Clearwater River Subbasin Climate Change Adaptation Plan*, 7 (Dec. 30, 2011) [hereinafter Nez Perce Climate Change Adaptation Plan] available at http://www.mfpp.org/wp-content/uploads/2012/03/ClearwaterRiver-Subbasin_ID_Forest-and-Water-Climate-Adaptation-Plan_2011.pdf.

¹²³ *Id.* at 13 (citing Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis* (Solomon, S., Qin, D., & Manning, M. eds., 2007)).

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in size and extends 100 miles from north to south and 120 miles from west to east (Idaho/Washington border to Idaho/Montana border).”¹²⁴ The plan focuses on this region because “[t]he Clearwater River Subbasin comprises much of the original homeland of the Nez Perce Tribe (Tribe) and still is the largest population center for the Tribe.”¹²⁵

The Plan details the impacts of climate change on the Subbasin, then conducts resource assessments, water assessments, economic assessments and concludes with a discussion of the proposed action plan. “The goal of the adaptation plan is to act as a catalyst for the regional community to begin developing and implementing detailed adaptation strategies in order to better withstand the impacts of a changing climate upon the natural resources, economy and social structure of the Clearwater River Subbasin in the decades to come.”¹²⁶ The Plan also explains that “[h]istorically, the Nez Perce people were hunters and gathers and thrived on abundant salmon, elk and deer, camas and other roots and berries. The protection of these resources is a fundamental mission of the Nez Perce Tribe.”¹²⁷

Consistent with the NPT’s fundamental mission, the Adaptation Plan acts to identify the impacts of climate change on these natural resources and then develop adaptation strategies to best preserve these resources.¹²⁸ The Plan indicates a preference for local government planning because “[a]daptation actions are ... most effective if they are developed and implemented by local communities, since resource and land-use decisions are primarily made at the local level.”¹²⁹ Here, a significant portion of the Subbasin is not tribal property, and therefore, the Tribe will have to work cooperatively with the federal government, the state, and private landowners to accomplish some of its adaptation objectives.¹³⁰

The NPT Adaptation Plan begins by explaining how climate change is

¹²⁴ *Id.* at 13.

¹²⁵ *Id.* at 9.

¹²⁶ *Id.* at 7.

¹²⁷ *Id.* at 9.

¹²⁸ *Id.* at 9-10.

¹²⁹ *Id.* at 13.

¹³⁰ *Id.* at 15.

negatively impacting the Tribe's environment. For example, the Tribe is experiencing increased air temperatures, the snowpack has decreased, and the timing of spring runoff has shifted which increases the region's vulnerability for drought and increased water temperature.¹³¹ The Plan identifies key risk assessment findings for the region, which include:

- An increase in wildfire intensity and severity.
- Changes in the current distribution and composition of forest communities.
- An increase in number and distribution of invasive/destructive plant and insect species.
- Loss of productivity in key timber species.
- An increase in the elevation of typical winter snowline.
- Earlier spring peak stream flows.
- Higher summer water temperatures and a decrease in water quality overall.
- A change in habitat types for fish and wildlife.
- Negative impact to non-irrigated farmland, from drier conditions in summer.
- An increase in wildfire suppression costs.
- Negative impacts to recreation and tourism.¹³²

After reviewing the impacts of climate change to the region, the Plan concludes that “[t]he changes already observed have been substantial,” and that by the end of the century, the Tribe “will likely be facing unprecedented changes to [its] natural environment and the economies that depend on it.”¹³³ The NPT Adaptation Plan then goes on to identify its major goals, which includes ideas to:

- Create partnerships to research local effects of climate change on water resources, forestry, and the economy.

¹³¹ *Id.* at 9.

¹³² *Id.* at 10.

¹³³ *Id.* at 13.

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- Include climate change adaptation assessment data, goals, and objectives into local and regional planning documents.
- Affect a change in planning and zoning regulations along waterways and restore the 100-year floodplain.
- Protect and restore water quality and quantity for human health and anadromous fish.
- Manage wildfire risk.
- Reduce and/or improve infrastructure in landslide-prone areas.
- Develop ecologically connected network of public and private lands to facilitate fish, wildlife and plant adaptation to climate change.¹³⁴

Interestingly, in its proposed outcomes, the NPT explains that its treaty rights may prove to be helpful in protecting its natural resources from the impacts of climate change.¹³⁵

NPT acknowledges that its Adaptation Plan is just a first step in developing robust actions to correct the impacts of climate change.¹³⁶ The NPT views the Plan as “risk management,” allowing it to “help identify some of the potential impacts of climate change on the forest, water, and economic resources of the Clearwater River Subbasin.”¹³⁷ Ultimately, the NPT anticipates that “the subbasin and its people will benefit from more resilient forest lands, clean and abundant water supply, healthy wildlife habitat, more sustainable farming, and communities more prepared to handle the weather, fire, and health impacts of climate change.”¹³⁸

¹³⁴ *Id.* at 10.

¹³⁵ “A more robust discussion of keystone and endangered wildlife species would also be beneficial in the development of additional adaptation strategies, as would a discussion of Tribal treaty rights and the potential effects climate change might have on the resources guaranteed by those rights.” *Id.* at 55.

¹³⁶ *Id.* at 47.

¹³⁷ *Id.*

¹³⁸ *Id.* at 11.

D. Swinomish Indian Tribal Community

The Swinomish Indian Tribal Community is located within the state of Washington. “The Swinomish Indian Reservation is located on the southeastern peninsula of Fidalgo Island, west of the Swinomish Channel and adjacent to low-lying mainland areas of western Skagit County, in western Washington.”¹³⁹ Approximately 3,000 people live on the Reservation.¹⁴⁰

In 2007, the Swinomish Indian Senate passed a Proclamation authorizing the study of the impacts of climate change on the lands, resources and community of the Swinomish Indian Reservation.¹⁴¹ “In the fall of 2008, the Swinomish Indian Tribal Community started work on a landmark two-year Climate Change Initiative to study the impacts of climate change on the resources, assets, and community of the Swinomish Indian Reservation and to develop recommendations on actions to adapt to projected impacts.”¹⁴² In October 2010, the Tribe adopted the Swinomish Climate Change Initiative Climate Adaptation Action Plan (Swinomish Adaptation Plan). The Swinomish Adaptation Plan was the culmination of the study initiated by the 2007 Proclamation, although the Tribe acknowledges that the Plan is a first step.¹⁴³

The Plan defines “Adaptation (climate change)” as “[a]ctions to respond to and/or counter the effects of climate change; relocation and armoring are examples of adaptation actions.”¹⁴⁴ The Plan also defines “Climate Change” as:

[c]hanges in the Earth’s physical systems that occur over long time periods (decades, centuries, or even millions of years) rather than over shorter periods such as for annual or seasonal

¹³⁹ Swinomish Indian Tribal Community, *Swinomish Climate Change Initiative Climate Adaptation Action Plan*, 7 (Oct. 2010), http://www.swinomish-nsa.gov/climate_change/Docs/SITC_CC_AdaptationActionPlan_complete.pdf.

¹⁴⁰ *Id.*

¹⁴¹ *Id.* at v.

¹⁴² *Id.* at 1.

¹⁴³ *Id.*

¹⁴⁴ *Id.* at 5 (emphasis in original).

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changes; climate change may include changes in natural cycles of variability such as seasonal, annual, multi-year, and/or multi-decade patterns of variability. As used in the Tribal project, climate change refers to those changes resulting from increase in greenhouse gas concentrations and changes in aerosol emissions that are deemed to be caused by human activities. Examples of global effects of climate change include increase in average atmospheric and sea temperatures, general melting and decrease in snow and ice, increased drought conditions, and rising sea levels.¹⁴⁵

The Plan points out that the Tribe has a proven record of adaptation. As M. Brian Cladoosby, Chairman of the Swinomish Indian Senate, explained, “our community and culture have also proven their ability to endure and survive many times before. . . . If adaptation is to be our future, we at Swinomish have already proved ourselves equal to the challenge.”¹⁴⁶

The Swinomish Adaptation Plan is organized based on five categories with every climate change impact and action item being organized into one of these categories. The first four categories are Coastal Resources, Upland Resources, Physical Health, and Community Infrastructure and Services.¹⁴⁷ “A fifth overarching category, Cultural Traditions and Community Health, has threads to all categories, given the ties and significant [sic] of cultural and community health to a great number of issues, and as such is the subject of special focus.”¹⁴⁸ Accordingly, the Swinomish Adaptation Plan specifically considers the impacts of climate change on culture. The detailed discussion of the impacts of climate change on the Tribe starts with the impacts to culture at Chapter 4 of the Plan.

The Plan explains that the Swinomish Indian Reservation brought together several Coast Salish groups with the Treaty of Point Elliot in 1855 “who shared a culture centered on fishing, and a ceremonial calendar

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at v.

¹⁴⁷ *Id.* at 2.

¹⁴⁸ *Id.* at 2.

revolving around cedar houses.”¹⁴⁹ The Plan further explains that “[t]raditional foods such as salmon and seafood are ‘cultural keystone’ aquatic species to the Tribe; much more than food sources, these foods are a vital contribution to the cultural, spiritual, and social life of tribal members.”¹⁵⁰ The loss of these cultural resources can have profound effects on the tribal community because “[l]oss of a traditional food is directly related to loss of morale, and cultural health and well-being.”¹⁵¹

The Swinomish Adaptation Plan explains that acknowledging the connection between culture and the health of the community is important because “the projected impacts [of climate change] are expected to affect long-standing traditions of tribal members, including shellfish harvesting, salmon fishing, hunting, gathering of native plants, and use of cedar and other species.”¹⁵² The Plan sums up this connection by stating that:

Given the potential threats to a way of life that has been at the core of tribal cultural for countless generations, the significance of these issues and long traditions merits special focus. This chapter [Chapter 4] describes the connection between these tribal traditions and issues of community resilience and cultural sovereignty that are vital to preparing for significant changes, issues based on a foundation of *community wellness* that encompasses more than the physical health actions listed in this report. . . . The adaptive responses described in this report are intended to be dynamic, and they are consistent with local traditions, while drawing from and contributing to neighboring tribes, regional compacts, and international bodies.¹⁵³

The Swinomish Adaptation Plan specifically calls for the

¹⁴⁹ *Id.* at 8.

¹⁵⁰ *Id.* at 10 (citation omitted).

¹⁵¹ *Id.* (citation omitted).

¹⁵² *Id.*

¹⁵³ *Id.* at 13 (emphasis in original).

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incorporation of TEK in order to find solutions to the impacts of climate change on the Tribe's culture. The Plan defines "Indigenous Knowledge, Native Science, Traditional Knowledge, Traditional Ecological Knowledge" by explaining that "[t]he terms are used interchangeably to refer to holistic, evolving practices and beliefs passed down through generations about the relationships of living beings to their environment."¹⁵⁴ The Plan explains that TEK can be helpful in addressing the impacts of climate change because "[i]ndigenous knowledge offers valuable insights and tools to respond to challenges such as climate change and to find solutions."¹⁵⁵

Furthermore, the Plan explains that tribal self-determination is linked to the community's health and tribal culture. The Plan asserts that the tribal community should be able to determine what lifestyle leads to good health and that development and restoration should be community driven.¹⁵⁶ The Swinomish Adaptation Plan goes on to say that "[s]elf determination is a key health indicator that incorporates healing, restoration, and development, all enacted by and at a community/local level. Self-determination means the freedom to decide how to create and sustain 'good health.' ... Self-determination is the ability to exercise sovereign rights."¹⁵⁷ In evaluating which adaptation methods to use, the Plan acknowledges that "regulatory measures and tools also fall squarely within the sovereign rights and responsibilities of the Tribe to protect the Reservation environment."¹⁵⁸

In addition to the broad focus on culture, the Swinomish Adaptation Plan also looks more narrowly at cultural resilience. The Plan explains that "[r]esilience is important because certain impacts of climate change may lead to *grief* and *despair*, e.g. from decline in shellfish, salmon, land animals such as elk, the loss of traditional gathering and hunting places, and impacts to traditional plants."¹⁵⁹ The Plan, therefore, considers how tribal culture may increase resiliency to climate change. For example, one idea to increase resiliency through traditional tribal culture is the creation of a repository of

¹⁵⁴ *Id.* at 5.

¹⁵⁵ *Id.* at 15.

¹⁵⁶ *Id.* at 20.

¹⁵⁷ *Id.* at 22.

¹⁵⁸ *Id.* at 39.

¹⁵⁹ *Id.* at 23 (emphasis in original).

indigenous plants, which would become a place for traditional teaching and healing.¹⁶⁰

Similarly, Chapter 4 of the Swinomish Adaptation Plan concludes with suggestions of how to adapt to climate change and preserve tribal culture at the same time generally. To accomplish this, the Plan recommends integrating indigenous knowledge into ongoing planning and programs and also exploring treaty implications of adaptation planning.¹⁶¹

The Swinomish Adaptation Plan also discusses the anticipated impacts of climate change on cultural resources. For example,

[c]ultural resources may be impacted both positively and negatively by tidal inundation. Gradual sea level rise will increasingly submerge near shore or low-lying buried artifacts and sites, both protecting them and making investigation more difficult, while strong storm surges may uncover some sites or artifacts, rendering them vulnerable to weathering and tampering. Cultural use areas may be impacted by either inundation in near-shore or low-lying areas or by wildfire in forested areas, rendering them unusable in either case for some extended period of time.¹⁶²

Furthermore, because Coastal Resources are generally of a high cultural value, the Plan indicates that their protection from climate change should be a high priority for the Tribe.¹⁶³

Following its in-depth discussion of the impacts of climate change on tribal culture, the Swinomish Adaptation Plan then goes on to summarize the impacts of climate change on the remaining four identified categories. In terms of its Coastal Resources, climate change has impacted the tribal resource because of “[i]nundation from sea level rise and storm surge;

¹⁶⁰ *Id.*

¹⁶¹ *Id.* at 24.

¹⁶² *Id.* at 31.

¹⁶³ *Id.* at 46.

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includes impacts on shoreline areas, structures, habitat, and natural resources within those areas,”¹⁶⁴ and, “[d]ecreased habitat viability due to changing water quality parameters.”¹⁶⁵ For its Upland Resources, the Tribe anticipates increased wildfire risk as a result of climate change.¹⁶⁶ In terms of the physical health of its citizens, the Tribe anticipates heat-related illnesses, increased incidence of respiratory disease, and toxic seafood contamination.¹⁶⁷ In terms of the Tribe’s Community Infrastructure and Services, the Tribe anticipates that climate change will lead to: “[i]nundation of low-lying roads and bridge approaches,” “[r]oad closure from storm/tidal surge event and/or wildfire,” “[r]educed potable water supplies due to decreased sources,” “[c]ontamination of drinking water supplies from flooding,” and “[s]ervice disruption of communication and energy systems.”¹⁶⁸

The Tribe worked directly with its community to create a plan that was responsive to the community’s concerns and suggestions. Interviews with tribal community members resulted in information suggesting that the Tribe has strengths that can be built upon to increase the community’s resiliency.¹⁶⁹ Consistent with this focus on the tribal community, potential adaptation methods will be evaluated in part to ensure they are consistent with community goals.¹⁷⁰ Ultimately, the Plan focuses an entire chapter, Chapter 9, on community participation, acknowledging that “[a]n essential ongoing component of any climate change project is communicating the issues to the affected community and involving the community in responses to identified issues.”¹⁷¹

Although the focus of the Swinomish Adaptation Plan is adaptation, the Plan ends with a brief discussion of some mitigation activities that the

¹⁶⁴ *Id.* at 2.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.* at 3.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ *Id.* at 19. Summary excerpts of interviews with Swinomish community members are also available at Appendix 6 of the Swinomish Adaptation Plan.

¹⁷⁰ *Id.* at 38.

¹⁷¹ *Id.* at 81.

Tribe may undertake in order to reduce the emission of greenhouse gases. In this regard, “the Tribe recognizes the importance of reducing greenhouse gas emissions and contributing to related efforts to mitigate the causes of climate change.”¹⁷² The recommended mitigation strategies include: a resource conservation management plan, a shift to a 4-day workweek, the use of alternative energy, the development of an energy efficiency, and greenhouse gas emissions reduction strategy.¹⁷³

III. CONCLUSION: EMERGING TRENDS AND A WAY FORWARD

Having generally introduced the concept of climate change adaptation and then looked specifically at adaptation plans developed by four tribes, this section extrapolates trends that appear from the plans explored above. Although the sample here is admittedly small, the purpose of the section is to identify possible trends in the development of tribal adaptation plans that other governments (and not just tribal governments) may find helpful as they develop their own adaptation plans. Although this section is largely descriptive, the information contained herein may ultimately lead to a normative discussion of what adaptation factors or considerations are best for tribal governments.

Examining the four tribal adaptation plans here illuminates several potential emerging trends in tribal adaptation planning. All four of the tribal adaptation plans either explicitly or implicitly discussed the importance of tribal culture. Most of the tribal adaptation plans considered: 1) the necessity of coordination with local governments and community; 2) TEK; and, 3) resiliency. And, half of the adaptation plans incorporated interviews with tribal community members and discussed the importance of tribal sovereignty or self-determination.

All four tribal adaptation plans discussed the importance of tribal culture and the impacts of climate change on tribal culture and traditions, and, as a result, cultural preservation is apparently very important to tribes. Given the intimate connection between culture and health and wellness,

¹⁷² *Id.* at 85.

¹⁷³ *Id.*

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preservation of tribal culture is important for the well-being of tribal communities. The UNDRIP provides for the preservation of tribal culture, and therefore tribes developing adaptation plans in the future may wish to incorporate aspects of international indigenous law into their planning efforts. Furthermore, non-tribal communities, such as municipalities and regional entities engaged in adaptation planning, may want to extrapolate from this tribal adaptation trend and identify local culture that should be protected from the impacts of climate change.

In addition to culture, three of the four tribal adaptation plans considered: 1) the necessity of coordination with local governments and community;¹⁷⁴ 2) TEK;¹⁷⁵ and, 3) resiliency.¹⁷⁶ Coordination with local governments and communities relates to the call for Free, Prior and Informed Consent provision and the international norm regarding a right of participation. It is also consistent with tribal sovereignty because the ability of tribes to work cooperatively on a government-to-government basis promotes tribal sovereignty. Allowing for community participation is also consistent with theories of environmental justice, which calls for environmental justice communities to determine corrective actions for themselves. Accordingly, the tribes' focus on community participation and government-to-government cooperation is very much consistent with several of the factors discussed above.

Furthermore, that tribes are incorporating TEK into their adaptation plans may provide the detailed environmental information and flexibility in governance necessary to ensure effective adaptive management. And, although resiliency is not specifically discussed above, it is interesting to note that the majority of the tribes studied are focusing on increasing their community resiliency rather than merely surviving the impacts of climate change.

¹⁷⁴ The CSKT, JSK and NPT adaptation plans all referenced coordination with local governments in their adaptation plans, as discussed above.

¹⁷⁵ The CSKT, JSK and Swinomish adaptation plans all reference TEK, as discussed above.

¹⁷⁶ The JSK, NPT and Swinomish adaptation plans all reference resiliency, as discussed above.

Two of the tribal adaptation plans, the CSKT and Swinomish plans, incorporated interviews with community members into their adaptation plans. Such incorporation parallels the call for TEK and recognizing the unique connection many tribal members have with their environment, as discussed above. It also relates to the international norm calling for increased community participation in decision-making.

These same two adaptation plans also mention the importance of tribal sovereignty and self-determination, which directly tracts the factors discussed above. Although the other two tribal adaptation plans discussed do not explicitly reference tribal sovereignty or self-determination, tribal governments enacted all of the adaptation plans discussed above. Such policy development and law making activities are certainly consistent with tribal sovereignty and self-determination.

Overall, it appears that tribes are at least implicitly, and in some instances explicitly, considering elements of the factors discussed above: international human rights norms, environmental justice, tribal sovereignty, the unique connection that many indigenous communities possess with their land and environment, and traditional environmental knowledge. Also, emerging from the tribal adaptation plans studied are new trends, such as the focus on culture and resiliency. Although a comparative analysis has not been done here, it may be that other communities engaged in adaptive planning can learn from these tribal trends in a way that protects the cultures of other communities and builds on existing strengths to improve their own resiliency.

As noted above, the sample size here is admittedly small.¹⁷⁷ Yet, despite the fact that only four adaptation plans were sampled and the impacts of climate change are notoriously localized, consistency exists among the

¹⁷⁷ Terri Hansen, *8 Tribes that are Way Ahead of the Climate-Adaptation Curve*, INDIAN COUNTRY TODAY (Oct. 15, 2013), available at <http://indiancountrytodaymedianetwork.com/2013/10/15/8-tribes-are-way-ahead-climate-adaptation-curve-151763> (mentioning only 8 tribes engaged in adaptation planning). Accordingly, while the author has admittedly not done an exhaustive search of all tribal adaptation plans in the United States, it may be that the plans detailed in this article constitute a significant percentage of the tribal adaptation plans already in place.

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four plans reviewed. Overwhelmingly, the tribes all focused on the protection of culture. Also, themes of community participation, TEK, coordination with local governments, tribal sovereignty and resiliency pervade the adaptation plans studied. Whether incorporation of these factors constitutes tribal best practices remains to be seen and additional work is necessary before normative conclusions can be drawn. At the very least, however, the foregoing discussion demonstrates the validity of the factors discussed in Section 1 and tribes are encouraged to consider such factors in developing their own adaptation plans. Moreover, these themes are in no way limited to the tribal experience, as non-tribal communities may also benefit from the consideration of such factors.

Ultimately, climate change threatens the very existence of tribal and non-tribal communities around the world. Adaptive governance provides the flexibility to regulate in such an uncertain world. This article has hopefully provided some guidance as to factors that all communities should consider when developing adaptation plans.