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Supporting Tribal Climate Change Adaptation Planning Through Community Participatory Strategic Foresight Scenario Development

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Project Objectives

Climate change projections in the Great Lakes region cover a variety of systems and predicted changes, such as changes in water temperature and shifts in the ranges of certain species. Despite climate change projections, social-ecological systems are complex and there is great uncertainty regarding how climate change will unfold in the future. Indigenous peoples in the region, such as federally-recognized Tribes, have definite interests in planning in advance for how to adapt to such alterations because of the potential impacts on their communities. Interests range from protecting and enhancing Tribal members' access to culturally significant species, such as black ash and wild rice, to maintaining viable economic enterprises, such as Tribal forest and marine products industries, to being able to provide adequate social services to Tribal members who may increasingly experience depression and distress in response to recognizable and felt ecological changes. Tribes, as sovereign governments, are responsible for administering government agencies and departments that provide services such as health care, housing, roads/culverts, environmental protection, permitting, and cultural preservation. In addition, climate changes may change the connections between some Tribal members' traditional knowledge and the ecology of their homelands. Traditional knowledge, however, is also seen as an important contributor to climate adaptation planning for both Tribes and neighboring communities in the region (Whyte 2015; Maldonado et al. 2013; Walker et al. 2013; Mears 2012; Grossman and Parker 2012; Willox et al. 2011; Wildcat 2009).

The topic of this project concerns the challenge of how specific Tribes can make plans for adapting to climate change in contexts of uncertainty in ways that ensure respect for Tribal sovereignty, protect Tribal cultures and harness cultural resources (such as traditional ecological knowledge), integrate the best scientific resources about environmental change, address emerging social problems, and negotiate jurisdictional and other legal challenges unique to federally-recognized Tribes (see Evans et al. 2013 for overviews of the challenges of Indigenous planning). Foresight is defined as "knowledge or insight gained by studying future possibilities" and is often used to bring a broad long-term perspective to policy and decision making (Olavarrieta et al. 2014). We refer to processes of "making plans" under conditions of uncertainty as processes of "foresight." A key aspect of foresight involves designing scenarios of what can be expected in the future. Tribes can use these scenarios as a starting point for reflecting critically on the degree to which they are prepared for dealing with the possible futures expressed in the scenarios.

Our topic concerns the challenges involved in establishing Tribal foresight processes that meet the political, cultural, scientific, social, jurisdictional and legal goals just enumerated. Our project explored two questions:

(1) Can strategic foresight processes be used to create viable Tribal climate adaptation scenarios that can used to support planning for future stewardship/management strategies that take climate change impacts into consideration?

(2) Can foresight processes involving Tribal leaders and natural resource staff in the agencies and departments of federally-recognized Tribes garner sufficient community member involvement for building scenarios that reflect Tribes' sovereignty, cultures, social situations, knowledge needs and resources, and jurisdictional and legal complexities?

To explore these questions, our proposal set out to initiate an engagement process of foresight for 2-3 Tribal nations or communities who are part of the network of the Center for First Americans Forestlands (CFAF), the lead boundary organization for this project. CFAF is the institutional structure for a partnership between the College of Menominee Nation Sustainable Development Institute and the US Forest Service. CFAF is at the forefront of relationships connecting Tribes, federal agencies, research institutions and institutions of higher education. CFAF had already connected with Dockry and Whyte, the two other investigators, through engagement on previous projects. None of CFAF's projects are standalone; CFAF is at the center of ongoing integrated efforts among many Tribal, federal, research and educational players. CFAF has the ability to bring together disparate federal/Tribal agencies under related projects. In this region, this is not something that governmental, research or educational organizations have succeeded in doing. In this way, CFAF engages in internal and external coalition building.

We proposed a year-long project that will achieve the following deliverables,

(1) Establish 1 foresight process meeting for each of the 2-3 Tribal nations or communities.

(2) Write reports of the meeting for each Tribe summarizing the future scenarios developed at that meeting. These reports could then be used by each Tribe in the future as part of the development of its own climate adaptation plan.

(3) Author a white paper evaluating what we learned about the two questions posed above for the Great Lakes Integrated Sciences + Assessments Center (GLISA).

(4) Author a peer-reviewed article about the process.

To achieve these outcomes, we developed a participatory engagement process guided by literatures on Indigenous research methodology and participatory action research (Smith 1999; Whyte 1999), Indigenous planning (Walker et al. 2013) and community-based scenario planning (Wollenburg et al 2000). Our process was designed to place emphasis on making sure the outcomes could be used by the participating Tribes and that the process was guided by Tribal perspectives.

The Menominee Theoretical Model of Sustainability

A key premise of the project is that possible climate change impacts affect Tribes' sovereignty, Tribal governments, cultures, social situations, knowledge needs and resources, and jurisdictional and legal processes. These impacts, then, integrate numerous aspects of Tribal societies. This requires a way of thinking of climate change that captures the complexity and uncertainty of climate change that goes beyond analyzing past trends. We needed a model that can deal with the uncertainty and complexity of climate change impacts as integrated social-ecological issues that connect diverse aspects of Tribal nations and communities, from government to culture. To express such complexity and
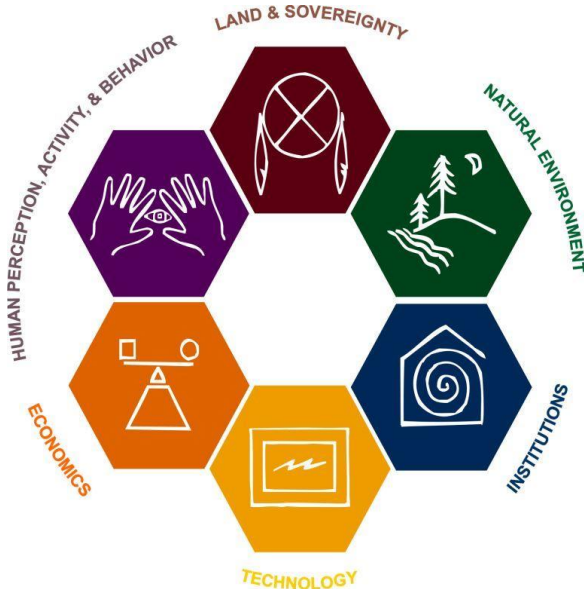

Figure 1: The College of Menominee Nation's Sustainable Development Institute (SDI) model defines sustainability as the interaction of six interrelated dimensions: 1.) land and sovereignty; 2.) natural environment (including human beings); 3.) institutions; 4.) technology; 5.) economics; and 6.) human perception, activity, and behavior.

uncertainty, we used a model developed by the College of Menominee Nation's Sustainable Development Institute (SDI) that defines sustainability using six interrelated dimensions: (1) land and sovereignty; (2) natural

environment (including human beings); (3) institutions; (4) technology; (5) economics; and (6) human perception, activity, and behavior (Dockry et al. 2015; Sustainable Development Institute 2014).

According to the SDI model, sustainability is the process of maintaining balance and reconciling tensions within and among these six dimensions of sustainability. Because all dimensions are of the same size, the SDI model implies an equal balance that expresses sustainability. Yet this model does not mean to imply that there is a functional equilibrium or a "natural" balance, which can be challenged scientifically. Rather, change is an explicit feature of sustainability expressed by the model. Therefore, change in one dimension will influence other dimensions in an iterative cascade of changes. These changes are both externally driven and inherent to all of the six dimensions. Furthermore, as the model is brought back "into balance," new tensions and states of disequilibrium will arise. Thus, sustainable development is a constant and iterative process.

Outline of Our Engagement Process

We designed the following participatory approach to engage Tribes in the scenario planning process.

1) The project team identified a set of Tribes with which the project team members had pre-existing relationships. These relationships had been developing over several years and were built on trust and mutual respect. For each Tribe, the project team designated a decision-making institution to reach out to, such as a Tribal Department of Natural Resources or a Conservation Committee (as opposed to an individual Tribal member). The project team initially met briefly with personnel of each institution at different Tribal events in the Great Lakes region, for example the Native American Fish & Wildlife Society Great Lakes Regional Conference. Three of the Tribes contacted by the project team decided to begin the scenario planning process.

2) The project team followed-up by scheduling an initial meeting in-person or by-phone with key personnel and leadership at each decision-making institution to get a sense of their concerns about climate change and what they were already doing to prepare for climate change. They provided information about their Tribe's geographic and jurisdictional boundaries as related to understanding the climate change impacts relevant to the Tribe. A key part of the conversation was to determine how scenario planning fit with what they were already doing or were planning to do. The SDI model of sustainability was used in these conversations as a way to introduce climate change impacts as integrated, complex and uncertain phenomena affecting multiple Tribal units. The use of the model encouraged people to consider climate change impacts beyond the

basic missions of their particular decision-making institution (e.g. a natural resource department focusing mainly on ecological dimensions of impacts had to think about impacts to other dimensions including Tribal institutions like schools and government, the integrated Tribal economy, and Tribal sovereignty).

3) Using the information from the initial meeting in (2), GLISA then created a localized climate change impacts profile tailored to geographic and jurisdictional boundaries identified by each Tribe. The profiles contain an analysis of historical climate trends and projected future changes for each Tribes' lands/territory, primarily in terms of temperature and precipitation. The profiles also drew from generalized GLISA climate impact reports and were tailored to discuss potential impacts on sectors that each Tribe specified as important to them. The profiles also identified differences between the local and regional climate change predictions and/or historical trends. The development of this profile was an iterative process in which each Tribe had the chance to offer feedback on initial drafts provided by GLISA.

4) With the localized climate profile in hand, the project team created informational materials for each Tribe. Members of the project team or the key Tribal personnel used the materials to inform each Tribal council about scenario planning and gain council approval.

5) The project team scheduled a formal preparation meeting hosted by the Tribe. This meeting served the purpose of allowing the project team to visit each Tribe and to prepare in detail for the scenario planning workshop. Using both the SDI model and the GLISA localized profile, the project team worked to identify key structural aspects of the workshop, including:

   a. The set of Tribal members, departmental representatives and employees, elected officials and any other relevant parties to invite to participate in the scenario planning workshop;

   b. Identify, map and structure the values, climate change impacts and potentials that should figure in the workshop. Values, impacts and potentials cover a wide range of issues, such as behavior health, diverse business portfolios, treaty rights, the timing of ceremonies, subsistence hunting and infrastructural integrity of Tribal property. The SDI model was used to ensure broad and integrated issues were discussed. Each Tribe determined how to represent the values, impacts and capacities of

their own Tribal governments and communities;

   c. Development of four draft scenario *plotlines* that the Tribe should consider; a plot line is essentially a scientifically-informed opening of a narrative on climate change. The workshop participants start with the plotlines (roughly on paragraph in length) in the workshop and provide feedback on how the narrative could possibly unfold for the Tribe. For each Tribe, plotlines of three different kinds were used. The plot lines of the first two scenarios involved challenges (e.g. algal blooms, variable snow cover) identified by each Tribe, a third plotline was positive and transformational (e.g. improving agricultural conditions), and a fourth plotline—called a *wild card*—involved a confounding condition (e.g. U.S. federal dis-acknowledgement of treaty rights). Each Tribe worked with the project team to create individualized plotlines based on realistic Tribal and scientific possibilities.

   d. Each Tribe chose where the workshop should be hosted and the project team administered and paid for all workshop expenses. Each Tribe worked with the project team to determine how the workshop would be facilitated. The Tribes were given the option of a 3 hour, a half day, or full day scenario planning workshop.

6) The Tribe and project team held the scenario planning workshop. All Tribes chose the full day workshop and they involved a three part format. The first part involved presenting information about climate trends from both climate scientists and Tribal perspectives. The SDI model was also presented to the group as a way to frame later discussions in a manner that illuminated integrated and complex issues. These presentations where short and designed to give everyone information from which to develop each scenario. Short presentations were important so the majority of the workshops would be spent working on scenarios and engaging in collaborative discussions. This approach contrasts to climate change meetings where hours and hours are spent listening to scientific presentations outlining trends and model outputs with little community synthesis or discussion. The second part of the workshops involved running through, discussing, debating and adding details to each of the 4 scenarios. Each scenario was discussed separately and the wildcard scenario was discussed last. The third part of the scenario planning workshops involved comparing similarities and differences among each scenario and then brainstorming about current and future Tribal capacities needed to be prepared for these potential scenarios in the future. After the workshop

(on the same day), the members of the project team, along with several workshop participants, consolidated the notes. The project team took on the responsibility for summarizing climate information and drafting scenarios.

As follow up, the project team organized a meeting for the Tribes at the Shifting Seasons Summit: Building Tribal Adaptive Capacity, which was hosted by the College of Menominee Nation and supported by the Bureau of Indian Affairs, GLISA and the Northeast Climate Science Center. At the meeting, Tribal representatives discussed their experiences working on the overall scenario planning process. Finally, the project team refined each scenario in collaboration with each Tribe to turn them into formal scenarios that will be combined with the GLISA localized climate profile and used for Tribally specific planning. The end of each report includes recommendations.

The Three Scenario Processes
We worked with three Tribes (Figure 2) in the Great Lakes region. Each Tribe selected a full day for the workshop.

Sault Ste. Marie Tribe of Chippewa Indians
The Sault Tribe has 44,000 enrolled members and has a seven-county service area consisting of the easternmost seven counties of Michigan's Upper Peninsula. This is roughly the area from the cities of Marquette to Escanaba. The Sault Tribe is also one of the five member Tribes of the 1836 Treaty area (3.8 million acres), which covers roughly 1/3 of the land area of the state of Michigan. The 5 member Tribes in the 1836 Treaty area assert their rights to harvest off reservation and manage the environment in the treaty area through the Chippewa-Ottawa Resource Authority (CORA). Tribal members also live in the part of the 1836 Treaty area that is part of Michigan's Lower Peninsula. The project team worked with the Inland Fish and Wildlife Department, which administers and manages the Tribe's 1836 Treaty harvesting and governance rights in both the Upper and Lower Peninsulas. The Department was interested in bringing its staff together with two committees in the Tribe, the Conservation Committee and the Great Lakes Committee, and the Inter-Tribal Fisheries and Assessment Program, to discuss climate change impacts that would affect inland subsistence and cultural harvesting and the Great Lakes fishery established through the 1836 Treaty. They were interested in having information that they could use to justify natural resources pilot projects on climate change, such as one involving forestry, one involving the restoration of a key river area, and one involving an assessment of the implications of climate change on Treaty harvesting allocations. The department was interested, then, in convening people to have a frank discussion about changes in natural resources and

environmental management. The Sault Tribe opted for a full day workshop involving over 10 members from the two committees, the Inter-Tribal Fisheries and Assessment Program, and Department staff. The Meeting was held at the Kewadin resort owned by the Tribe.

Figure 2: Lands identified by Red Lake, Oneida, and Sault Ste. Marie Tribes for analysis during their scenario planning processes.

Red Lake Nation
The Red Lake Nation has 11,422 enrolled members and has a 636,934 acre reservation in what is now often called Northwest Minnesota as well as an additional 156,900 acres of reservation trust land along the Minnesota/Canada border including the majority of Minnesota's Northwest Angle (by Lake of the Woods). The Tribe's jurisdiction includes 240,839 acres of surface water and 337,000 acres of woodlands. The Red Lake reservation is one of the only closed reservations (which limits non-ribal access and use) in the U.S. sphere. The project team worked with the Red Lake Nation Department of Natural Resources (DNR), which administers programs in air quality, water quality, fish and wildlife, forestry and other environmental services. The Red Lake DNR had already entered into a climate adaptation planning project with Climate Solutions University (CSU), a nongovernmental organization that provides adaptation planning support. As part of this work, the Red Lake DNR was supposed to hold a public meeting in which representatives from different government units and community members discussed some of the risk scenarios they had been developing through their work with CSU. Their goal is to have an adaptation plan by the end of the

project. Red Lake saw collaborating with the project team as an opportunity to gain additional support on developing the scenarios, convening a Tribal collaborative process, and reporting the results of their CSU collaboration. Red Lake was also interested in connecting their forestry unit and natural resources/environmental quality units within their DNR on climate change. Red Lake had recently hired a climate change specialist on its staff. The Tribe also wanted to bring climate change to the attention of their elected officials. The Red Lake workshop involved over 20 representatives from DNR, forestry, natural resources and environmental quality, representatives from over 5 other Tribal agencies (including health and cultural heritage domains, for example), and interested community members. The climate change specialist presented her work on climate trends and risk scenarios at the beginning of the workshop, in addition to brief presentations from the project team. The Red Lake Nation also asked us to organize a separate workshop the following day (half day) that brought together federal, state, and private sector advisors to discuss what the DNR could be monitoring to track important trends. The monitoring workshop facilitated discussions around how their Tribal monitoring programs could be designed to be useful for climate scientists and Tribes in the future. They wanted to know whether they are monitoring the right things now to respond to climate change in 20 years. The workshops were held at the 7 Clans Casino Resort owned by the Tribe.

Oneida Tribe of Wisconsin

The Oneida Tribe has 17,015 enrolled members and its Reservation is located in what are now referred to by many as Brown and Outagamie Counties, which totals 65,400 acres. 23,122 acres are Tribally owned; 12,208 acres are considered fee land, and 10,904 acres are considered tribal trust land. Oneida is the 5th largest employer in Brown County (which includes the City of Green Bay) and the 14th largest in Outagamie County (which includes the city of Appleton), employing approximately 2,689 people. The Oneida Tribe is ancestrally from what is now upstate New York, being relocated in the 19th century to what is now the Green Bay area. Given its proximity to the City of Green Bay, the Tribe has significant urban infrastructure (for example, while not administered by the Oneida Tribe, the Green Bay airport is located within the Reservation boundaries); the Tribe also engages in multiple agricultural and retail businesses. The project team worked with the Environmental Health and Safety Department to design the workshop. Oneida has been interested for some time in an interdepartmental approach to climate change planning that includes elected officials. They have called this "A Climate Change Focused Organization" (Mears 2012). Oneida wanted to do the workshop as a first conversation to get more robust planning and internal collaboration toward implementing this approach. Oneida also wanted to use a facilitation method they had developed for other

projects for climate change adaptation planning. The workshop was attended by two elected officials and representatives from over ten agencies. The Tribe had its own facilitators who worked with the project team to run the workshop. The Tribe also invited Oneida media to cover the event. The meeting was held at the Radisson Hotel owned by the Tribe.

Insights and Outcomes of the Project

Each workshop generated scenarios that each Tribe can use for future planning. We understand the following as some of the outcomes of the processes we engaged in with each Tribe.

1. The process ended up translating global/regional climate models to make them meaningful at local Tribal geographic and jurisdictional scales;
2. Different institutions/communities within each Tribe, some of which rarely communicate with each other, were able to share knowledge and insights through storytelling (since scenarios are narratives);
3. The participatory approach developed by the project team turned out to be flexible enough to work with each Tribe distinctly and address each Tribe's unique goals;
4. Since the scenario process focuses on possible futures, participants appeared to feel less threatened by what were essentially very serious conversation topics and implications for the Tribe; participants were receptive to having an open and respectful dialogue on the ramifications of what were often rather severe issues facing the Tribe in the future;
5. The scenarios for each Tribe are realistic and relevant to decision-making in the sense that the plotlines on which the scenarios were built were based on the actual issues each Tribe faces and the latest climate science.
6. Other Tribes, through word of mouth, are approaching the project team to do something similar in the future;
7. Though specifics cannot be reported here in this white paper, we do know the Tribes are already using the outcomes generated for initiating new climate change adaptation planning activities including writing grants for funding internal adaptation planning, writing grants for coordinated regional adaptation planning efforts and exploring changes to their programs.

Each of these outcomes serves to advance Tribal adaptation planning in the Great Lakes region, both internally to the

Tribes involved in the project but also branching out to other Tribes who are interested in the project in the future.

That being said, the project team learned through working with each Tribe that each process ended up being rather different and more involved than initially planned. For example, two of the Tribes required over two in-person planning meetings each. In the case of one Tribe, the project team made two different site visits before doing the workshop. With another Tribe, the project team met at a national Tribal conference in-person for the preparatory meeting instead of on the Tribe's reservation (the workshop was still held on the reservation). The project team had to take responsibility for keeping on schedule and to be in regular communication with each decision-making institution. Tribes often have limited staff which run the entire suite of governmental and community functions. Doing this work is an intensive and iterative process that requires numerous meetings, follow-ups and check-ins with the Tribal partners. This was, then, a process of relationship building. The project team found that focusing on relationship building is what really laid the foundation for the outcomes described above. Since this was a participatory approach, each Tribe structured the project to meet their unique needs. The project team was committed to ensuring that the workshops did not turn out to be just another meeting where people look at climate trends. In fact, during the workshop, members of the project team quickly and efficiently reviewed the climate information. This worked in part because the workshop participants had had the opportunity to review the climate science information in advance. It also worked because the project team distilled the climate science into "easy to understand historical trends" (precipitation and temperature by season) and "potential" future impacts (e.g. potential impacts on agriculture, transportation infrastructure, fish populations, tourism economy, etc.).

It is also the case that the process was less of a research process and more of a governance process. For example, none of the Tribes wanted to use the participant stipends, even though we had budgeted for stipends for attendees of the workshops. Instead, the Tribes were primarily interested in the project team's time and effort toward structuring the process, following up, facilitating the workshop, and drafting needed documents. Each Tribe highlighted the importance of a whole day workshop to provide opportunities for in-depth conversation.

Through working with each Tribe, we found that many Tribes have a history of adapting to environmental change and view their cultures as adaptive, forward thinking, and oriented toward planning for the future. Yet many Tribes face situations in which their government agencies are disconnected from each other, are not well coordinated, do not communicate and are underbudgeted and understaffed. A key outcome of the scenario planning workshops was to bring together units and constituencies that have typically not been in dialogue. The scenario

process brought people together, which has been a strategy Tribes have used in other contexts.

The scenarios developed in each workshop can be used as the basis for getting important conversations occurring that connect different Tribal departments and constituencies, motivating more extensive Tribal adaptation plans, justifying future Tribal adaptation/mitigation projects, and creating the foundation for more sophisticated collaborations between Tribes, other parties and GLISA (and other decision support organizations) that harness robust risk analysis, decision tools and strategic foresight methods. For the Tribes engaged in this project, they are not just concerned with having data or information on climate change; rather, Tribal decision-making institutions are concerned with how such scientific resources can be put to use by both staff in the institutions but also Tribal members whose actions affect the environment. For Tribes, jurisdictional issues and sovereignty are critical components of the scenarios. The Tribes differed in terms of what they thought were the jurisdictional needs that would matter most to adaptation. For example, one Tribe focused on expanding control in the form of regulatory authority over lands within its reservation boundaries; another Tribe felt strongly that there needed to be more flexibility in managing natural resources within Tribal jurisdiction to allow Tribal members to adjust for climate change. Each Tribe saw its traditional cultural heritage as a major source of guidance in conjunction with scientific information, research, and governance.

Future Implications

The project generated important ideas about the future implications of scenario planning, or foresight, for Indigenous peoples in the Great Lakes region.

1. Tribes envision positive futures as strengthening sovereignty and self-determination and involving the continuation of their experiences, heritages and traditional knowledges of adaptation to social, ecological, and cultural changes over centuries.

2. A key issue moving forward is whether the scientific resources and tools developed by organizations such as GLISA will continue to be used by Tribal members and agencies. A related issue is if organizations such as GLISA can continue to build relationships with Tribal communities and produce Tribally specific and meaningful information.

3. Scenario planning could also be used in education. For example, the College of Menominee Nation has classes and summer programs focused on sustainability and the Menominee Theoretical

Model of Sustainability. Scenario planning could be adapted to be part of curriculum of that kind.

4. Scenario planning is more than a tool; it is a process. As such, future Tribal scenario planning should focus on more than just one scenario workshop. Planning activities for the workshops involved communicating with the different Tribal departments, community members and elected officials and were just as important as the workshop itself. Therefore scenario planning projects should be broadened to include sufficient consideration on key pre- and post -workshop activities.

5. The experiences in this project suggest that the project team could develop a guide to scenario planning that Tribes could use as a reference for how to work with climate science and decision-support organizations such as GLISA.

The project team hopes to establish a feedback loop through follow-ups regarding how they have used or not used the scenario reports. The project team will also engage each Tribe in a continual dialogue and suggest that the Tribes continue to do scenario planning on a regular basis (for example, every 3 years). Doing so will allow each Tribe to keep track of some of the capacities they have built and identify new capacity needs as they arise.

Acknowledgements

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