

# Operationalizing Environmental Justice through Tools and Approaches of the Climate Change Response Framework

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The Forest Service recognizes that climate change poses a multi-generational challenge that spans borders, transcends unilateral solutions, and demands shared learning and resources (USDA Forest Service 2011). The Climate Change Response Framework (CCRF, [www.forestadaptation.org](http://www.forestadaptation.org)) grew from this recognition, and was formally launched in 2009 to address the major challenges that land managers face when considering how to integrate climate change into their planning and management. Practitioners whose livelihoods and communities depend on healthy forests face daunting challenges when responding to rapid forest decline or preparing for future change, particularly tribal natural resources professionals and tribal communities (Vogesser et al. 2013). Emphasizing climate services support for these rural communities can help them build adaptive capacity in their cultural and economic systems, often considered fundamental to environmental justice. Supporting climate-informed decision-making by these practitioners and communities requires climate service organizations to show up, listen, and then creatively work with practitioners to meet their own goals on the lands they manage. The emphasis of the CCRF on stewardship goals, as opposed to climate change and its effects, represents a subtle but important shift in focus to people and their values.

## Adaptation issues, community solutions

The CCRF is an effort to draw upon the collective experience of the forestry community to compile and create climate change-related information relevant to resource management, and also to devise and demonstrate management responses to the changing climate. The Northern Institute of Applied Climate Science (NIACS) began in 2008 by providing climate change education, scoping activities, and discussion with land managers from across the region. Four major issues or challenges were repeatedly raised in region-wide discussions, and the means of addressing these issues became the core components of the emerging CCRF (Table 1).

Table 1. Each component of the Climate Change Response Framework addresses a major adaptation issue or challenge identified by natural resource managers. From Swanston et al. (2016)

<b>Issue identified by managers</b>	<b>CCRF Component addressing issue</b>
Climate change is too big and too complex	<b>Partnerships</b> , which increase the capacity of organizations to cope with the overwhelming nature of the problem.
Climate research is not relevant enough	<b>Vulnerability assessments</b> , which compile credible, relevant information about projected future climate conditions and forest responses and vulnerability.
One-size-fits-all answers are insufficient	<b>Forest adaptation resources</b> , which help land managers and landowners devise adaptation actions to meet their objectives.
There are not enough real-world examples	<b>Adaptation demonstrations</b> , which provide on-the-ground examples of adaptation planning and implementation.

Productive partnerships in landscape conservation increase the effective capacity of the partners, ideally taking advantage of diverse skills, perspectives, and land bases. The CCRF has involved thousands of people and hundreds of organizations, resulting in eight published ecoregional vulnerability assessments with more than 150 authors ([www.forestadaptation.org/vulnerability-assessment](http://www.forestadaptation.org/vulnerability-assessment)). These assessments are examples of effective partnerships creating information resources otherwise largely beyond the capacity of individual organizations. Additionally, the inclusive assessment and writing process ensures both relevance and credibility. Several tribal natural resources departments helped create the CCRF vulnerability assessments, and now these products are being leveraged to create additional tribal-focused climate change vulnerability assessments within the region (e.g., Wonch et al. 2015 and Stults et al. 2016).

The CCRF addressed the need to support diverse values and approaches to land management through a climate planning tool, the Adaptation Workbook ([www.adaptationworkbook.org](http://www.adaptationworkbook.org)). The Adaptation Workbook is designed for use along with ecosystem vulnerability assessments and a diverse “menu” of adaptation strategies to generate site-specific adaptation actions that meet the explicit conservation objectives of the landowner or resource manager (Swanston et al. 2016; [www.treesearch.fs.fed.us/pubs/52760](http://www.treesearch.fs.fed.us/pubs/52760)). These tools have been integrated into Forest Adaptation Planning and Practices workshops that take organizations through this structured process of designing adaptation tactics for their projects and plans. This approach has generated more than 200 intentional adaptation demonstrations in real-world land management projects on federal, state, tribal, county, conservancy, and private lands. In each case, landowners and resource managers pursued adaptation actions that reflected their own values, needs, constraints, and opportunities.

The upper Midwest and Northeast is home to many tribes and bands, creating rich potential for knowledgeable partners with the ability to teach and implement lessons. NIACS is working with

numerous tribes in support of their climate-informed planning and conservation on tribal lands. These partnerships involve designing adaptation actions for tribal lands that work to achieve tribal goals and reflect tribal values. Though naturally diverse, they share an overall approach developed through the CCRF ([Swanston et al. 2016](#); [www.forestadaptation.org](http://www.forestadaptation.org)). The continuing story of these partnerships, and the creation of new partnerships, is about working together with respect, integrating traditional and scientific knowledge, placing ecological climate response within the context of people's lives and values, and building trusting relationships.

### Trusting relationships generate action

There are 50 federally recognized tribes and 13 state-recognized tribes in the upper Midwest and Northeast, many of which have active agreements and partnerships with the USDA Forest Service Eastern Region, Northern Research Station, individual National Forests, and multi-agency Northern Great Lakes Visitor Center. This broader background of cooperative relationships has provided a constructive atmosphere in which to pursue discussions of the changing climate and potential management responses. The Menominee Indian Tribe of Wisconsin in particular has had a strong relationship with the Forest Service, including a shared Forest Service position located at the College of Menominee Nation and resource management interaction on the Chequamegon-Nicolet National Forest. NIACS reached out through these existing contacts to Menominee Tribal Enterprises (MTE), which manages the Menominee Tribe's forest resources for both cultural and economic sustenance. The dialogue with MTE led to an active forest adaptation demonstration project on Menominee lands, with matching funding from MTE and Forest Service (Janowiak et al. 2014, [www.forestadaptation.org/mte](http://www.forestadaptation.org/mte)). This project further built trust and shared perspective, which enabled NIACS to co-host a Forest Adaptation Planning and Practices workshop with the Menominee Sustainable Development Institute. Participants included representatives from other tribes, Wisconsin DNR, the Forest Service, and tribes and bands.

A representative of the Sault Ste. Marie Tribe of the Chippewa Indians attended this workshop and later worked with the Bureau of Indian Affairs Midwest Regional Office to sponsor a similar workshop in Michigan, also co-hosted with NIACS. That workshop included multiple tribes, Michigan DNR, Forest Service, and conservation organizations. Similarly, positive relationships with the Great Lakes Indian Fish and Wildlife Commission and the Inter-Tribal Council of Michigan have opened new doors and created new connections with tribal natural resources departments in the region. This progression of relationship-building is an example of the value of relationships, and a reminder that relationships require trust and commitment. Especially in this era of rapid environmental change, building and enhancing trusting relationships is fundamental to learning from each other and learning quickly.

### Get it done

Nations set policies, but people get the work done. One of the greatest impediments to coping with the challenges of climate change in resource management, whether on tribal land or otherwise, is simply that resource managers are often already stretched thin working with a vast array of environmental and social issues and demands. Intentionally and explicitly adding

climate adaptation to that array, while working across borders, requires sensitivity and respect. NIACS makes a fundamental commitment in each partnership to “meet them where they are,” listen to their needs and help them meet their goals, and follow through to get the work done. Different tribes and bands commit to these partnerships as they deem appropriate, but simply by engaging in the partnership they have begun ensuring that their decisions are climate-informed. Commitment follows purpose, and engaging in climate-informed management planning and implementation is the common purpose.

## Regional assessments, tribal decisions

Northern forests are already responding to the changing climate, and many iconic and culturally important species are likely to experience dramatic shifts in range in coming decades. Northern tribes who depend on these forests for cultural resources, ceremonial use, and economic support are considering how to adapt to the changing forest, and how to help the forest adapt to the changing climate. NIACS has worked with land managers from the Fond du Lac Band of Lake Superior Chippewa Indians, Keweenaw Bay Indian Community, Sault Ste. Marie Tribe of Chippewa Indians, Saint Regis Mohawk Tribe, as well as many US public agencies, universities, and private organizations to produce eco-regional vulnerability assessments of forest tree species and ecosystems. These assessments present information about the existing landscape and observed historic climate, a range of projected climates, modeled vegetation impacts, and a synthesis of regional literature. The evaluation of ecosystem vulnerability was performed by a panel of experts, including tribal representatives, of land managers, ecologists, and modelers. NIACS then works directly with tribal ecologists and foresters in each place-based adaptation project to “step down” the ecoregional assessments to a local scale as part of a structured process called the Adaptation Workbook and menu. This process fundamentally revolves around the values and objectives of the tribal land managers, and involves multiple opportunities to integrate traditional ecological knowledge. The final judgment of vulnerability has to come from people who know and live with the land, and whose needs and perspectives ultimately define risk.

## Learn by doing, learn together

The adaptation demonstration projects that form the core of each CCRF partnership with tribes are rooted in tribal experience, initiative, values, and goals. NIACS has brought climate specialization to the partnerships and worked with the tribes to develop these real-world adaptation demonstrations on tribal lands using the Adaptation Workbook. This “learn by doing” approach is effective within the partnership, but also creates a story that can be shared with others. When tribes are willing to share their stories, NIACS works with them to describe their adaptation demonstration and place them online at [www.forestadaptation.org/demos](http://www.forestadaptation.org/demos). These stories very briefly describe the tribe’s place, forest management goals and objectives, perception of climate challenges and opportunities, and adaptive actions to minimize risk and attain objectives. Dozens of such stories on this community website represent a variety of organizations with diverse perspectives and approaches to living with the land. The tribes’ stories greatly enrich this collection, providing a window into their values for the US forestry community, and an entry point into climate considerations for other tribal nations.

## Adaptation Example #1: Menominee Tribal Enterprises

Menominee Tribal Enterprises (MTE) manages 235,000 acres of forest land for the Menominee Indian Tribe of Wisconsin. For more than 150 years, the Menominee have focused on maintaining a diversity of species and habitats for cultural and environmental values, while also maximizing the sustainable production of forest products. MTE is currently responding to oak wilt across the Menominee Forest. Oak wilt, a non-native fungus, kills red oak trees by plugging up the cells that move water within the tree. Over 300 pockets of forest affected by oak wilt have been found and treated so far on Menominee lands. Treatment typically involves removing any affected oak trees, including the tree stumps to avoid transmission of the fungus through roots. Following treatment, the oak wilt sites are heavily disturbed, with few trees left on site and a disrupted forest floor. The typical management approach is to allow natural regeneration of red oak, white pine, and other species to restore these pockets over time. MTE decided to pick 10 of the largest and most accessible sites to use as climate adaptation sites. MTE foresters prepared the soil and have begun to plant a variety of tree and plant species on these demonstration sites to help them return to forests more quickly. The tree species being used for the reforestation efforts are expected to be better adapted to future conditions, including white oak, bur oak, black cherry, black walnut, chinkapin oak, hackberry, and disease-resistant American elm. The plantings also help to increase forest diversity, reducing the risks of any one species being negatively impacted by climate or forest health issues. Additionally, understory grasses, herbs, and shrubs are also being planted on these sites to establish entire plant communities. The species selections and planting arrangements in each site were guided by traditional knowledge of plant community relationships, making the overall project a successful blend of different ways of knowing. For more information on this project, visit: [www.forestadaptation.org/mte](http://www.forestadaptation.org/mte).

## Adaptation Example #2: St. Regis Mohawk Tribe

The Saint Regis Mohawk Tribe is located in the St. Lawrence River Valley in northern New York and Canada. The tribal forestry program manages approximately 6,800 acres of forest, much of which is forested wetlands. Members of the St. Regis Mohawk community, similar to many tribes in the Midwest and Northeast, are very concerned about the introduction of the emerald ash borer (EAB). This insect kills ash trees, which are very important cultural resources. The tribe has been actively working to prevent the establishment of the emerald ash borer in the area and safeguard the ash resource. As a climate adaptation project, forest managers with the Saint Regis tribe considered how climate change could affect the management of black ash stands now and in the future. This goal of the project was to increase the availability of resources for ash basketmaking and to develop silviculture practices for black ash stands. After working with NIACS to consider potential impacts from climate change, tribal staff developed several adaptation ideas. Some of these ideas included tracking information about existing black ash forests in a spatial database, gathering black ash seeds for future regeneration efforts, and also creating black ash “refugia” on remote islands along the Atlantic coast where the introduction of EAB would be less likely. For more information on this project, visit: [www.forestadaptation.org/Saint\\_Regis](http://www.forestadaptation.org/Saint_Regis).

These examples, and many others, illustrate that climate adaptation is not a one-size-fits-all enterprise. Adaptation decisions will be custom-built in each situation, depending on the unique combination of ecosystem characteristics, manager goals, organizational capacity, and other factors. NIACS developed the CCRF to reflect this necessary diversity, and working with tribal natural resource departments has further illustrated how traditional knowledge can inform and enrich climate adaptation decisions. The CCRF fundamentally embodies core approaches to environmental justice, such as treating people and communities with respect, building trust, upholding commitments, and supporting partners in defining and making the decisions that best meet their needs. In this sense, environmental justice is integrated in to day-to-day business and becomes both operationalized and expected.

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