

## Climate Change Adaptation

### A Form of Risk Management

**Climate Change Adaptation** is defined by the Intergovernmental Panel on Climate Change (IPCC) as “the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.” (McCarthy et al. 2001)

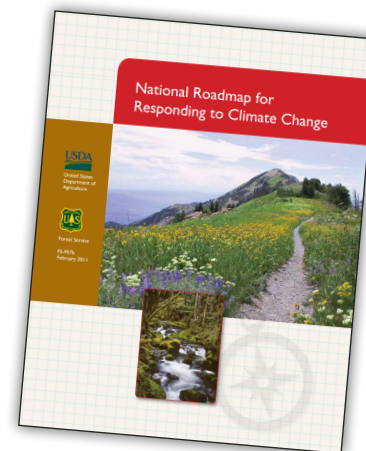
Climate Change Adaptation is a form of risk management that many forests are choosing to implement in advance of further serious effects on forest ecosystem resources such as vegetation, fisheries, hydrology, infrastructure and much more.

Many public and private land managers are moving forward in considering climate change in their management planning and on-the-ground actions. There are many different tools being developed and refined that will provide land managers with a range of options in considering the necessary mitigation to a changing climate.

### ► Connecting Policies to the Field

The **National Roadmap for Responding to Climate Change** was created to guide forests and grasslands to plan for and adapt to changing climates. It provides a framework that builds upon our short term strategies to create a long term vision of how we face climate change as an agency. Adaptation strategies set forth in the Roadmap include the following:

1. Building resistance to climate-related stressors such as drought, wildfire, insects, and disease.
2. Increasing ecosystem resilience by minimizing the severity of climate change impacts, reducing the vulnerability, and/or increasing the adaptive capacity of ecosystem elements.
3. Facilitating large-scale ecological transitions in response to changing environmental conditions.

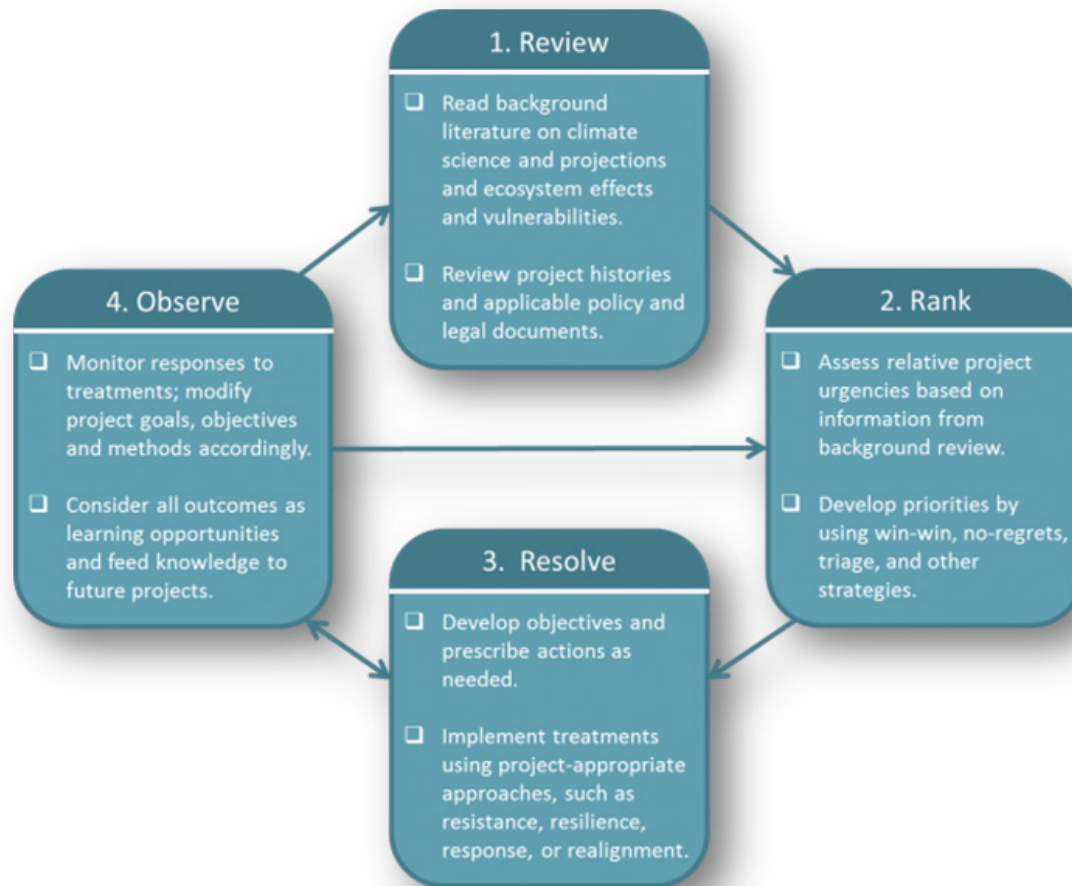


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The Forest Service Climate Change Performance Scorecard, 2011 (version 1.3)		
To be completed annually by each National Forest or Grassland (Unit).		
Scorecard Element	Unit Name	Yes/No
Organizational Capacity		
1. Employee Education	Are all employees provided with training on the basics of climate change, impacts on forests and grasslands, and the Forest Service response? Are resource specialists made aware of the potential contribution of their own work to climate change response?	
2. Designated Climate Change Coordinators	Is at least one employee assigned to coordinate climate change activities and be a resource for climate change questions and issues? Is this employee provided with the training, time, and resources to make his/her assignment successful?	
3. Program Guidance	Does the Unit have written guidance for progressively integrating climate change considerations and activities into Unit-level operations?	
Engagement		
4. Science and Management Partnerships	Does the Unit actively engage with scientists and scientific organizations to improve its ability to respond to climate change?	
5. Other Partnerships	Have climate change related considerations and activities been incorporated into existing or new partnerships (other than science partnerships)?	
Adaptation		
6. Assessing Vulnerability	Has the Unit engaged in developing relevant information about the vulnerability of key resources, such as human communities and ecosystem elements, to the impacts of climate change?	
7. Adaptation Actions	Does the Unit conduct management actions that reduce the vulnerability of resources and places to climate change?	
8. Monitoring	Is monitoring being conducted to track climate change impacts and the effectiveness of adaptation activities?	
Mitigation and Sustainable Consumption		
9. Carbon Assessment and Stewardship	Does the Unit have a baseline assessment of carbon stocks and an assessment of the influence of disturbance and management activities on these stocks? Is the Unit integrating carbon stewardship with the management of other benefits being provided by the Unit?	
10. Sustainable Operations	Is progress being made toward achieving sustainable operations requirements to reduce the environmental footprint of the Agency?	

## ► The Guidebook to Developing Adaptation Options

We all need an instruction manual once in a while. The **Guidebook to Developing Adaptation Options** was developed by the Forest Service to summarize current knowledge on climate change adaptation and produce a suggested outline for adaptation planning. The guidebook suggests a four-step approach:



## SPOTlight

*The Climate Change Adaptation Case Study in the Olympic National Forest and Olympic National Park* is a multi-agency effort to determine how to adapt management of federal lands on the Olympic Peninsula of Washington to climate change.

Efforts on the Olympic Peninsula began in the summer of 2008 and included Olympic National Forest (ONF), Olympic National Park (ONP), scientists from the U.S. Forest Service Pacific Northwest Research Station, Region 6 of the Forest Service, the University of Washington, and the U.S. Geological Survey.

Adapting to Climate Change at Olympic National Forest and Olympic National Park may be downloaded [here](#).

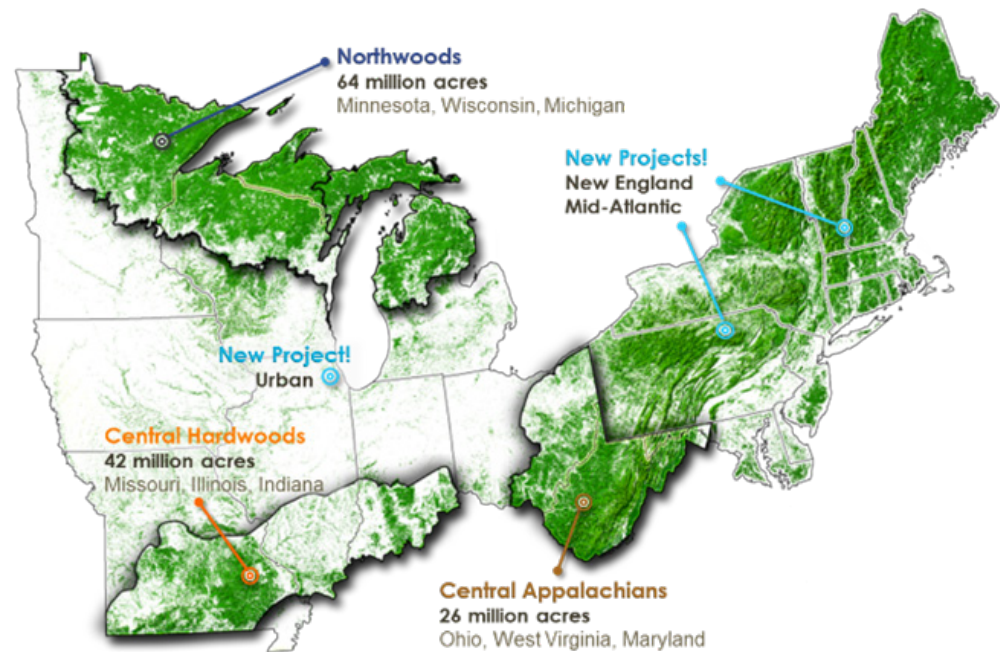
## Collaboration Enhances Adaptation

Climate change does not follow lines on a map.

The **Climate Change Response Framework (CCRF)** is a collaborative, cross-boundary approach among scientists, managers, and landowners to incorporate climate change considerations into natural resource management. Since 2009, the effort has helped bridge the gap between scientific research on climate change impacts and on-the-ground land management.

Similarly, the **Adaptation Partners Team** led by the US Forest Service uses an all-lands approach to adaptation in collaboration with a diversity of other organizations and stakeholders for western forests and grasslands. Building on previous work across large landscapes and multiple federal agencies, Adaptation Partners—using the Roadmap and Scorecard for guidance—employ the following strategies:

1. Conducting an educational effort to ensure a basic understanding of climate change science for agency employees and stakeholders.
2. Compiling a scientific vulnerability assessment that examines the sensitivity of natural resources to climate change.
3. Developing adaptation strategies in response to the vulnerability assessment.
4. Implementing the vulnerability assessment and adaptation strategies in agency resource planning and management processes.





## SPOTlight

- » ***Climate change assessment in the Pacific Northwest*** — Multi-resource climate change assessments have been completed or are ongoing for 16 national forests and 3 national parks in Washington and Oregon, encompassing over 23 million acres of federal lands. Adaptation strategies are developed for each assessment.
- » ***Northern Rockies Adaptation Partnership*** — The largest multi-resource climate change assessment in North America, this partnership includes 15 national forests, 3 national parks, the Greater Yellowstone Area, and 20 wilderness areas in Montana, Idaho, Wyoming, and North Dakota (over 38 million acres). The assessment and adaptation strategy are focused on direct implementation in agency planning and management.



## SPOTlight

***Climate change assessment in the Midwest and Northeast*** — Eight comprehensive forest vulnerability assessments have been completed or are ongoing, providing information to 14 national forests with broader applications on 250 million acres of public, private, and tribal lands.

***Climate change adaptation demonstrations*** — On-the-ground examples of adaptation actions have been broadly implemented to help meet landowner management goals. Over 50 adaptation demonstration projects have been developed to date, providing a robust network of natural resource professionals and landowners engaged in building resilience to climate change.

