ESTABLISHING AN URBAN FORESTRY CLIMATE CHANGE RESPONSE FRAMEWORK

Chris Swanston
Northern Institute of Applied Climate Science
US Forest Service

www.forestadaptation.org

Northern Institute of Applied Climate Science

Climate

Carbon

Bioenergy

NIACS is a regional multi-institutional partnership

Forest Service

- Northern Research Station
- Eastern Region
- Northeastern Area S&PF

Non-FS partners

- Michigan Technological University
- National Council for Air & Stream Improvement
- Trust for Public Land

NIACS
Northern Institute of Applied Climate Science

www.nrs.fs.fed.us/niacs/

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

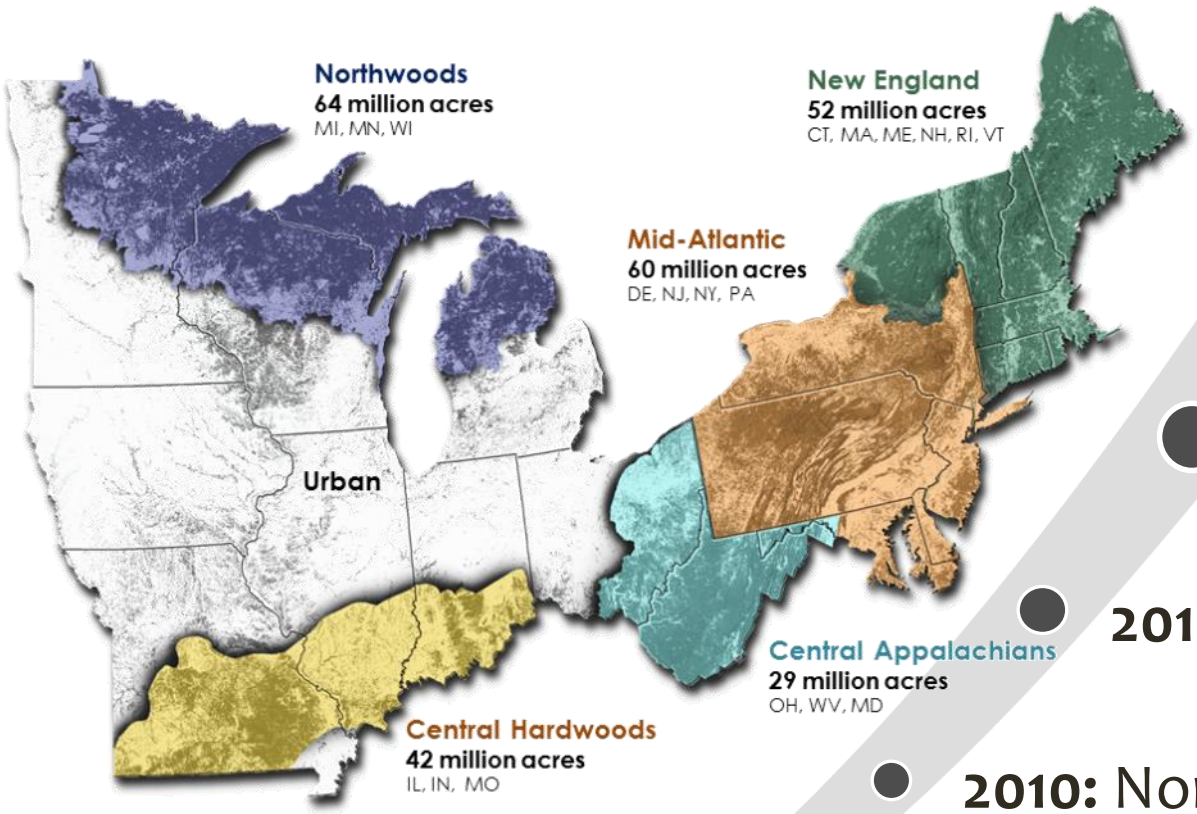
Michigan Tech

ncasi

THE TRUST for PUBLIC LAND

PAST WORK

Climate Change Response Framework



2013-14:
New England
Mid-Atlantic
Urban

2012: Central Appalachians

2011: Central Hardwoods

2010: Northwoods expansion

2009: Wisconsin pilot

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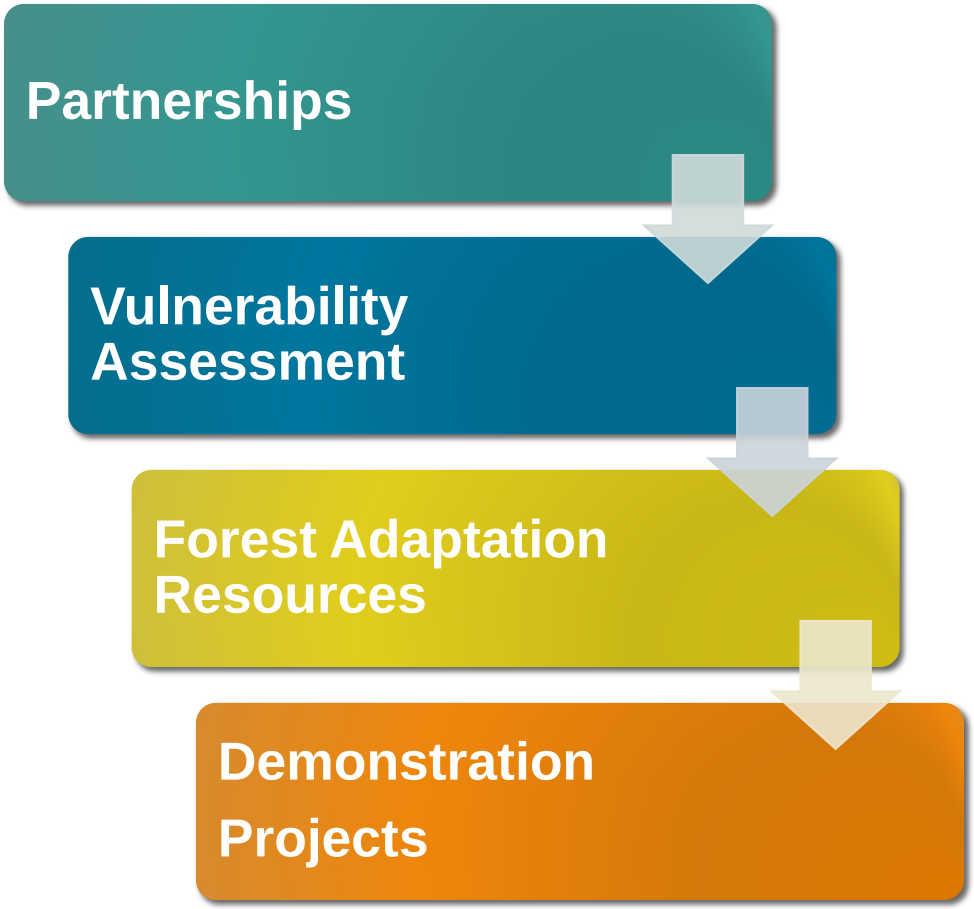
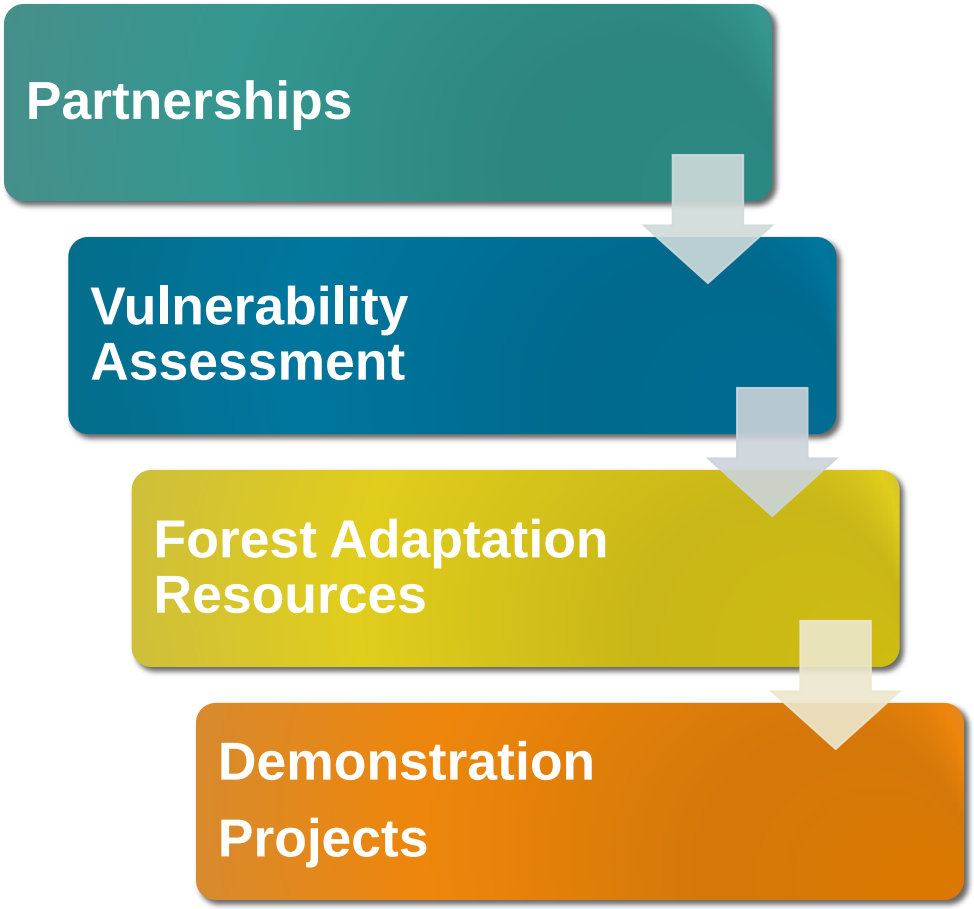
Climate Change Response Framework



Climate Change Response Framework



work with scientists, land managers public, NGO, university, private organizations

understand how climate change may affect forests in an ecoregion

structured approach to identify strategies, approaches, and tactics to adapt to climate change

incorporate information into decision-making and on-the ground projects

PARTNERSHIPS

Ecosystem Vulnerability Assessment and Synthesis Documents

- Focus on tree species and forest ecosystems
- Use two downscaled climate models/scenarios
- Use two-three forest impact models
- Summarize peer-reviewed and secondary literature on the impacts of climate change
- Assess the vulnerability of natural communities or forest types to climate change

Expert Panel

- Mix of scientists, managers
- Representation of government, non-governmental organizations, academic institutions, private industry

Vulnerability Process

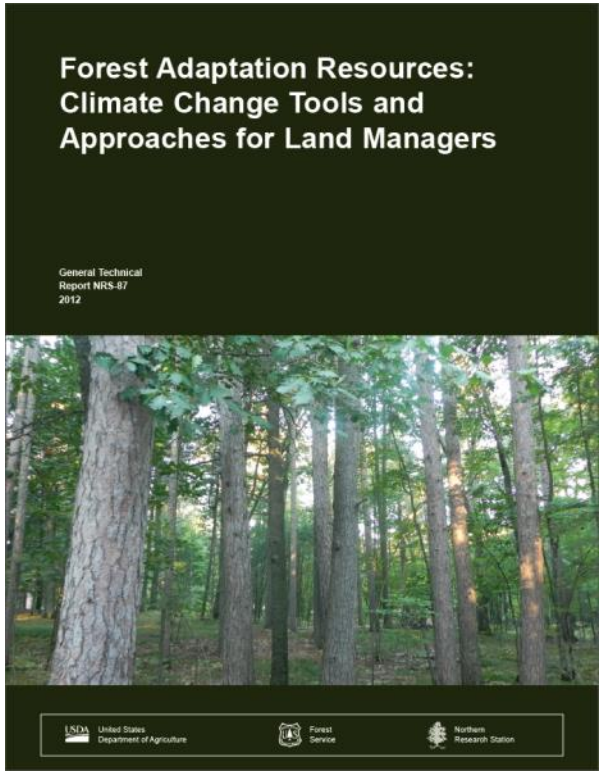
Place-based, model-informed, expert-driven, transparent

Communities Assessed

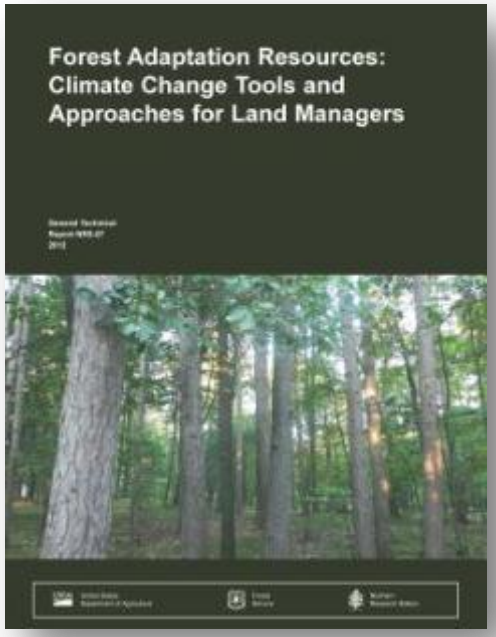
Community Type	Potential Impacts	Adaptive Capacity	Vulnerability	Evidence	Agreement
Dry-Mesic Upland Forest	Moderate	High	Low-Moderate	Medium	Medium-High
Mesic Upland Forest	Negative	Low	High	Medium	Medium-High
Mesic Bottomland Forest	Moderate	Moderate	Moderate	Limited - Medium	Medium
Wet Bottomland Forest	Moderate-Negative	Moderate	Moderate-High	Limited-Medium	Medium
Flatwoods	Moderate-Positive	Moderate	Low-Moderate	Limited-Medium	Medium
Closed Woodland	Positive	High	Low	Limited	Medium
Open Woodland	Positive	High	Low	Limited-Medium	Medium
Barrens and Savannas	Positive	Moderate	Low	Medium	Medium-High
Glade	Moderate-Positive	Moderate	Low-Moderate	Medium	Medium-High

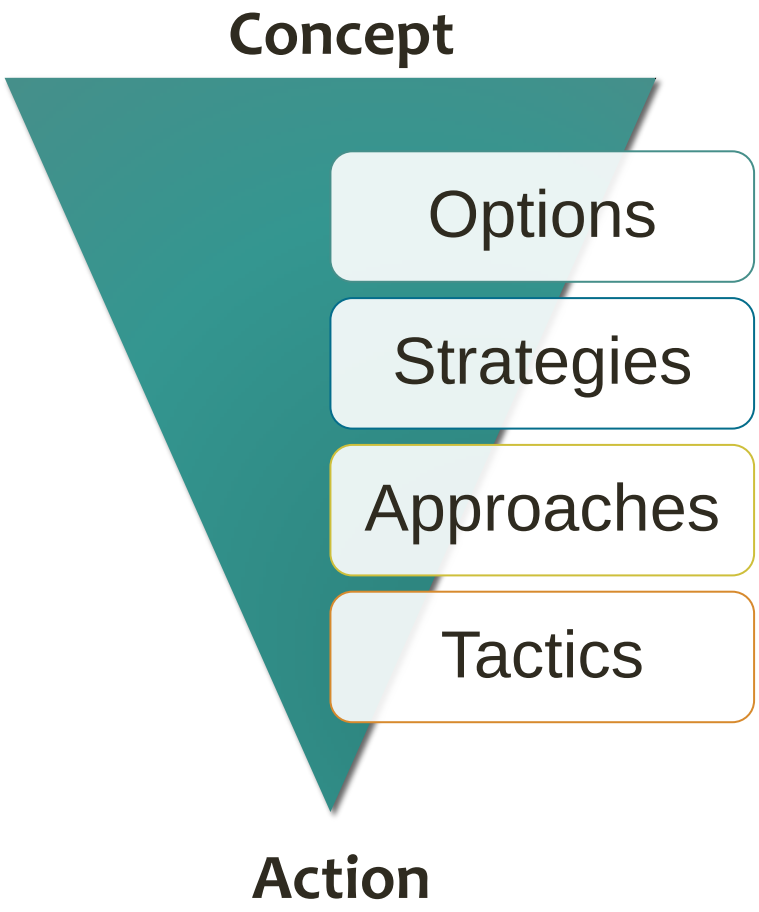
Forest Adaptation Resources

- Designed for a variety of land managers with various goals and objectives
- Tailored to eastern forest types; the first version is now in revision
- Does not make recommendations
- Menu of adaptation strategies & approaches for forest ecosystems
- www.nrs.fs.fed.us/pubs/40543



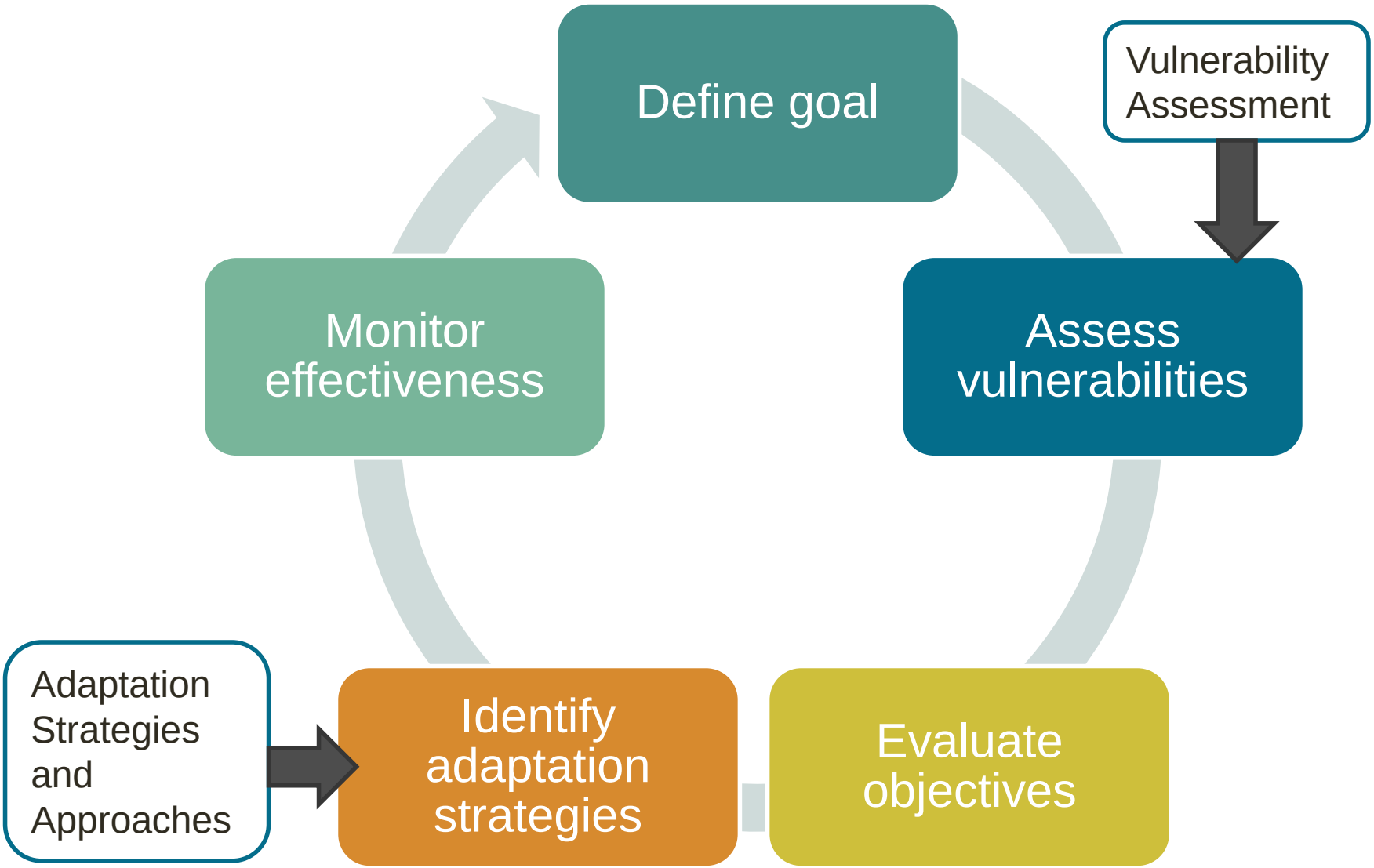
Forest Adaptation Resources: Adaptation Strategies and Approaches





Swanston and Janowiak 2012; www.treesearch.fs.fed.us/pubs/40543

Forest Adaptation Resources: Adaptation Workbook



Demonstration Projects

Real-world examples of how managers have integrated climate considerations into forest management planning and activities

URBAN FORESTRY CLIMATE CHANGE RESPONSE FRAMEWORK

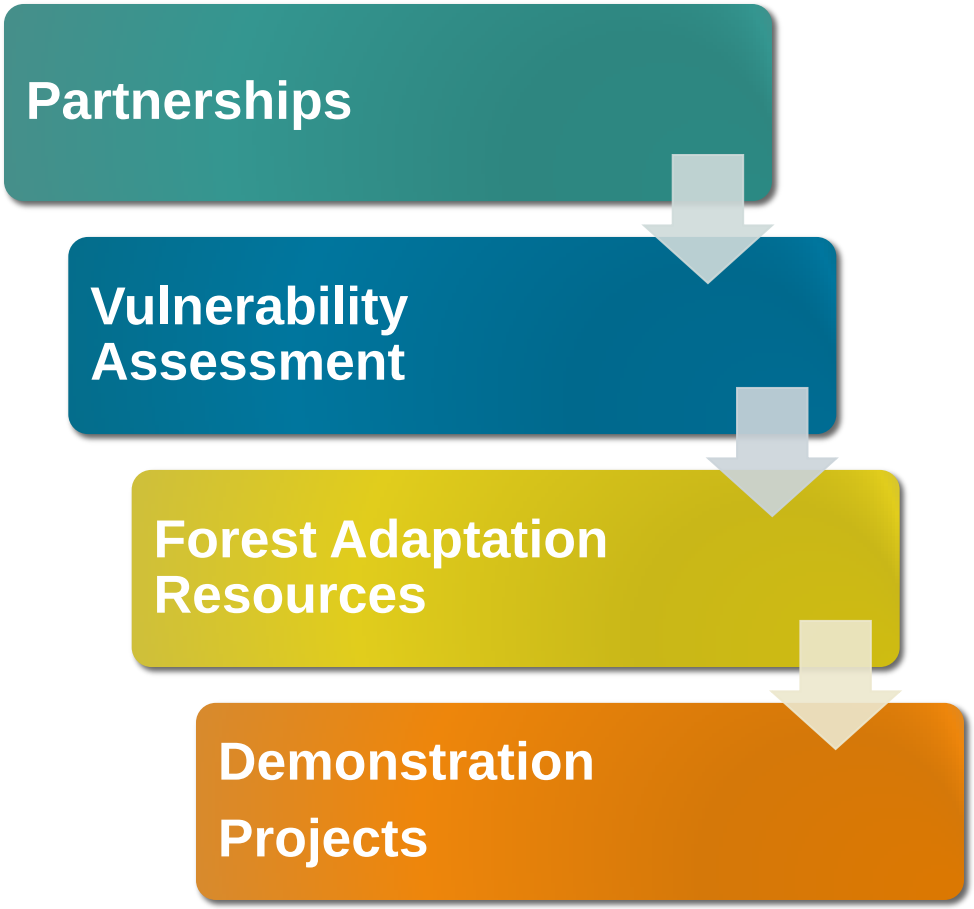
URBAN FORESTRY CCRF OBJECTIVES

- **Engage** with communities across the Northeast, Mid-Atlantic, and Midwest that are interested in adapting their urban forest management to climate change.
- Work with these communities to **assess the vulnerability** of their urban forests to climate change.
- Identify and/or develop tools to **aid adaptation** of urban forests to climate change.
- Develop **real-world examples** of climate-informed management of urban forests.

Chicago Wilderness Area Pilot Objectives

- Establish a template for climate adaptation in urban forestry that can serve as an example both regionally and nationally by:
  - Engaging with urban forestry professionals, scientists, and municipalities across the Chicago Wilderness area.
  - Developing and applying an approach to assess the vulnerability of urban forests in the Chicago Wilderness area to climate change.
  - Applying tools to aid adaptation of Chicago Wilderness area urban forests to climate change.
  - Developing real-world examples of climate-informed management of urban forests in at least four municipalities.

Climate Change Response Framework



work with scientists, urban foresters, natural area managers, public, nongovernmental, university, private organizations

KEY PARTNERS

- Chicago Wilderness
  - Climate Change Task Force
  - Trees and Green Infrastructure Task Force
- US Forest Service
  - Northern Research Station
  - Eastern Region
  - Northeastern Area
- Northern Institute of Applied Climate Science
- The Morton Arboretum
- The Field Museum
- Chicago Botanic Garden
- Looking for more!

Chicago Wilderness
A regional alliance dedicated to protecting nature and enriching life

GREENING Infrastructure

ClimateACTION

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

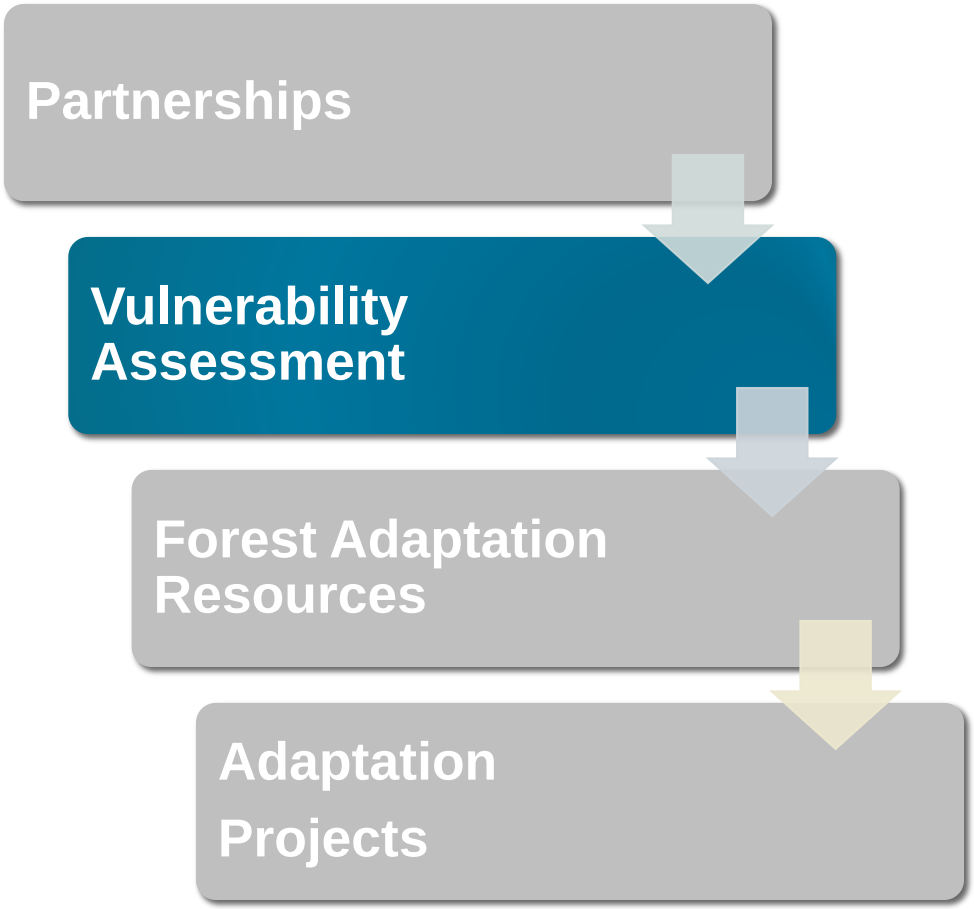
NIACS
Northern Institute of Applied Climate Science

CHICAGO BOTANIC GARDEN

The Morton Arboretum

The Field Museum

Climate Change Response Framework



understand how climate change may affect forests in an ecoregion ★

★ Or, in the case of this project, urban area

Modifications to Vulnerability Assessment Process: Urban Areas

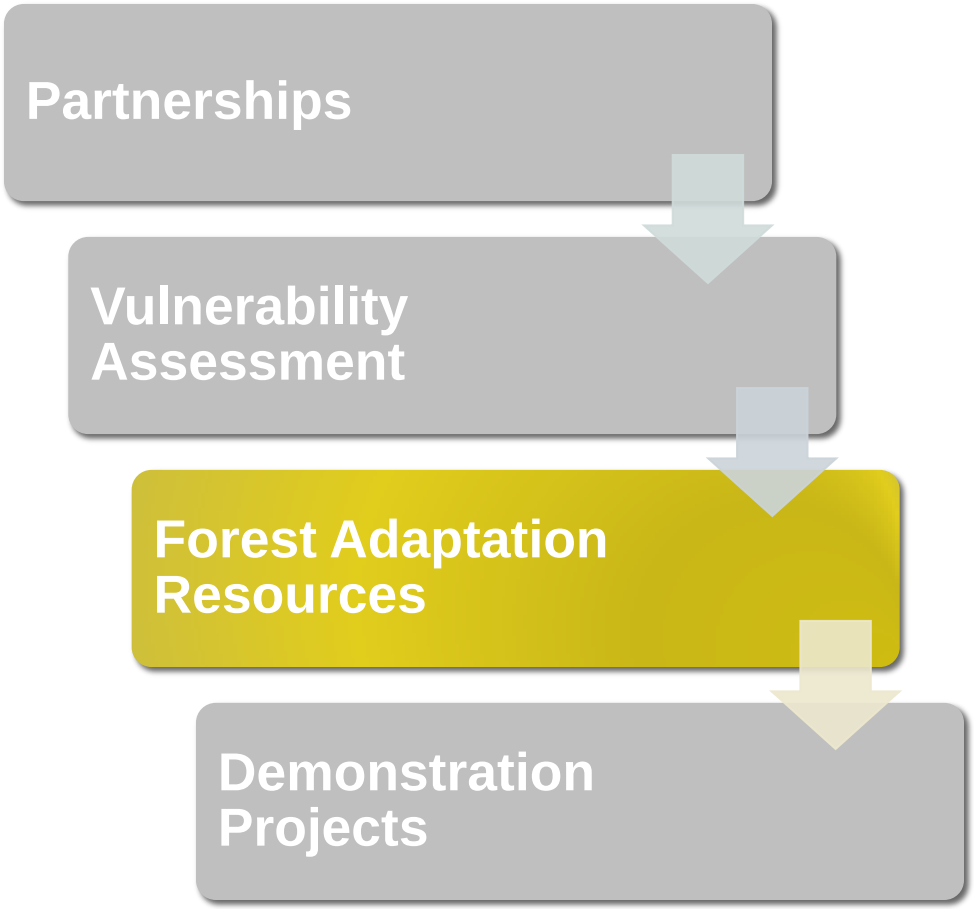
1. Assess **tree species vulnerability** to climate change

2. Assess **urban forest vulnerability** to climate change

- Done for entire Chicago Wilderness area
- Area-wide scientist/manager expertise incorporated
- Draft done by small team, wider group reviews

- Done at the municipal level
- Local/municipal forester/planner expertise incorporated
- Workshop setting

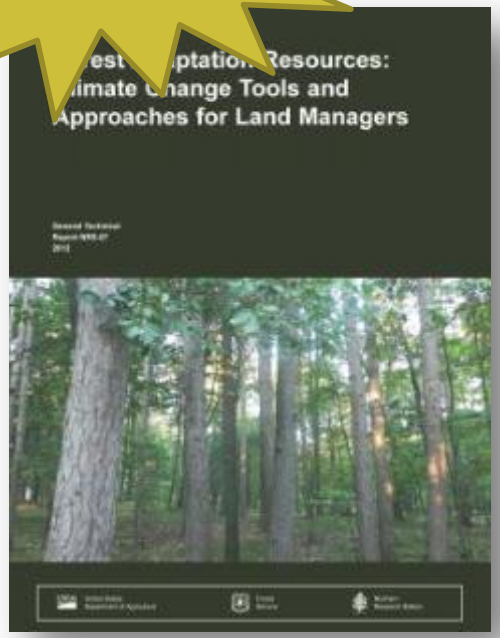
Climate Change Response Framework

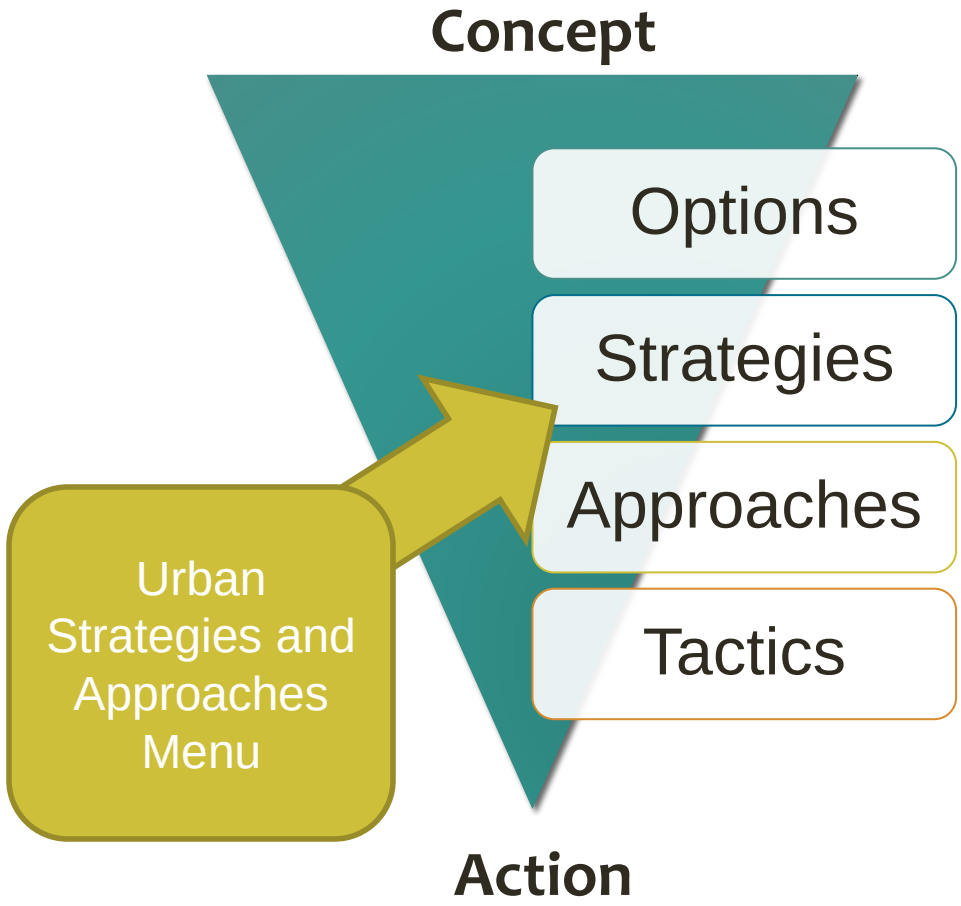


structured process to identify strategies, approaches, and tactics to adapt to climate change

Forest Adaptation Resources

New Version





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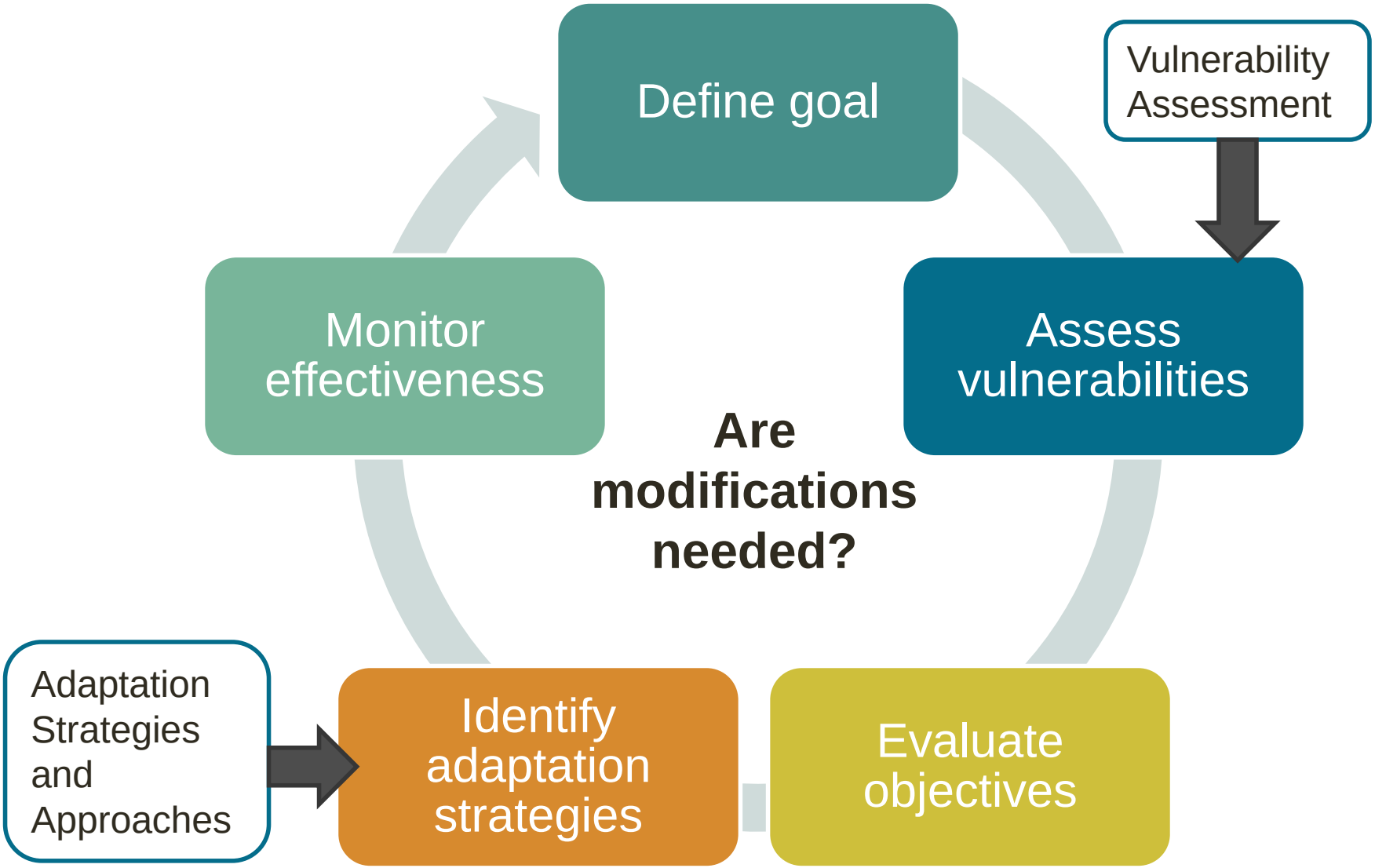

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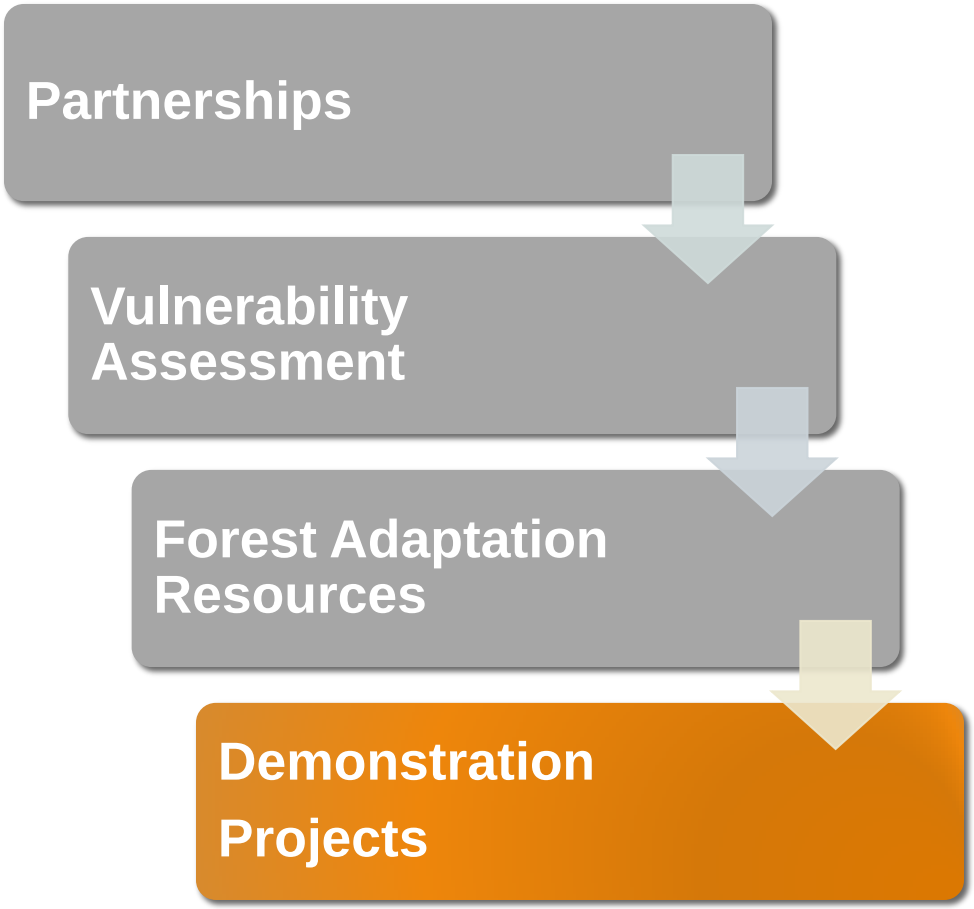


incorporate information into decision-making and on-the ground projects

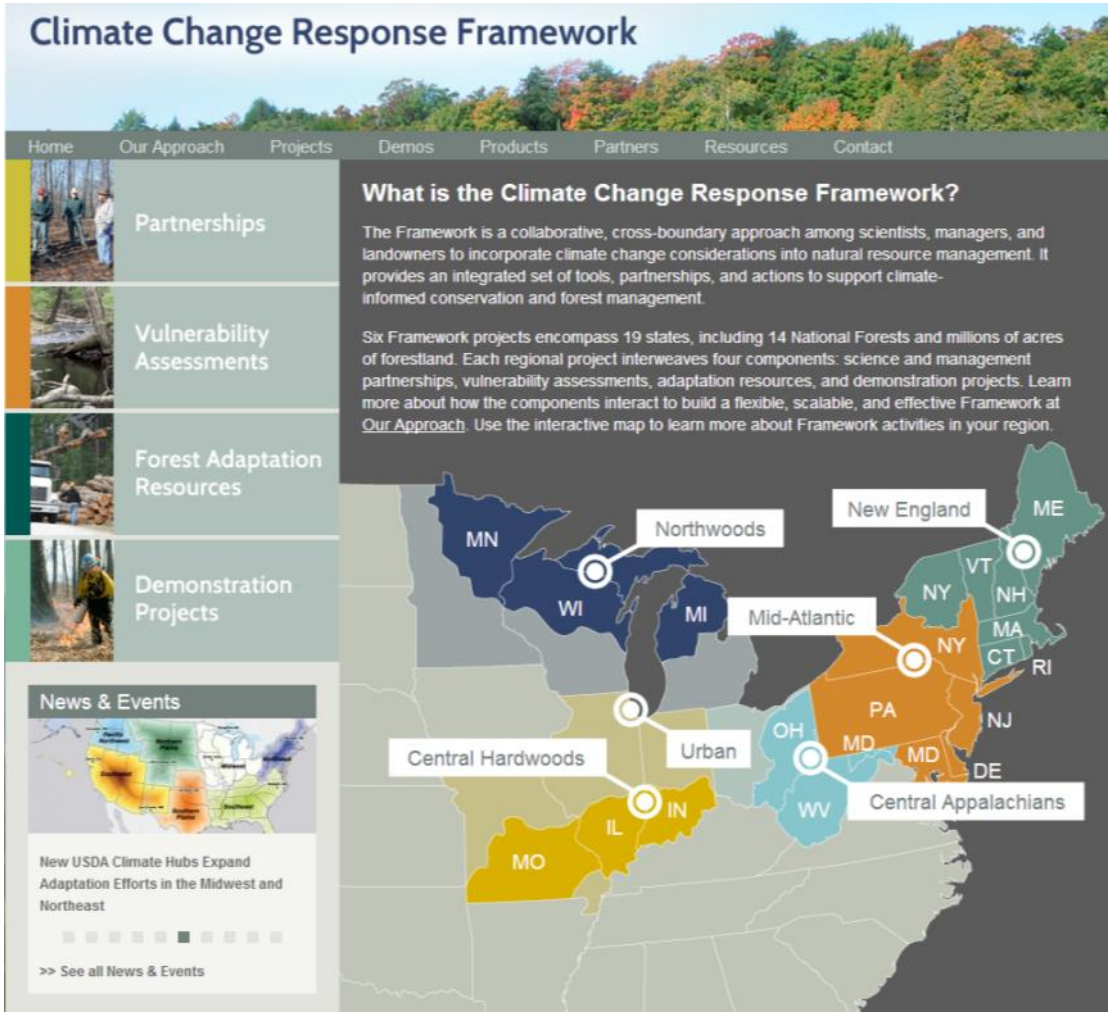
Demonstration Projects

- Application of vulnerability assessment information and adaptation resources to a **real-world example**, such as:
  - long-term plans (e.g. a master plan or a species planting list)
  - short-term projects (e.g. living streets projects , riparian restoration project)
- Five municipalities in the CW area have expressed interest:
  - Chicago
  - Homewood
  - Glenview
  - Lake Forest
  - Park Ridge
- Demonstrations could also be regional in scope

OUTREACH/PRODUCTS

- Print/web-based area-wide species vulnerability assessment
- Municipal vulnerability assessment and adaptation case studies
- Hands-on training for urban forestry professionals
- Web and print resources

WEBSITE



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