

# Executive Summary

## 2<sup>nd</sup> Generation East Central Landscape Plan



This summary overview offers a quick look at the basics of the East Central Landscape Forest Resources Plan. The plan is one of six regional plans developed by the Minnesota Forest Resources Council (MFRC), as required by the Sustainable Forest Resources Act. The purpose of the plan is to provide a detailed framework that allows landowners, local officials, resource managers and other stakeholders to work together to voluntarily implement landscape strategies to effectively sustain the forests of Minnesota.

### Sections 1 - 3: Introduction, Planning Process, and Context of the East Central Landscape

Sections 1-3 of the East Central Landscape Forest Resources Plan introduce the concept of landscape planning, review the formation of the East Central Landscape Planning Committee, and puts the East Central Landscape into context regarding the history and current status of the landscape.

#### Context of the East Central Landscape

##### Geopolitical

The East Central Landscape covers about 3.7 million acres in nine Minnesota counties: Benton, Chisago, Isanti, Kanabec, Mille Lacs, Pine, Sherburne, Wright, and eastern half of Morrison.

##### Land Ownership and Management

Private land ownership accounts for about 88% of the total land area. The remaining 12% is public land and is concentrated in the north-central and north-eastern portion of the landscape.

##### Native American Reservation and Treaties

There is one Band of Chippewa in the region, the Mille Lacs Band. The Mille Lacs Band maintains off-reservation hunting, fishing, and gathering rights in the 1837 Ojibwe Ceded Territory, which covers over 75% of the landscape.

##### Hydrology

The East Central Landscape is moderately rich in water resources and straddles the Upper Mississippi River and St. Croix River Basins. The region contains four of the six designated rivers in Minnesota's Wild & Scenic Rivers program (St. Croix, Kettle, Rum, and Mississippi).

##### Ecological Classification System

The East Central Landscape is primarily located within the Laurentian Mixed Forest Province, but the southern third of the region intersects with the Eastern Broadleaf Forest. There are three ECS Sections (Western Superior Uplands, Minnesota & NE Iowa Morainial, and Southern Superior Uplands) and a total of six ECS Subsections within those Sections.

## Section 4: Resource Assessment and Trends

Section 4 summarizes an assessment of the forest resources in the East Central Landscape. This section was organized into three areas or resource initiatives including: 1) Ecological, 2) Economic, and 3) Social. In each area a list of assets and issues were identified and then resource assessments and trends are summarized. This section is intended to serve as a foundation for the development of the strategic policy framework including desired future conditions, goals, and objectives provided in Section 6.

### Ecological Assets and Issues

#### Assets

- Diverse ecological landscape.
- Regionally significant lakes and rivers.
- Healthy water resources.
- Significant public lands.
- Numerous family forests.
- Remaining oak savanna.
- Good natural resource data.

#### Issues

- Forest parcelization.
- Habitat conversion and fragmentation.
- Threatened water quality.
- Forest health threats from climate change, disease and pests, invasive species, deer, imbalance of forest age and type.
- Change in disturbance regions such as fire and harvest.
- Loss of brushlands.

### Economic Assets and Issues

#### Assets

- Remaining forest product industries.
- Highly-valued wild areas.
- Forest lands close to high population areas.
- Ecosystem services from forests.
- Private working forests.
- Technical assistance resources for private landowners.
- Forest stewardship incentives.
- Conifer plantations.
- Non-timber forest products.

#### Issues

- Changing land ownership patterns.
- Changing landowner values.
- Increasing property values.
- National and global competition for industries.
- Reduced harvesting from loss of industry, fewer forest operators, low timber quality, less timber management.
- Lack of market for underutilized species.
- Site access difficulties.

### Social Assets and Issues

#### Assets

- Outreach and education resources.
- Diverse recreation opportunities.
- Highly valued rural/natural landscapes.
- Non-profit organizations.
- Governmental organizations.
- Technology.
- Groundwater recharge areas.
- Urban and community forest programs.

#### Issues

- Changing recreation preferences.
- Lack of awareness about the importance of forest management.
- Changing attitudes and expectations.
- Shoreland/riparian development.
- Expanding urban development.
- Networking and collaboration is challenging for regional forest stakeholders.

## Key Resource Trends

### Climate Change

- Climate change is impacting Minnesota's forest in the form of warmer average annual temperatures, longer growing seasons, intermittent drought, more frequent freeze/thaw cycles, and more frequent and extreme storm events.
- Winters are becoming shorter and warmer, which creates difficulties for forest operators.
- Wet forest, forested rich peatlands, and acid peatland systems are among the most vulnerable forested native plant community systems to climate change.
- Climate impact models indicated that in a changing climate, the East Central Landscape will have several 'winner' and 'loser' tree species. The 'loser' species include commercially and ecologically important species such as aspen/poplar and spruce species, birch, tamarack, and black ash.

### Forest Health

- Native biodiversity is trending downward and competition from invasive species is a contributing factor.
- Oak wilt continues to spread northward and remains among the most concerning plant pathogen in the East Central Landscape.
- Emerald Ash Borer (EAB) is a serious threat to the region's ash resources, and it has been identified in the Twin Cities Metro area and communities bordering the East Central Landscape.
- In recent years flooding has damaged thousands of acres of forest in Minnesota, a significant portion of which are in the East Central Landscape.
- Urban forests are becoming more diverse as communities implement strategies to manage for resilience against pests and pathogens.

### Habitat

- Since 1977 the forests in the East Central Landscape have been steadily accruing more acres in the 61+ age-classes, especially among private forest lands.
- The oak/hickory forest type group has significantly increased over the past 40 years has surpassed the aspen/birch forest type group as the most abundant group in the East Central Landscape.
- The amount of oak savanna in the East Central Landscape has decreased from 547,000 acres prior to European settlement to under 4,000 today.
- The quantity and quality of brushland habitat is decreasing.

### Land Ownership

- In Minnesota, 20% of National Woodland Owner Survey respondents indicated that they were 'extremely likely' or 'likely' to sell or give away their forest land in the next 5 years.
- Younger cohorts of landowners are more likely than their older counterparts to think that cost-sharing programs are helpful and are more open to receiving advice on woodland management.
- Due to the significant extent of private forest lands, East Central forests have been and will continue to become more fragmented and older.

### Forest Products Industry

- Most mills in Minnesota are consuming less industrial roundwood than they had in recent decades.
- Many mills have downsized or permanently shut down over the past several years.
- Benson Power, which was a biomass power plant near the East Central Landscape, closed in 2018. The loss of biomass plants and other mills that accept lower quality wood has a significant negative impact on the ability of landowners to manage their forests.

## Conclusions

- **Complex Landscape.** The region is a highly complex landscape with an abundance of interconnected ecological, economic, and social resources and values.
- **Ecosystem Stress.** Native plant communities are stressed by altered natural disturbance regimes, invasive species, and climate change.
- **Land Ownership.** The region has some areas of patchwork ownership but is predominantly privately owned. The large private forest resource base creates both opportunities and challenges.
- **Tribal Interests.** The majority of the region is covered by the 1837 Treaty.
- **Water Resources of National Significance.** This region encompasses water resources that are nationally significant and provides drinking water for millions of people downstream.
- **Water Quality/Forest Connection.** Water quality is directly linked to healthy forests.
- **Recreation and Forest Products.** The local economy is diverse and includes the forest industry and outdoor recreation. Effective management of natural resources for multiple objectives is important to maintain and enhance the region's economic and social well-being.
- **Forest Management Challenges.** Due to cost-limiting distance to markets, forest management through commercial harvesting is challenging in the East Central Landscape.
- **Forest Fragmentation.** A significant portion of the land base in the region is at risk to parcelization, fragmentation, and land use change.
- **Habitat Change.** Forests and brushlands are aging and resulting in less early successional habitat.

## Section 5: Working Principles and Definitions

These working principles summarize how the Committee views the context of the forests in the East Central Landscape over time and how they recommend interested stakeholders pursue sustainable forest management in the future:

- **Principle 1.** Promote a Shared Understanding of the Forest Resources in the Region.
- **Principle 2.** Use Best Available Science, Traditional Knowledge, and Professional Judgment to Inform Decision Making.
- **Principle 3.** Work Collaboratively to Sustainably Manage Forest Resources Across All Lands in the Landscape.
- **Principle 4.** Recognize the Challenges of Private Land and Population Growth.
- **Principle 5.** The East Central Landscape Committee Recognizes Healthy Forest-based Industry is the Most Significant Tool for Sustainably Managing Forests.

## Section 6: Desired Future Conditions, Goals, and Objectives

Section 6 of the Plan further describes the vision for the future forest conditions across the East Central Landscape by providing the Desired Future Conditions and the approaches (Goals and Objectives) to promote the management of healthy forests in the region. The SFRA requires the MFRC and its regional committees give equal consideration to the long-term ecological, economical, and social needs and limits of the state's forest resources. The Committee addressed this legislative directive by organizing this section of the plan into ecological, economic, social, and coordination resource initiatives.

### Ecological Resource Initiatives

From an ecological perspective, in 100 years the East Central Landscape Committee envisions a landscape with the following Desired Future Conditions (DFCs):

- **DFC 1: Healthy, Resilient, and Sustainable Forests.** Forests in the East Central Landscape are healthy and managed using science-based ecological principles. The East Central Landscape Committee envisions a forest that:
  - is resilient to threats such as climate change, invasive species, pests, and pathogens
  - has a variability of land cover types and age-classes that are consistent with the ecology of landscape, and
  - provides diverse habitats that maintain natural communities and viable populations of native plant and wildlife species in east central Minnesota.
- **DFC 2: Improved and Protected Water Resources.** Both landowners and local units of government recognize that healthy forests and wetlands managed at the watershed level are key to protecting water quality and quantity while maintaining the functionality of our hydrological systems and benefiting aquatic and riparian wildlife. Evaluation of forest and wetland cover is an integral component in the local land use planning process. Forest management is integrated into all water resource initiatives in the East Central Landscape to maintain quality water resources where they exist and restore or enhance impaired waters when necessary.

The following ecological goals and objectives outline the steps the Committee believes are necessary to achieve the Desired Future Conditions (DFCs):

#### Goal 1: Protect, maintain, and increase ecologically sound and climate resilient forests in the East Central Landscape.

1. Evaluate Forest Resources.
2. Support Public Outreach.
3. Support Conservation Programs and Projects.
4. Control Invasive Species, Pests, and Pathogens.
5. Promote Spatial Connectivity.
6. Enhance Forest Diversity.
7. Conserve Rare Species.
8. Increase Private Forest Management.
9. Implement Forest Carbon Projects.

#### Goal 2: Improve water quality and storage capacity through forest management.

1. Integrate Forest/Watershed Management Planning.
2. Evaluate Riparian Areas.
3. Increase Forested Riparian Buffers.
4. Support Site Level Guidelines.
5. Protect Private Forest Lands.

Goal 3: Increase the knowledge and understanding among natural resource professionals and landowners about forest resources within the East Central Landscape to help coordinate management efforts and improve outcomes.

1. Prepare Forest Spatial Analyses Report.
2. Support Cooperative Forest Planning.
3. Monitor Forest Land Cover.
4. Set Vegetation Targets.

### **Economic Resource Initiatives**

From an economic perspective, in 100 years the East Central Landscape Committee envisions a landscape with the following Desired Future Conditions (DFCs):

- **DFC 1: Sustainable Use of Forest Resources.** A wide range of forest products and services are sustainably produced which support local economies while maintaining biological and ecological integrity. The landscape has forests that appeal to the evolving values of residents, tourists, and outdoor enthusiasts. A broad range of opportunities in the forests are available to the public consistent with tribal interests, respect for private property rights, high quality of life enjoyed by residents, and protection of the natural resource base.
- **DFC 2: Adaptive Forest Products Industry.** The forest supports both traditional forest industries as well as emerging opportunities, including ecosystem services, and ensures sustainable forest management.
- **DFC 3: Informed Landscape Planning and Development Decisions.** Land use and development across the landscape are strategically planned using the best available data to minimize fragmentation and preserve contiguous blocks of healthy forests connected by green corridors. Forest, wildlife, and water resources are considered in land planning and management.

The following economic goals and objectives outline the steps the Committee believes are necessary to achieve the Desired Future Conditions (DFCs):

Goal 1: Promote sustainable timber production and expanded use of forest products harvested from the East Central Landscape.

1. Improve Forest Productivity.
2. Increase Cover Type and Age-Class Diversity.
3. Enhance Forest Health and Resilience.
4. Advance Research and Development.
5. Strengthen Markets and Utilization.
6. Multiple Use Management.
7. Inform and Support Landowners.
8. Collaborative Management and Education.
9. Monitor and Support Outreach About the Regional Forest Economy.

Goal 2: Integrate sustainable forest management into land use planning and decision-making processes.

1. Support County and Community Planning.
2. Consider Other Plans.

Goal 3: Promote forestry-based recreation and tourism.

1. Increase Public Awareness.
2. Promote Recreation Planning.

## Social Resource Initiatives

From a social perspective, in 100 years the East Central Landscape Committee envisions a landscape with the following Desired Future Conditions (DFCs):

- **DFC 1: Strong Cultural Connection to Forests.** People living, working, and recreating in the East Central Landscape are more closely connected to the forests and the landscape. They recognize the value of historical connections and the need for leaving the legacy of healthy forests for future generations. People have a greater awareness of the importance of forests from ecological, economic, social, and traditional perspectives.
- **DFC 2: Diverse Users.** People from diverse backgrounds are engaged in forest uses and advocacy.

The following social goals and objectives outline the steps the Committee believes are necessary to achieve the Desired Future Conditions (DFCs):

Goal 1: Increase the public awareness, including private landowners, about the importance of sustainable forest management.

1. Implement Outreach.
2. Assist Landowners.

Goal 2: Promote the wellbeing of the people living, working, and recreating in the region through sustainable forest management.

1. Foster Sense of Place.
2. Promote Community Forestry.
3. Support Wild and Natural Areas.

Goal 3: Promote diverse forest uses.

1. Conduct Public Outreach.
2. Conduct Private Outreach.

## Administration/Coordination/Financial Initiatives

From a coordination perspective, in 100 years the East Central Landscape Committee envisions a landscape with the following Desired Future Condition (DFC):

- **DFC 1: Shared Stewardship Management Approach.** Landscape planning is universally practiced and part of standard operating procedures to enhance management across multiple ownerships. Coordinated and collaborative management of East Central Landscape's forest resources is a thoroughly established practice. Landowners, local officials, local nonprofits and agency staff work collaboratively on both the planning and management of forest resources to achieve the goals set forth in this plan.

The following coordination goals and objectives outline the steps the Committee believes are necessary to achieve the Desired Future Condition (DFC):

Goal 1: Increase coordination of sustainable forest management in the East Central Landscape.

1. Establish Landscape Committee.
2. Promote Shared Stewardship.
3. Improve Private Landowner Cooperation.

Goal 2: Promote public involvement in sustainable forest management throughout the East Central Landscape and build leadership capacity to maintain sustainable forest management.

1. Implement Public Outreach.
2. Support Volunteerism.
3. Develop Local Leadership.
4. Survey Public Attitudes.

Goal 3: Expand and improve assistance to stakeholders regarding sustainable forest management.

1. Enhance Technical Assistance.
2. Promote Use of Research.

Goal 4: Expand the financial resources available to support the implementation of this Plan and to enhance the quality of technical assistance provided to landowners in the region on sustainable forest management.

1. Advocate for Funding.
2. Support Budget Development.



## Section 7: Vegetation Management Framework

This section of the Plan further provides land managers with more specific guidance for achieving the Plan's broader ecological goals and moving the landscape towards the Desired Future Conditions described in Section 6. It accomplishes this by providing guidance regarding A) Native Plant Community Management and B) Open Landscape Habitat Management.

### Native Plant Community Management

#### Fire-Dependent Forests

- Goal 1: No net loss of fire-dependent forests.
- Goal 2: Maintain and increase the presence of conifers in the NPC classes to which they are suited – principally the FDn and FDc classes.
- Goal 3: Maintain or restore fire where possible.
- Goal 4: Emulate natural disturbances across various land ownerships to promote fire-dependent species.
- Goal 5: Provide public outreach and education on the importance of disturbance in fire-dependent ecological communities.
- Goal 6: Contain oak wilt.

#### Mesic Hardwood Forests

- Goal 1: Maintain and enhance species and age class diversity at multiple scales (landscape to site-level).
- Goal 2: Maintain healthy aspen forests across the landscape.
- Goal 3: Maintain oak as a component.

#### Acid and Forested Rich Peatland

- Goal 1: Protect and support critical forest habitats and peatland ecosystems.
- Goal 2: Build resiliency to eastern larch beetle and climate change.
- Goal 3: Encourage the use of silvicultural systems to address forest health issues.
- Goal 4: Maintain or restore hydrology.

#### Floodplain Forest and Wet Forest

- Goal 1: Maintain forest land cover to buffer against water level fluctuations.
- Goal 2: Protect these NPCs from land use conversion for wildlife habitat and water quality benefits.
- Goal 3: Prevent and/or slow the spread of emerald ash borer.
- Goal 4: Increase management of wet forest and floodplain forest native plant communities.

## Open Landscape Habitat Management

Expansive open landscape habitats were once a conspicuous feature of Minnesota. The overall aim of the following goals is to increase the amount and quality of open landscape habitats on public and private lands within identified core habitat areas in the East Central Landscape.

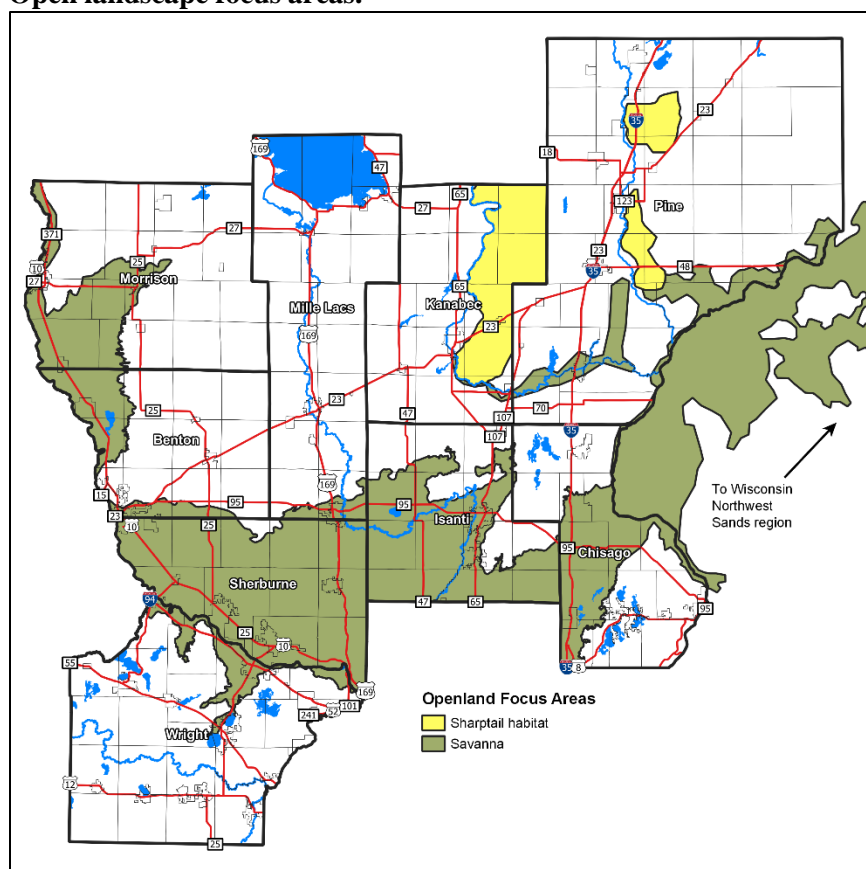
### Sharptail Habitat Goals

- Goal 1: Maximize the amount and quality of open landscape habitats and corridors on public lands within core habitat areas through increased, more diverse, and improved habitat management. Creation and enhancement of upland habitats are a focus.
- Goal 2: Support partners in protecting, restoring and enhancing open landscape habitats on private lands and tribal lands within core habitat areas, within potential “stepping stones” between them, and to the Northwest Sands of Wisconsin. Upland habitats are a focus.

### Oak Savanna Goals

- Goal 1: Restore oak savanna ecosystems on degraded sites where oak savanna was formerly present or where oak savanna foundation characteristics are present (sandy soils, good drainage, mixed oak and pine).
- Goal 2: Protect remaining oak savanna remnants.
- Goal 3: Manage sites to maintain the composition and structural characteristics of intact, functioning oak savannas.

### Open landscape focus areas.



## Section 8: Climate Adaptation Framework

Climate change is impacting Minnesota’s forests and will continue to have widespread effects in the future. This section of the East Central Landscape Plan provides guidance to decision makers regarding climate change and actions to mitigate its impact.

### General Forest Adaptation Strategies

The following is a list of climate change adaptation strategies and approaches adapted from the USDA general technical report [Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers](#) (Swanston et al. 2016).

- Strategy 1: Sustain fundamental ecological functions.
- Strategy 2: Reduce the impact of biological stressors.
- Strategy 3: Reduce the risk and long-term impacts of severe disturbances.
- Strategy 4: Maintain or create refugia.
- Strategy 5: Maintain and enhance species and structural diversity.
- Strategy 6: Increase ecosystem redundancy across the landscape.
- Strategy 7: Promote landscape connectivity.
- Strategy 8: Maintain and enhance genetic diversity.
- Strategy 9: Facilitate community adjustments through species transitions.
- Strategy 10: Realign ecosystems after disturbance.

### Cover Type Adaptation Strategies

This following guidance was adapted from the 2020 MFRC report [Climate Change and Minnesota's Forests](#). The table below identifies whether a resistance, resilience, or transition adaptive silvicultural strategy may be most effective in managing these forest types under a changing climate.

**Summary rating of climate adaptability and proposed adaptation strategy types by cover type.**

Cover Type	Likely Climate Adaptability	Recommended Adaptation Strategy Types
Aspen	Low	Resistance, resilience, or transition
Pine	Medium	Resistance, resilience, or transition
Oak	High	Resilience
Northern hardwoods	High	Resistance or resilience
Lowland Conifers	Low	Resistance or resilience

### Forest Carbon Management

The following has been adapted from [NIACS Forest Carbon Menu of Adaptation and Mitigation Strategies and Approaches](#).

- Strategy 1: Maintain or increase extent of forest ecosystems.
- Strategy 2: Sustain fundamental ecological functions.
- Strategy 3: Reduce carbon losses from natural disturbance, including wildfire.
- Strategy 4: Enhance forest recovery following disturbance.
- Strategy 5: Prioritize management of locations that provide high carbon value across the landscape.
- Strategy 6: Maintain or enhance existing carbon stocks while retaining forest character.
- Strategy 7: Enhance or maintain sequestration capacity through significant forest alterations.

## Urban and Community Forests

The following has been adapted from [NIACS Urban Forest Adaptation Strategies and Approaches for Climate Change and Human Health](#)

- Strategy 1: Engage social systems to integrate climate change, urban forest, and human health actions.
- Strategy 2: Reduce the impact of human health threats and stressors using urban trees and forests.
- Strategy 3: Maintain or increase extent of urban forests and vegetative cover.
- Strategy 4: Sustain or restore fundamental ecological functions of urban ecosystems.
- Strategy 5: Reduce the impact of physical and biological stressors on urban forests.
- Strategy 6: Enhance taxonomic, functional, and structural diversity.
- Strategy 7: Alter urban ecosystems toward new and expected conditions.
- Strategy 8: Promote mental and social health in the face of climate change.
- Strategy 9: Promote human health co-benefits in nature-based climate adaptation activities.

## Sections 9: Coordination and Implementation Framework

Section 9 outlines the organizational structures and coordination strategies that the East Central Landscape Committee believes are necessary to support the successful implementation of this Plan.

### How the Plan Will Get Implemented

This is a voluntary plan and its success will be based on the cooperation, coordination, and collaboration of regional partners and the commitment and imagination they bring to the overall landscape management process. In general terms, the MFRC Landscape Plans are implemented through four basic approaches including:

- Encourage consideration of the landscape-level context by all agencies, organizations, industry, and private landowners when developing their resource management plans and implementation projects.
- Coordinate and support projects by partnering organizations that promote sustainable forest management practices in the landscape region.
- Develop and implement committee projects that proactively address the goals and strategies outlined in the regional forest resource plans. Regional committees have been catalyst for securing of funds for Committee and partner project development and implementation.
- Monitor activities and outcomes of projects implemented by the committees, as well as those by partnering organizations and landowners across the landscape region.

### Coordination Strategies

The following is a list of coordination strategies that have been developed by the Committee to enhance the implementation of this Plan:

1. Information Sharing and Networking
2. Landscape Plan Outreach
3. Promote Integration of the Landscape Plan into Partners' Plans
4. Actively Support the Forest Policy and Research Development Processes
5. Develop Regional Priorities to Guide Investment in the Region
6. Promote Cross Boundary Demonstration Projects
7. Support Monitoring Efforts

## Section 10: Monitoring and Evaluation Framework

Section 10 serves as an outline for monitoring and evaluating the implementation of this Plan over the next decade. The Committee has proposed a two-part monitoring program which includes monitoring completed actions intended to attain plan goals and objectives and to the extent possible, measure the overall trends or outcomes of those actions on the landscape.

The Committee recommends the following questions be addressed to evaluate the implementation and effectiveness of this Plan:

- Resource Trend Monitoring (long term): Are management efforts moving the East Central Landscape towards the forest resource management goals outlined in the Plan and fulfilling the requirements of the SFRA?
- Implementation Monitoring (short term): Are management actions being carried out in a manner that is consistent with the Plan goals and strategies?

## **Section 11: Priority Recommendations to Agencies and Organizations**

The purpose of Section 11 is to summarize priority recommendations from the Committee to agencies, organizations, and private landowners working in the region on sustainable forest management.

The Committee's overarching recommendation was to encourage all organizations, agencies, landowners, and citizens, to use this Plan and the corresponding maps and data in as many ways as possible. As a regional level plan, it is intended to provide a broad context on how forest resources can be managed sustainably through collaboration.

The Plan contains recommendations for the following groups:

- MN Forest Resources Council – Governor and Legislature
- Federal and State Agencies
- Tribal Agencies
- Local Units of Government
- Conservation and Non-Governmental Organizations
- Forest Products Industry
- Education and Research Groups
- Private Landowners and Citizens