

Overview

Interim Update of the 2000 Renewable Resources Planning Act Assessment

In this overview of the findings of the RPA Assessment Update, we present highlights of findings as answers to commonly asked questions about renewable resource conditions and policies in the United States.

What's Behind Expected Changes in Natural Resource Conditions?

Population growth—The U.S. population is projected to grow from 300 million in 2006 to 403 million by 2050.

Population distribution—Population growth continues on both coasts of the United States, but other fast-growing areas include the Southwestern United States.

Population composition—The average age is increasing, the population is more diverse racially and ethnically, and the population is becoming increasingly urban and suburban in location and occupation.

Economic growth—U.S. average per capita income will continue to outpace inflation in the future, increasing the overall purchasing power of the American public.

The result—The changing U.S. population will likely demand increased ecosystem services coming from forest land and rangeland resources, including fresh water, protection from drought and floods, carbon storage, recreation, and other cultural benefits.

What's Happening Across the Landscape?

Total forest land has remained relatively stable at about 750 million acres since 1900, but this stable trend masks dynamic shifts among forest types, forest age classes, and how forest cover is arranged on the landscape due to land use intensification. The area of rangeland has slowly declined from about 800 million acres in 1900 to approximately 580 million acres today. Since the middle of the 20th century, rangeland losses have averaged between 1 and 2 percent per decade.

Forest conversion—More than 50 million acres of non-Federal forests are projected to be converted to urban and developed uses in the next 50 years.

Net change in forest land—Conversion of pastureland to forest helps to offset future loss of forest land, but still an estimated net loss of 20 million acres of forest land, primarily to housing development, is expected over the next 50 years.

Rangeland loss—Rangeland area is projected to decline slowly over the next 50 years

Increasing urbanization—Urban land is projected to increase from 3.1 percent of the conterminous United States in 2000 to 8.1 percent in 2050—an increase in area the size of Vermont and New Hampshire combined.

Arrangement of forest lands and rangelands—Much of today's forests are subject to anthropogenic, or human-caused, "edge effects." Most large patches of forest are publicly owned, although urbanization and increasing intensity of land use on private lands are leading to further subdivision of these lands.

Parcelization—Nonindustrial private forest land is being held in increasingly smaller parcels by an increasing number of owners. Working ranches are also being subdivided into smaller parcels often called ranchettes.

The result—The interface between humans and natural land cover will increase as intensified land uses expand. Resulting edge effects will increase the risks of fire and invasive species,

change the amount and pattern of wildlife habitat and alter the distribution of air pollution. Collectively, these changes will increase the challenges to management of forest lands and rangelands.

How Do Globalization Forces Affect Natural Resources?

Expansion of free trade policies has affected U.S. competitiveness in forest products and mineral and energy resources and accelerated restructuring and consolidation of the U.S. forest products industries. The United States is expected to continue to be a net importer of timber products, as well as numerous mineral and energy products.

Effects on domestic harvest—High levels of goods imports and continued high rates of paper recycling result in U.S. timber harvest increasing at a slower rate than in the last half of the 20th century.

Effects on measures of forest resource condition—Imports and loss of domestic processing capacity reduce domestic timber harvest, which affects the age-class distribution of domestic forests, which in turn affects habitat for plants and animals, biodiversity, and other measures of forest resource condition.

Effects on forest management—A slowing in the growth of stumpage prices caused by imports reduces expectations for long-term returns for forest management, raising questions about incentives for sustainable forest management.

Effects on domestic industrial capacity—Globalization has been associated with the loss of domestic capacity in forest industry and several mineral industries. The historical comparative advantage of some U.S. industries is now challenged by rising imports and structural changes in manufacturing. Related impacts are loss of related jobs and income, which is particularly problematic for natural-resource-dependent communities with few other economic development options.

Effects of imports on invasive species—Increasing forest product imports and global commerce in general increase the risk of invasive species entering the United States.

How Will Climate Change Affect Natural Resources?

Increasingly, the relationship between human-caused emissions and a warming climate is being documented. Although uncertainty exists in quantifying the impact of emissions on climate, a global warming of 1.4 to 5.8 degrees centigrade is projected by 2100. Melting of glaciers, reduction in arctic sea ice, and rising sea levels are expected to continue. Adapting to climate change and its potential impacts poses challenges and opportunities for managing resources, infrastructure, and the economy.

Ecosystem responses—The carbon dioxide fertilization effect on ecosystems is more complex than originally thought. Research is documenting changes in the breeding and migrating patterns of animals and flowering of plants, especially in northern latitudes.

Climate variability—Whether natural or human-induced, lack of understanding of climate variability limits natural resource managers' ability to plan mitigation for climatic extremes such as droughts, intense rainfall events, or extreme temperatures.

Effects on forest management toward the range of historical variation—Management to mimic the range of historical variation in resource conditions may no longer be plausible if climate change overwhelms the intent of the actions: management must adjust to dynamic conditions.

Other effects—Concurrent with climate change could be land cover and land use changes,

increases in atmospheric pollutants such as ozone and nitrous oxides, and potential expansion of exotic plants and animals, some of which may be considered invasive.

What's the Role of the Nation's Forests and Rangelands in Carbon Management?

Forests and rangelands are seen as part of the solution to reducing atmospheric carbon dioxide and other greenhouse gases. Carbon management technology and trading are emerging. The magnitude of the opportunity for carbon storage and carbon trading is not well quantified.

Forests as carbon sinks—Although forests are expected to continue to be sinks for carbon, the size of the annual addition to the sink appears to be declining.

Forests reduce emissions—Trees and forests around buildings can reduce building energy use and consequently reduce carbon emissions from power plants.

Wood products as carbon reservoirs or fuel—Accumulation of wood carbon in long-lived products holds down carbon dioxide release to the atmosphere; and use of wood for fuel, when combined with tree regrowth, can offset carbon dioxide emissions from fossil fuels.

What's Happening to the Nation's Biodiversity?

The largest reserves of intact forest are concentrated on public lands, with the largest share of public intact forest contained in the National Forest System (NFS). Since private lands can limit the degree of intactness on adjacent public lands, joint management may be needed to achieve a specified level of forest intactness.

Distribution of threatened and endangered species—Geographic areas where threatened and endangered species are concentrated have remained unchanged for the past decade and include the southern Appalachians, coastal areas, and the arid Southwest. States that have recently lost the most species occur prominently in the South. More than 30 species have been lost from the biota of California, Texas, Tennessee, Alabama, and Florida.

Distribution of forest species richness—Data on the distribution of nearly 700 tree species and nearly 1,500 terrestrial animals show that biodiversity is concentrated in the Southeast and the arid Southwest. Future concentrations of biodiversity will be affected by global climate change.

Trends in bird biodiversity—Land use intensification and housing development is associated with reduced native diversity and increased exotic diversity. Potential impacts include an overall simplification of biological communities that may reduce the goods and services that humans derive from ecosystems.

Where Are All of These People Going To Recreate?

Recreation demand for forest lands and rangelands in the United States continues to grow. Population and income growth, coupled with technological advances in camping and off-highway transportation, are helping to expand use of our Nation's forests and rangelands.

Access to public lands—Primary and secondary home and resort development adjoining public lands will limit general public access and allow greater unmanaged recreational use of those public lands, including off-highway motorized use.

Access to private lands—Increasing closure of private lands to free public access and shortfalls in funds for public site and facility management will stress the U.S. public recreation supply system.

Effects on sensitive ecosystems—Wilderness areas and special attractions will experience greater congestion at peak times of the year. Unmanaged motorized uses and heavy uses in

high-elevation alpine ecosystems (e.g., peaks over 14,000 feet) can be especially problematic.

What's the Role of the Growing Urban Forest?

Urban land is expected to grow from 3.1 percent of the total area in the conterminous States to 8.1 percent in 2050. Understanding how and where these urban areas and urban forests are changing is critical to helping develop policies and management plans to help sustain this growing resource and its numerous benefits, and to minimize negative urban effects on surrounding forests.

Carbon storage—Urban forests sequester an estimated 22.8 million metric tons annually, with total storage in urban forests estimated at 700 million metric tons.

Air quality—Urban forests can influence air quality by reducing temperature, removing air pollutants, and altering building energy use which affects pollutant emissions from utilities.

Water quality and runoff—Changes in tree canopy cover affect stream flows and water quality.

Wildlife habitat—Urban forests can provide important habitats for wildlife.

Quality of life—Besides the numerous environmental benefits associated with urban forests, these trees also provide significant social, psychological, and economic benefits that contribute to the quality of life in urban areas.

Outdoor recreation—Urban forests provide nearby outdoor recreation opportunities for residents. Some attractions may be so popular as to decrease pressure for recreation in the surrounding countryside.

Wildland-urban interface interactions—Urban land expansion increases the potential for human-caused pollution and enhances the risk of structural damage from wildfire. Increasing human population density that occurs with an expanding wildland-urban interface may also increase the risk of introducing exotic species into wildlands. Expansion of urban lands can also displace other land uses such as timber production.

Where Does Our Water Come From and Will We Have Enough?

Water supply—About 53 percent of the Nation's water supply originates on forest land, 26 percent on agricultural land, and 8 percent on rangeland. About 24 percent of the water supply in the contiguous 48 States originates on Federal lands and 18 percent on NFS lands alone, even though these lands occupy only about 11 percent of the surface area.

Water withdrawals—Water withdrawals in the United States are projected to increase less than 10 percent over the next 50 years, although population is expected to increase more than 40 percent. These increases in withdrawals, although relatively small, will further diminish instream flows in rivers and streams across the country. This trend will add pressure for amending laws and institutions to facilitate water transfers from low-value to higher-value water uses. Generally, the quality of water draining from forests is very good.

Where Do Our Timber Products Come From and Will We Have Enough?

Current timber supply—At the end of the 20th century, the United States imported the equivalent of 27 percent of the consumption of industrial wood used for products, up from 13 percent in 1965. Most of the imports originated in Canada, but Brazil, Chile, Finland, and other offshore countries are increasing in importance for some products. In 2002, private lands accounted for 92 percent of timber removals; national forests, 2.1 percent; and other public lands, the remaining 5.9 percent. In 2002, the South accounted for 58 percent of the domestic

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harvest; the North, 21 percent; the Rocky Mountain region, 4 percent; and the West Coast the remaining 17 percent.

Projected timber supply—Most of the projected increase in U.S. harvest through 2050 is in nonsawtimber (smaller) trees, and will come primarily from managed stands in the South. By 2050, 60 percent of projected softwood harvest is from managed plantations that occupy about 9 percent (46 million acres) of total U.S. timberland area. Projected product imports in roundwood terms will remain around 25 percent of domestic consumption. Aggregate U.S. forest inventory rises 31 percent for all owners as growth exceeds harvest over the next five decades. Supplies are generally adequate to moderate price increases for timber products. Solidwood product prices rise more slowly than historical rates and paper and paperboard prices are projected to decline in real terms. Consumption is expected to increase as population increases.