

Indicator 27. Contribution of Forest Ecosystems to the Total Global Carbon Budget, Including Absorption and Release of Carbon (Standing Biomass, Coarse Woody Debris, Peat, and Soil Carbon)

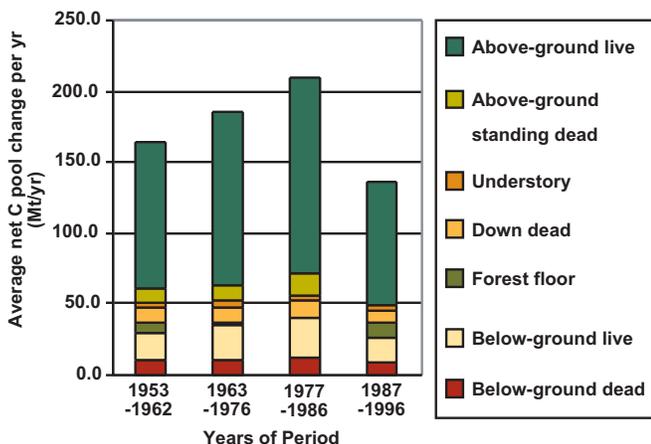


Figure 27-1. Average annual net forest carbon change (Mt/yr), 1953–1996.

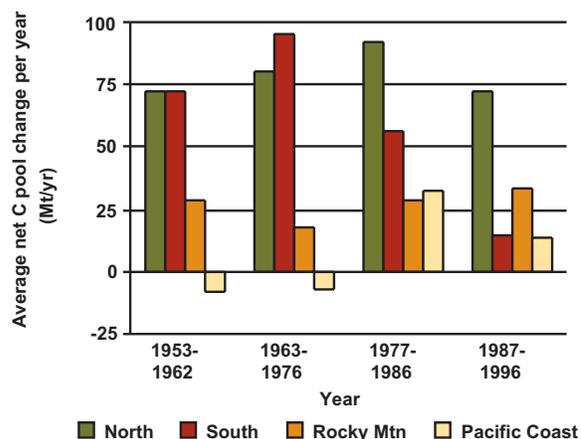


Figure 27-2. Average annual net forest carbon change (Mt/yr) by region.

What Is the Indicator and Why Is It Important?

Because plants utilize carbon dioxide in the photosynthesis process, forests provide a primary vehicle for sequestering carbon from the atmosphere. During this process, the carbon becomes part of the plant mass. Thus, managing forests to sequester carbon reduces the net amount of carbon dioxide accumulating in the atmosphere. Less carbon dioxide in the atmosphere may help reduce the possibility of human-induced climate change. The United States emitted a gross 1,909 megatonnes (Mt) equivalent of C in the year 2000. This indicator provides an estimate of forest carbon sequestration that may be subtracted from the gross emissions to estimate net emissions. Currently, soil carbon changes are not included in this indicator; however, forest soils are expected to be sequestering carbon.

What Does the Indicator Show?

A positive number means carbon is being sequestered from the atmosphere into the forest. The average annual net change in nonsoil forest ecosystem carbon pools for the period 1953–1997 is 175 Mt C/yr being absorbed by forests from the atmosphere. Between 1987 and 1996, about 135 MtC/yr were added to nonsoil forest carbon stocks. Forest ecosystems sequester about 10 percent of the gross U.S. greenhouse gas emissions, with additional carbon sequestration accounted for in products (see indicator 28). U.S. forest ecosystems sequester more than 10 percent of the global total for terrestrial ecosystems. The decrease in sequestration in the last period is thought to be because of more accurate data, increased harvests relative to growth, and accounting issues related to emissions from dead wood. The North Region is sequestering the greatest amount of carbon, followed by the Rocky Mountain Region. The trend of decreasing sequestration in the South Region is because of the increase in harvesting relative to growth. This harvested carbon will be shown as being sequestered in wood products (see indicator 28).