

Indicator 6.35.

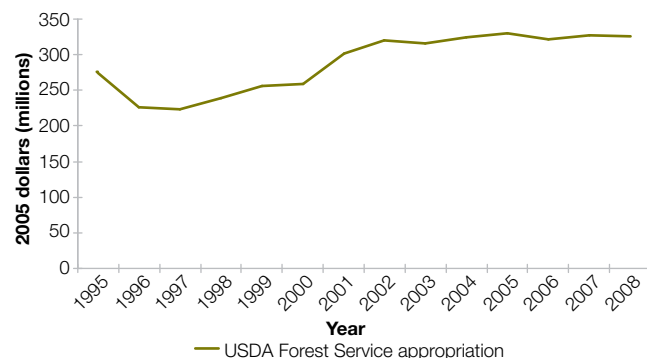
Annual Investment and Expenditure in Forest-Related Research, Extension and Development, and Education

What is the indicator and why is it important?

Capital investments and annual operating expenditures on forest-related education, research and development increase human capital. Funds invested in communicating the results of research and development to practitioners and the public build awareness, and hopefully support, for sustainable forest management. These investments and expenditures increase knowledge and skills and, over time, increase a country's ability to practice sustainable forest management.

Research and development, extension, and education areas include all disciplines that influence forest resource management decision making. Forests in the United States are threatened by fragmentation, invasive species, the effects of climate change, and the disconnect of our children and increasingly urban populations from the natural world. Forest related education and extension, and the communication of research and development to both forestry practitioners and the general public can build awareness and support for sustainable forest management. Thus, it is critical to examine the level of funds invested annually toward forest-related education, extension, and research and development.

Figure 35-1. USDA Forest Service Research and Development appropriations, 1995–2008 (millions of 2005 dollars).



Source: USDA Forest Service

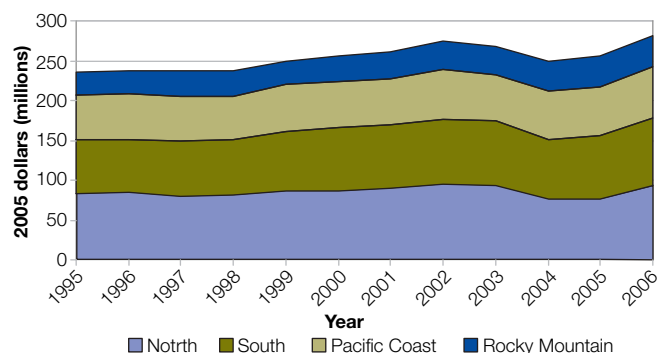
What does the indicator show?

Forest resource management-related research and development efforts are centered in the Forest Service, in universities, and in industry, with additional efforts by other agencies and nongovernmental organizations. Forest Service funding for research, including construction, and net of inflation, has increased from \$259 million in 2000 to \$326 million in 2008 (both in year 2005 dollars) although funding has been relatively constant above \$300 million per year (2005 dollars) since 2002 (fig. 35-1).

Forest Service publications (including those in peer reviewed journals) have increased from 1,886 in 1981, to 2,718 in 1998, and most recently to 3,182 in 2007.

Funding available for forestry research at universities that receive Federal funding increased from \$256 million in 2000 to \$282 million in 2006 (2005 dollars). Funding in 2006 was highest in the North (\$92 million), followed by the South (\$84 million), Pacific Coast (\$65 million), and the Rocky Mountains (\$39 million) (fig. 35-2).

Figure 35-2. Forestry research funding at U.S. universities that are partially funded by the USDA National Institute of Food and Agriculture by Resource Planning Act Region, 1995–2006 (millions of 2005 dollars).



Source: USDA National Institute of Food and Agriculture

Forest industry also provides funding for both internal and external research. The Agenda 2020 is a key Federal and industry partnership that provides funds from the Federal Government and industry for research on a wide range of topics, including improved fiber recovery and use, decreasing capital costs, reducing environmental effect, the forest biorefinery, and improved housing systems. Funding for 2003 was about \$30 million each from industry and the Federal Government.

Additional sources of funding for forestry research are available, from other Federal sources and nongovernmental organizations (NGOs).

Baccalaureate, masters, and doctorate degrees awarded in forest science programs decreased 20 percent from 2,263 in 2001 to 1,810 in 2006. During that period, the number of baccalaureate degrees decreased 28 percent, doctorate degrees decreased 15 percent, and master's degrees increased almost 4 percent.

In 2007, funding appropriated through the Renewable Resources Extension Act for forest stewardship and health extension programs, resulted in 1,495 education events nationwide, the development of 1,574 stewardship plans, and affected more than 12 million acres.

Forest Service Conservation Education activities and programs, which are funded from numerous sources within and external to the Forest Service, reached 4,400,000 people in FY 2006. 35 percent of those reached came from urban areas, 10 percent were underserved, and 33 percent were youth and their educators. FY 2006 data indicate a significant increase over previous years for the number of activities conducted, audiences

reached, partnerships developed and improved, and total dollars spent, although these data are collected from a voluntary, self-reporting database (table 35-1).

Forest resource education is also provided by public schools, and by a wide range of nongovernmental organizations (NGOs).

What has changed since 2003?

The amount of funds available for forest research since 2003 has increased both for Federal and university research. In the same time period, the amount of forest science degrees awarded has decreased by 20 percent.

Why can't the entire indicator be reported at this time?

Investment in forest education for primary school-aged children is important for this indicator but a forestry-specific, nationwide data set was not found. Information is not available on funding for forestry related research and education from other Federal sources, such as U.S. Department of the Interior or National Aeronautics and Space Administration, nor are data available funds for research done by many NGOs.

Table 35-1. Level of Forest Service Conservation Education activities and dollars spent, 2004–2006.

	2004	2005	2006
Number of activities	655	1,007	1,335
Audience reached	2,100,000	982,000	4,400,000
Number of partnerships	641	825	1,578
Total spent (millions of 2005 dollars)	8.3	9.7	17.9