

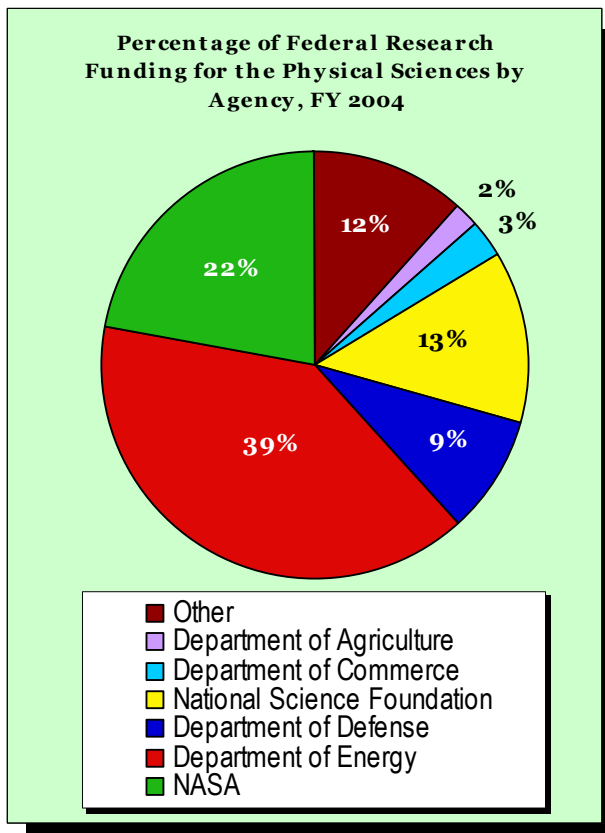


BHEF 2006 Issue Brief

The Administration's American Competitiveness Initiative: Providing Federal Funding for Basic Research in the Physical Sciences

Investing in research, which drives industrial development and innovation, is essential to ensuring America's economic prosperity, national security, and leadership in a global economy. While U.S. commitment to research and development (R&D) has traditionally been strong and sustained, federal funding of R&D as a share of U.S. gross domestic product (GDP) fell from 1.25% to 0.78% between 1985 and 2003. At the same time, many other nations have increased R&D expenditures as a percentage of GDP. This worldwide increase in R&D expenditures has shrunk the U.S. share of patents and publications in scientific journals, and adversely affected the nation's trade balance in high technology products.

In February 2006, President Bush introduced the American Competitiveness Initiative (ACI) to re-establish American dominance in the global marketplace. At BHEF's 2006 summer meeting, Dr. John Marburger, the Director of the Office of Science and Technology Policy of the Executive Office of the President, discussed the imperative to increase America's commitment to basic research, particularly in the physical sciences. He also explained the ACI plan to double funding over the next ten years for the National Science Foundation (NSF), the Department of Energy's (DOE) Office of Science, and the Department of Commerce's National Institutes for Standards and Technology (NIST), as well as other plans to make permanent the \$4.6 billion Research and Experimentation (R&E) federal tax credit.



SOURCE: National Science Foundation, Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003. (2006).

Quick Facts

Fact 1

Federal investment in the physical sciences, routed through key agencies and conducted primarily by research universities, drives industry innovation.

Fact 2

While federal support for biomedical and health science research doubled over the last decade, funding in the physical sciences remained relatively flat.

Fact 3

The business and higher education communities advocate for increasing research funding at DOD, DOE, Homeland Security, NASA, NIH, NIST, and NSF.

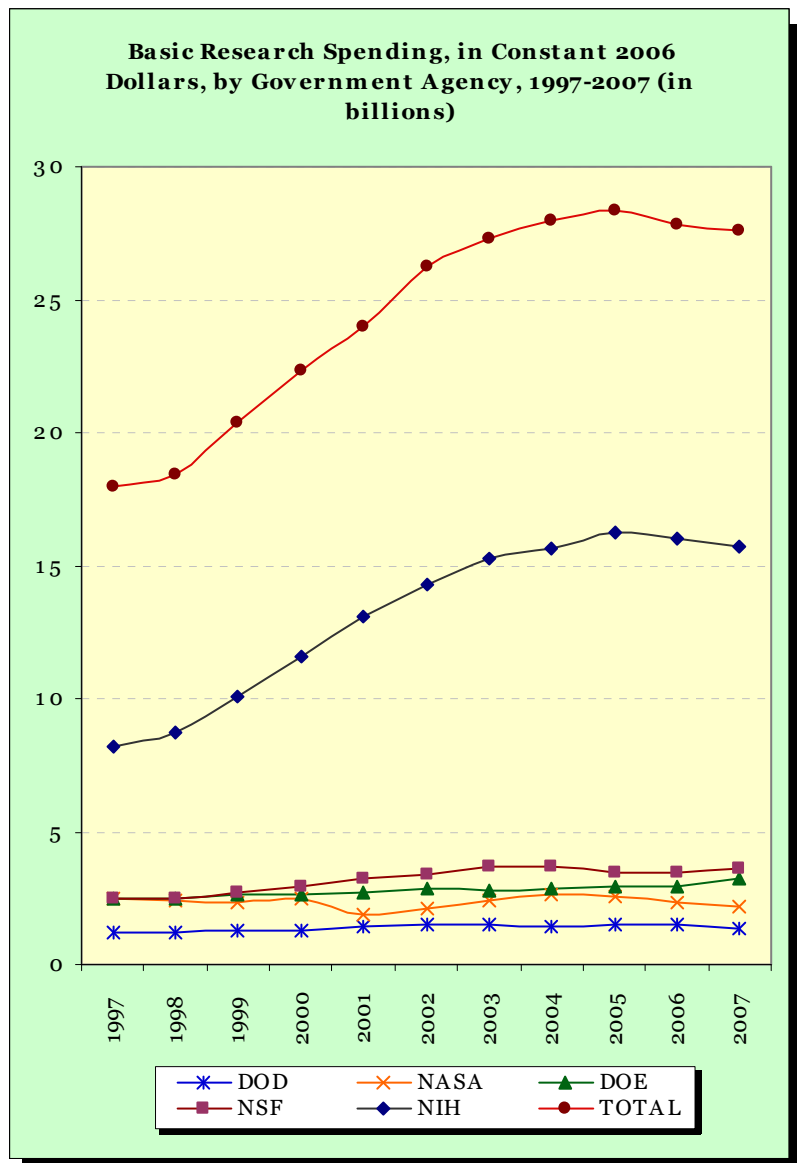
Fact 4

The Administration's ACI proposal channels funding increases to three federal agencies it expects will contribute to long-term economic competitiveness.

Fact 1: Federal investment in the physical sciences, routed through key agencies and conducted primarily by research universities, drives industry innovation. Thirteen federal agencies fund basic research in the physical sciences. Each of these 13 agencies sponsors research in a variety of fields. For example, NASA funds studies in earth science, space science, astrophysics, and aeronautics. DOE, with its 21 national labs and centers, is the leading source of funds and facilities for high-energy and nuclear physics, nuclear medicine, heavy-element chemistry, plasma physics and magnetic fusion, and catalysis. DOE also supports research at more than 300 colleges and universities nationwide. NSF plays an extraordinary role in funding discoveries in climate and weather forecasting, aircraft design, pioneering medical tools, robotics, fiber optics, and computational tools, financing approximately 20 percent of all federal support for basic research at academic institutions.

Outcomes from federally funded basic research in the physical sciences often lead to actual development of products, devices, and uses by industry. At the Department of Defense (DOD), basic research funded by the federal government assisted industry in building weather satellites and utilizing global positioning technology. Dozens of companies are beginning to produce nanoscale products due to NSF's support of nanotechnology research. NASA's sponsored research on space travel transformed how companies make athletic shoes, swimsuits, and even golf balls. Overall, industry funds 80 percent of all development.





Fact 2: While federal support for biomedical and health science research doubled over the last decade, funding in the physical sciences remained relatively flat. According to the National Academies report *Rising Above the Gathering Storm*, a balanced research portfolio in all fields of science and engineering research is critical to our nation's prosperity. Despite this finding, in the last decade virtually all increases in federal funding went to biomedical and health research at the National Institutes of Health (NIH). From 1998 to 2003 NIH's budget doubled in size, while funding for research in physical sciences, engineering, and mathematics remained relatively flat. In fact, DOD's allocation for basic research declined from 3.3 percent to 1.9 percent between 1994 and 2005.



SOURCE: American Association for the Advancement of Science, AAAS Reports I- XXXI. (2006).

These trends in federal funding greatly impact America’s ability to support discovery and investigation in the physical sciences. In 2004, funding restrictions forced NSF to reject \$2.1 billion worth of proposals rated by external reviewers as “very good” or “excellent.” Even the relatively well-funded NIH has been forced to restrict funding for researchers over the past two years, when inflation has outpaced budget growth.

Fact 3: The business and higher education communities advocate increasing research funding at DOD, DOE, Homeland Security, NASA, NIH, NSF, and NIST. Multiple coalitions and organizations composed of businesses and/or universities produced action plans for supporting basic research. Although their recommendations vary slightly by funding levels and targeted agencies, all have a common goal of increasing total federal support for research. Additionally, the Association of American Universities (AAU) and others have advocated specifically for increases in NIH funding.

Research Funding Priorities, by Group			
Group	Membership	Recommendation	Agencies
 <p>The Council on Competitiveness</p>	Business, University, and Labor Leaders	Significantly increase research budgets at agencies that support research in the physical sciences	NSF, DOD
 <p>Tap Coalition</p>	15 business Organizations (Including BHEF)	Increase the federal share of basic research in the physical sciences by seven percent annually	NSF, NIST, DOD, DOE
 <p>Association of American Universities</p>	62 Research Universities	Increase federal investment in basic research ten percent annually over the next seven years	NSF, NASA, DOE, DOD, Homeland Security, NIST
 <p>The National Academies</p>	National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council	Ten percent annual increases over the next seven years for agencies that fund basic research in science, technology, engineering, and mathematics	DOE, DOD, NASA, NSF

Fact 4: The Administration’s ACI proposal channels funding increases to three federal agencies it expects will contribute to long-term economic competitiveness. NSF, DOE, and the Department of Commerce’s NIST are considered the agencies best able to support research in the physical sciences and to have the greatest impact and return on investment. President Bush’s budget request strategically provides \$1.05 billion increase in research to these three agencies. However, overall non-defense R&D spending is projected to increase at a rate below inflation. Over the next ten years ACI seeks to double the combined budgets of these three specific agencies.

