

January 15, 1997

Dear Colleague:

Enclosed is a copy of *The Federal Science & Technology Budget, FY 1997*, a new report from the National Academy of Sciences. It was prepared by a panel consisting of H. Guyford Stever and myself.

The report focuses on the federal science and technology (FS&T) budget for fiscal year 1997 and on trends in it since 1994. The FS&T budget was proposed in a 1995 report, prepared by a committee that I chaired, as a more precise measure of the federal investment in new knowledge and new technologies, because it excludes the funding traditionally counted in the federal R&D budget for activities such as production engineering, testing and evaluation, and upgrading of large weapons and related systems. These latter activities are unquestionably important, but if the nation wishes to understand trends in public investments in creating new knowledge, then I believe that the FS&T budget, and especially its trends, is more useful and truer to the mark.

The main findings of the report, expressed in constant or inflation-adjusted dollars, are as follows:

- The final federal science and technology (FS&T) appropriation for FY 1997 is approximately \$43.4 billion, which is a slight increase (0.7 percent) over the FY 1996 appropriation for FS&T.
- The upturn in FS&T funding follows but does not offset several years of shrinkage. The new FS&T budget is 5.0 percent less than it was in FY 1994.
- Only two of the 10 major S&T agencies and departments—the National Science Foundation and Department of Health and Human Services (DHHS)—have more FS&T funding in FY 1997 than they had in FY 1994. If the FS&T budget at DHHS (which is mostly for the National Institutes of Health) were not included, the FS&T budget for FY 1997 would be nearly 10 percent less than it was in FY 1994.

One can argue about what should be or should not be included in the FS&T budget; for example, some might dispute the inclusion of the Space Station. However, while excluding it would change the amount, it would not affect the trend. It would still show, for example, a substantial decline in funding for the physical and other non-biomedical sciences. I hope you find the FS&T budget data informative and useful in assessing what is happening to federal support of the research enterprise, which has been an important factor in the nation's preeminence in science and technology.

This report is the first in a planned series of annual reports from the NAS that will analyze the President's budget request and the final approved appropriations bills for trends in federal budgetary support for science and technology work. We would be happy to hear your views on the FS&T budget and its utility and we invite your ideas for improving future reports.

Sincerely,

Frank Press
Chair, Panel on FS&T Analyses

Enclosure

**THE
FEDERAL SCIENCE & TECHNOLOGY BUDGET
FY 1997**

PANEL ON FS&T ANALYSES

NATIONAL ACADEMY OF SCIENCES
WASHINGTON DC 1997

Summary

The President and the Congress agree that federal funding of science and technology (S&T) is an important investment in the nation's future, along with investments in education, environmental protection, and other sources of long-term growth in productivity. Research aimed at new knowledge and novel technologies is a major source of economic growth, national security, health, quality of life, and human knowledge. Certainly, there has been bipartisan recognition in the 50 years since World War II that support of S&T in the nation's science and engineering institutions (universities, federal laboratories, nonprofit research, and other organizations) is a basic government responsibility.

In its 1995 report *Allocating Federal Funds for Science and Technology* (NAS, 1995), a joint committee of the National Academies of Sciences and Engineering and the Institute of Medicine proposed adoption of a new measure of the status of the federal government's investment in new knowledge and technologies, the "federal science and technology" (FS&T) budget, to ensure that the United States remains the world leader in research and development. The congressionally mandated report recommended that policy makers identify and focus on—that part of the federal R&D budget that is devoted each year to expanding fundamental knowledge and creating new technologies. For example, the FS&T budget recommended by the committee does not include the substantial and important part of federal R&D devoted to the production engineering, testing and evaluation, and upgrading of large weapons and related systems. It does include, however, the large amount (nearly \$8 billion a year) that the Department of Defense (DOD) invests in its "S&T base," which is aimed at the development of new knowledge and technologies for future systems. DOD's S&T base provides substantial federal support of academic research in several key areas, such as computer science, electrical engineering, and material science. The FS&T budget also recognizes the large role played by agencies beyond the two most commonly equated with S&T: The National Science Foundation (NSF) and the National Institutes of Health (NIH) within the Department of Health and Human Services (DHHS).¹

The final federal science and technology (FS&T) appropriation for FY 1997 is approximately \$43.4 billion, a slight increase (0.7 percent) over the FY 1996 appropriation in real terms (Figure 1). This upturn in FS&T funding does not, however, offset several years of shrinkage. The new FS&T budget is 5.0 percent less than it was in FY 1994, and would be 9.7 percent less than in FY 1994 if DHHS were not included. Overall, only two of the 10 major S&T agencies and departments, NSF and DHHS, have more FS&T funding in FY 1997 than they had in FY 1994.

NOTE: The Panel on FS&T Analyses is composed of Frank Press and H. Guyford Stever, who were chair and member, respectively, of the committee that prepared the 1995 report cited in the text recommending the use of a new FS&T index to gauge federal investments in fundamental science and technology. Panel staff are Michael McGeary and Norman Metzger. Inquiries can be directed to (202) 334-3061 (voice), (202) 334-1528 (fax), or, preferably, r-dstudy@nas.edu (Internet). This report and the 1995 report are available via the Internet at <http://www.nas.edu/fsrd/fsrd.html>.

¹ See the appendix for an explanation of the methodology used to estimate the FS&T budget, which is a subset of R&D.

² All budget numbers and percentages are expressed in constant dollars in the text of this report, unless otherwise noted, to account for the effects of inflation. The current-dollar equivalents are provided in the top panel of Table A.1. They were converted to 1997 dollars using the GDP deflators *Budget of the United States Government FY 1997* (OMB, 1996), Historical Statistics volume, Table 10.1.

³ In this report, "major S&T agencies" refers to the 10 departments and agencies with an annual FS&T budget of more than \$0.5 billion (see Table A.1).

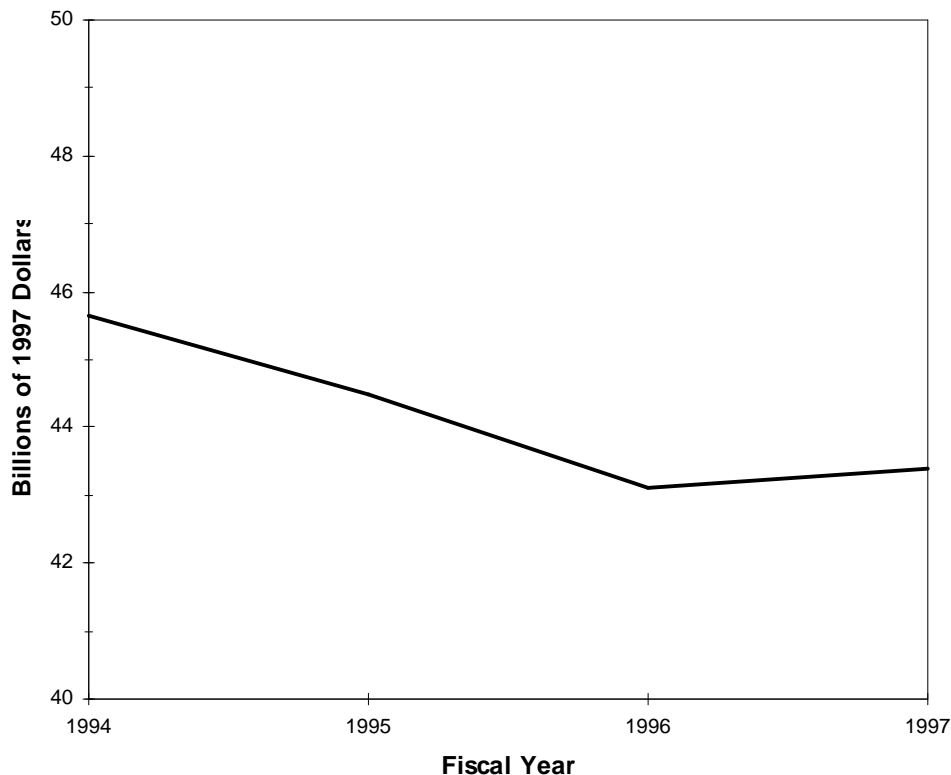


FIGURE 1. FS&T budget, FY 1994 to FY 1997 (constant dollars). SOURCE: Table A.1.

This report is the first in a series that will be issued twice yearly by the Panel on FS&T Analyses to track trends in federal funding of science and technology research programs and facilities. Future reports, beginning with FY 1998, will analyze FS&T in the President’s budget request and the final FS&T budget after enactment.

Further Details

Agency Changes, FY 1996 to FY 1997

The FS&T budget of DHHS increased by 5.3 percent to just under \$13.0 billion (Figure 2). Most of that increase went to support NIH and other health research activities. The absolute size of the FS&T budget increase at DHHS was much larger than the net increase in the overall FS&T budget in FY 1997, which helped offset decreases at other agencies. Without DHHS, FS&T funding would have declined by 1.2 percent, rather than increasing by 0.7 percent, from FY 1996 to FY 1997.

FS&T at the Department of Energy (DOE) grew 1.6 percent to \$5.4 billion.

The National Science Foundation (NSF), the main federal funder of S&T whose R&D spending is not mission-related, received a nominal increase of \$24 million over FY 1996’s \$2.4 billion appropriation for FS&T, a loss of 1.2 percent after inflation.

The Departments of Agriculture (USDA) and Commerce (DOC) received FS&T budget increases of 1.4 percent and 5.4 percent to \$1.5 billion and \$1.0 billion, respectively.

The Department of Transportation (DOT) also received a small increase in its FS&T appropriation of 1.8 percent to \$0.6 billion.

The FS&T budget of the Environmental Protection Agency (EPA) increased nearly 10 percent to \$0.6 billion.

The FS&T budget of \$7.8 billion at DOD is 1.1 percent smaller than that of FY 1996. Within DOD's FS&T budget in FY 1997, basic research and applied research are declining by 7.0 percent and 0.2 percent, respectively, while advanced technology development is increasing by 0.2 percent (see Table A.2).

The National Aeronautics and Space Administration (NASA) lost 3.7 percent of its 1996 FS&T budget after inflation.

The FS&T budget at the Department of the Interior (DOI) declined by nearly 10 percent.

The FS&T budgets of the 16 other agencies and departments with smaller S&T programs are shrinking as a group by 4.8 percent, to \$1.1 billion. Those programs range in size from about \$270 million down to about \$1 million⁴.

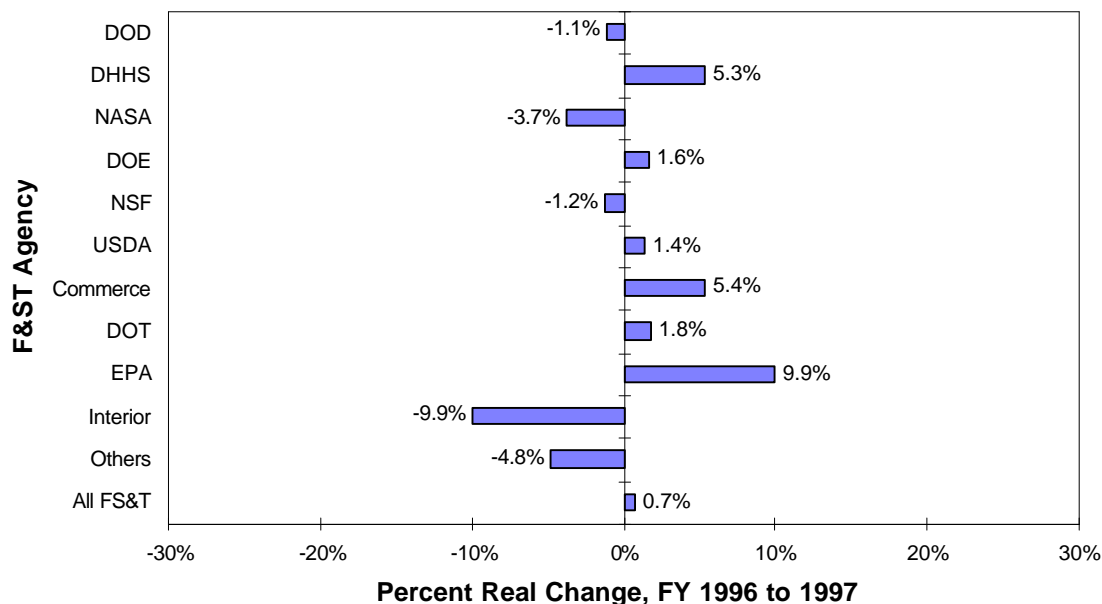


FIGURE 2. Constant-dollar changes in FS&T budgets, by agency, FY 1996 to FY 1997 (percent).

SOURCE: Table A.1.

Longer-term Changes, FY 1994 to FY 1997

Only two of the major S&T agencies, DHHS and NSF, have greater levels of FS&T funding for FY 1997 than they had in FY 1994. Propelled by support for biomedical research at NIH, FS&T funding at DHHS has been increasing annually and, in FY 1997, it will be 8.1 percent higher than in FY 1994. If DHHS were not counted, the FS&T budget would have fallen by 9.7 percent since FY 1994 instead

⁴ The departments and agencies, in descending order of FS&T budget size, are Veterans Affairs, Education, Smithsonian Institution, Agency for International Development, Justice, Postal Service, Nuclear Regulatory Commission, Tennessee Valley Authority, Corps of Engineers, Housing and Urban Development, Labor, Social Security Administration, Treasury, International Security Assistance, Arms Control and Disarmament Agency, and Marine Mammal Commission.

of by 5.0 percent, suggesting a disproportionate impact of the decline in the FS&T budget on fields of research other than health, such as the physical sciences, engineering, and the social sciences.

NSF is the only major S&T agency other than DHHS whose level of funding for FS&T is higher (by 1.8 percent) in FY 1997 than it was in FY 1994 (Figure 3).

DOD's FS&T budget for FY 1997 will be 11.1 percent below its level of FY 1994⁵. The remaining major S&T agencies also have smaller FS&T budgets in 1997 than in 1994, even though most received increases over FY 1996 levels. Despite a 1.6 percent increase over FY 1996, for example, DOE's FY 1997 FS&T budget is nearly 14 percent smaller than in FY 1994. FS&T funding at the Department of the Interior has shrunk by nearly 24 percent in the same time period. As a group, the 16 smaller FS&T programs have also experienced a decline in funding of more than 21 percent since FY 1994.

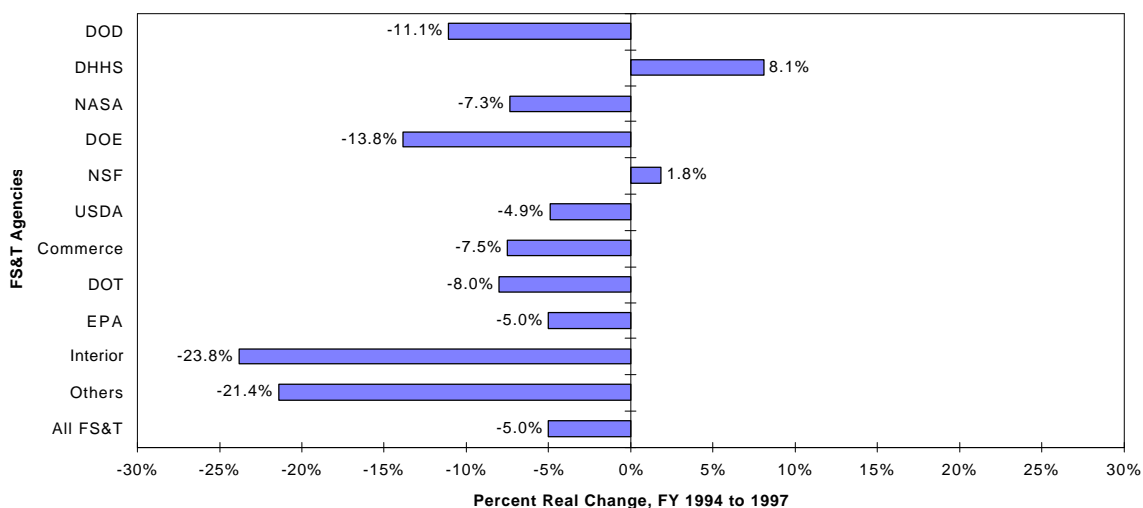


FIGURE 3. Constant-dollar changes in FS&T budgets, by agency, FY 1994 to FY 1997 (percent).
SOURCE: Table A.1.

As a result of these differential rates of growth, DHHS accounts for 30 percent of the FS&T budget in FY 1997, up from 26 percent in FY 1994 (Figure 4). The only other agency to claim a larger share of the FS&T budget over the same period is NSF, which has gone from 5.2 percent to 5.6 percent.

⁵ Within DOD's FS&T budget, basic and applied research declined relative to advanced technology development (see Table A.2).

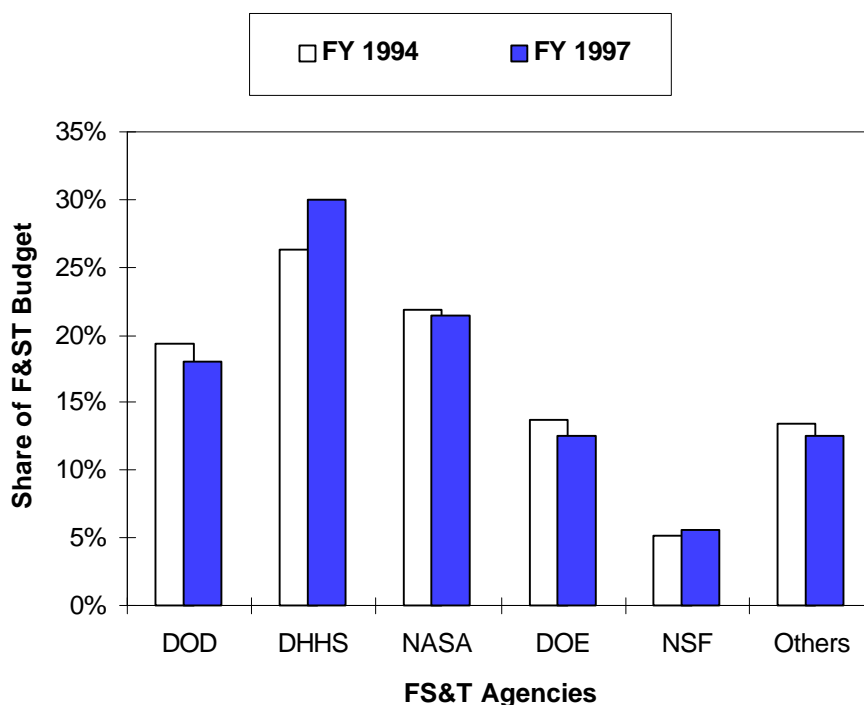


FIGURE 4. Agency shares of the FS&T budget, FY 1994 and FY 1997 (percent). SOURCE: Calculated from figures in Table A.1.

FS&T Trends in Context, FY 1996 to FY 1997 and FY 1994 to FY 1997

Although FS&T is a subset of the federal research and development (R&D) budget, its increase of 0.7 percent from FY 1996 to FY 1997 is less than R&D's overall increase of 1.8 percent (Figure 5). That is the case because more than half of the overall increase in the FY 1997 federal R&D budget is for the weapons system development activities excluded from the definition of FS&T.

Since FY 1994, FS&T funding has shrunk more than the total R&D budget, by 5.0 percent compared with R&D's 2.0 percent.

Although it did not grow as fast as R&D from FY 1996 to FY 1997, FS&T fared slightly better than the federal discretionary budget of which it is a part. During that same period, the federal discretionary budget increased 0.3 percent. The discretionary budget, where most of the deficit cutting is occurring, has also declined more than the FS&T budget since FY 1994, by 5.3 percent compared with 5.0 percent.⁶

⁶ In constant-dollar terms, the federal discretionary budget peaked in size in FY 1991 and the budget for federal R&D peaked in FY 1992.

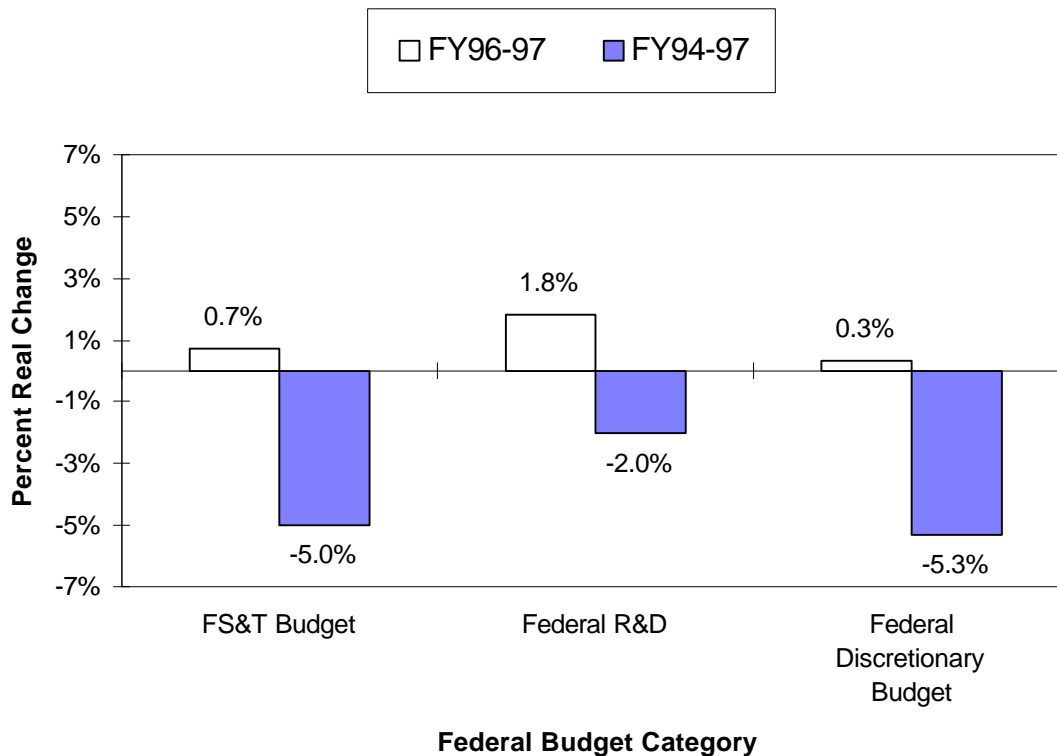


FIGURE 5. Constant-dollar changes in FS&T, federal R&D, and federal discretionary budget authority, FY 1996 to FY 1997 and FY 1994 to FY 1997 (percent). SOURCE: Table A.3.

Differences Between the Initial Budget Request and Final Appropriations, FY 1996 to FY 1997

The final FS&T budget for FY 1997 of \$43.4 billion is slightly (0.6 percent) less than the amount that the President asked for, but the allocation of FS&T funding in the President’s request was different than Congress provided. In the end, DOD, DHHS, and USDA received more than the President requested (\$1.0 billion in all), offset by reductions in other agencies (Figure 6).

The final FY 1997 budget has additional FS&T funding for DOD (\$595 million), DHHS (\$378 million), and USDA (\$48 million) over the President’s request. Major reductions were made at NASA (\$437 million), DOE (\$370 million), DOC (\$222 million), NSF (\$55 million), and in a number of the smaller FS&T budgets (e.g., DOT, EPA, DOI). The FS&T budget for DOD was cut from the FY 1996 level, but the cut was less than the President requested. DHHS and USDA received larger increases than the President had asked for, but the increases requested for NSF, DOE, and DOC were scaled back, and NASA was cut substantially rather than receiving the slight increase requested in the President’s budget.

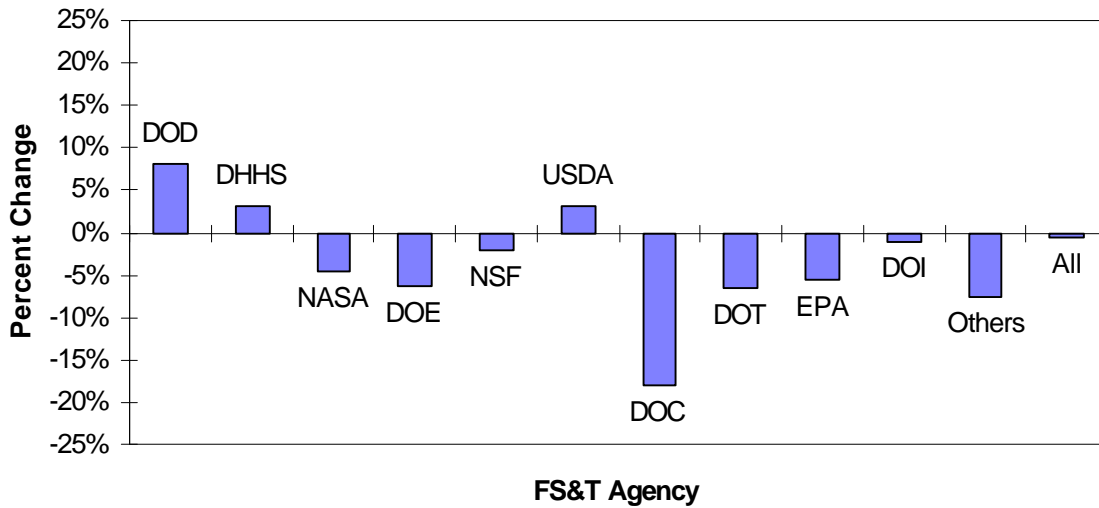


FIGURE 6. Differences between the President’s FS&T budget request and final congressional appropriations, FY 1997 (percent). SOURCE: Table A.4.

References

Intersociety Working Group

1995 *AAAS Report XX: Research & Development FY 1996* Washington, D.C.: American Association for the Advancement of Science.

1996 *AAAS Report XXI: Research & Development FY 1997* Washington, D.C.: American Association for the Advancement of Science.

Koizumi, Kei, Teich, Albert H., Nelson, Stephen D., and Cassidy, Bonnie Bisol

1996 *Congressional Action on Research and Development in the FY 1997 Budget* Washington, D.C.: American Association for the Advancement of Science.

National Academy of Sciences (NAS)/National Academy of Engineering/Institute of Medicine/National Research Council

1995 *Allocating Federal Funds for Science and Technology* Washington, D.C.: National Academy Press.

National Science Foundation (NSF)

1996 *Federal Funds for Research and Development: Fiscal Years 1994, 1995, and 1996*, volume 44, Detailed Statistical Tables. Arlington, Va.: NSF.

Office of Management and Budget (OMB)

1996 *Budget of the United States Government FY 1997* Washington, D.C.: U.S. Government Printing Office.

Appendix

Methodology

Currently, the federal government does not collect budget data based on the FS&T definition used in this report. The agency and governmentwide FS&T budget figures given in this report were estimated by making adjustments in federal R&D data that are collected, published, and analyzed annually by the R&D Budget and Policy Project of the American Association for the Advancement of Science.¹ The budgets for basic and applied research of all the agencies and departments are counted as FS&T. Budgets for development are also counted as FS&T at all agencies except DOD and DOE. Certain advanced development activities at those two agencies are excluded because they involve mostly the production engineering, testing and evaluation, and upgrading of large weapons and related systems rather than the development of new knowledge and technologies for future systems. Specifically, FS&T at DOD is deemed to be funding only for those activities supported by the three R&D budget accounts that DOD itself considers to be its “science and technology base,” i.e., its budget categories for basic research (6.1), applied research (6.2), and advanced technology development (6.3).

Determining the amount budgeted for FS&T at DOE is more difficult because, unlike DOD, DOE does not define and track subclassifications of its development activities in a way that clearly separates S&T from more systems-oriented upgrading, testing, and evaluation work. In this report, DOE’s FS&T budget is approximated by subtracting the funding for several activities that involve systems testing and evaluation or upgrading and modernization activities (i.e., the testing capabilities and readiness part of the weapons stockpile stewardship program, and the naval reactors program).

This report considers all of NASA’s R&D to be FS&T, unlike the 1995 report *Allocating Federal Funds for Science and Technology* (NAS, 1995), which excluded some large systems, primarily the space station, because they are engineering projects based on the extension of existing knowledge and technologies. The question of what R&D programs to include and exclude as FS&T was discussed at an informal meeting of executive and congressional R&D analysts sponsored by the National Academy of Sciences (NAS) in 1996, where the point was made that the space station is considered by the government a facility for the conduct of S&T and therefore should be included for the purpose of budget analyses. The NAS Panel on FS&T Analyses accepted this recommendation. FS&T in this report also encompasses both the conduct of research and support of research facilities, whereas the 1995 report counted only the conduct of research. These two refinements account for most of the difference between the \$43 billion estimated for FY 1994 FS&T in this report and the \$38 billion estimated in the 1995 report.²

Precise budget numbers for FS&T must await changes in the way the federal government accounts for R&D expenditures (the National Science Foundation has undertaken such an exercise for military R&D at the request of the DOD as part of its annual reporting on federal funds for R&D, which could be expanded to other agencies³). In the interim, the purpose of this report and of the annual updates to follow is to track trends in FS&T using consistent definitions of which federally funded R&D activities are FS&T and which are not FS&T.

¹ See in particular the latest volumes in a series of reports on R&D from the AAAS: Intersociety Working Group (1995, 1996), and Koizumi et al. (1996).

² There are some additional differences related to technical approach, especially the use of data on estimated expenditures in the 1995 report and of budget authority numbers in this report.

³ See NSF, 1996 (also available at <http://www.nsf.gov/sbe/srs/stats.htm>).

The budget numbers are also adjusted for inflation using the GDP price deflator used by the Office of Management and Budget (1996). That procedure may understate the loss of buying power from inflation, because the price index for R&D is generally higher than the overall price index.

Information on agency budgets and appropriations is given in Tables A.1 through A.4.

Table A.1. FS&T Budgets by Agency in the Final FY 1997 Budget Appropriations Acts (budget authority in millions of dollars)

Agency	FY 1994	FY 1995	FY 1996	FY 1997	Percent Change	
	Actual	Actual	Estimated	Approp'd	FY96-FY97	FY94-FY97
<u>In Current Dollars</u>						
DOD	8,283	7,930	7,730	7,816	1.1%	-5.6%
DHHS	11,324	11,517	12,077	12,998	7.6%	14.9%
NASA	9,406	9,459	9,416	9,263	-1.6%	-1.5%
DOE	5,925	5,577	5,226	5,426	3.8%	-8.4%
NSF	2,243	2,396	2,400	2,424	1.0%	8.1%
USDA	1,528	1,487	1,489	1,543	3.6%	1.0%
DOC	1,022	1,118	932	1,004	7.7%	-1.8%
DOT	641	666	602	626	4.0%	-2.3%
EPA	588	554	528	593	12.3%	0.9%
DOI	708	668	622	573	-7.9%	-19.1%
All Others	1,335	1,316	1,145	1,114	-2.7%	-16.6%
TOTAL FS&T	43,003	42,688	42,167	43,380	2.9%	-0.9%
<u>In Constant (1997) Dollars</u>						
DOD	8,795	8,266	7,900	7,816	-1.1%	-11.1%
DHHS	12,024	12,006	12,342	12,998	5.3%	8.1%
NASA	9,987	9,860	9,623	9,263	-3.7%	-7.3%
DOE	6,291	5,814	5,341	5,426	1.6%	-13.8%
NSF	2,382	2,498	2,453	2,424	-1.2%	1.8%
USDA	1,622	1,550	1,522	1,543	1.4%	-4.9%
DOC	1,085	1,165	952	1,004	5.4%	-7.5%
DOT	681	694	615	626	1.8%	-8.0%
EPA	624	578	540	593	9.9%	-5.0%
DOI	752	696	636	573	-9.9%	-23.8%
All Others	1,417	1,372	1,170	1,114	-4.8%	-21.4%
TOTAL FS&T	45,660	44,499	43,094	43,380	0.7%	-5.0%

NOTE: The constant-dollar numbers were calculated by using the GDP deflators, published in OMB (1996), Historical Table 10.1 (conversion factors: FY 1994, 0.9418; FY 1995, 0.9593; FY 1996, 0.9785; FY 1997, 1.000).

SOURCES: For all agencies except DOD and DOE, the current-dollar budget figures in Table A.1 are from reports of the R&D Budget and Policy Project, American Association for the Advancement of Science (AAAS). Specifically, the figures for FY 1996 and FY 1997 are from Koizumi et al. (1996), Table 1; for FY 1995, from

Intersociety Working Group (1996), Table II-1; and for FY 1994, from Intersociety Working Group (1995), Table II-1.

For DOD, the current-dollar totals for the 6.1 through 6.3 budget categories for FY 1996 and FY 1997 are taken from Koizumi et al. (1996), Table 4; for FY 1995, from Intersociety Working Group (1996), Table II-2; and for FY 1994, from a table supplied by the Office of the Director of Defense Research and Engineering (ODDR&E). The reason for using figures supplied by ODDR&E is that in FY 1994, DOD reported certain ballistic missile defense activities as part of the 6.3 budget category that were moved to the 6.4 budget category in FY 1995 and later years. To make the DOD FS&T series consistent, therefore, the ODDR&E figure for FY 1994 (\$8.3 billion) is used instead of the AAAS figure (\$10.1 billion) (see Intersociety Working Group (1995), Table II-2).

For DOE, the R&D figures reported by the AAAS are reduced by subtracting the naval reactors program and the testing capabilities and readiness activities of the weapons stockpile stewardship program (the latter taken from unpublished worksheet tables for the AAAS reports).

Table A.2. Constant-Dollar Changes within the FS&T Budget of the Department of Defense, FY 1996 to FY 1997 and FY 1994 to FY 1997 (millions of 1997 dollars)

S&T Base Category	FY 1994	FY 1995	FY 1996	FY 1997	<u>Percent Change</u>	
	Actual	Actual	Estimated	Approp'd	FY96–FY97	FY94–FY97
Basic Research (6.1)	1,252	1,226	1,172	1,090	-7.0%	-12.9%
Applied Research (6.2)	3,430	3,057	2,975	2,968	-0.2%	-13.5%
Advanced Technology Development (6.3)	4,113	3,983	3,752	3,758	0.2%	-8.6%
TOTAL FS&T	8,795	8,266	7,899	7,816	-1.1%	-11.1%

NOTE: The constant-dollar numbers were calculated by using the GDP deflators, published in OMB (1996), Historical Table 10.1 (conversion factors: FY 1994, 0.9418; FY 1995, 0.9593; FY 1996, 0.9785; FY 1997, 1.000).

SOURCES: The current-dollar totals for DOD budget categories 6.1 through 6.3 for FY 1996 and FY 1997 are taken from Koizumi et al. (1996), Table 4; for FY 1995, from Intersociety Working Group (1996), Table II-2; and for FY 1994, from a table supplied by the Office of the Director of Defense Research and Engineering (ODDR&E). The reason for using figures supplied by ODDR&E is that in FY 1994, DOD reported certain ballistic missile defense activities as part of the 6.3 budget category that were moved to the 6.4 budget category in FY 1995 and later years. To make the DOD FS&T series consistent, therefore, the ODDR&E figures for FY 1994 are used instead of the AAAS figures (see Intersociety Working Group (1995), Table II-2).

Table A.3. Constant-Dollar Changes in FS&T, R&D, and Discretionary Budgets, FY 1996 to FY 1997 and FY 1994 to FY 1997 (millions of 1997 dollars)

Fiscal Year	FS&T	Federal R&D	Federal Discretionary Budget
1994	45,660	75,466	528,328
1995	44,499	73,958	510,569
1996	43,094	72,674	498,830
1997	43,380	73,991	500,494
Change, FY 1996 to FY 1997	+0.7%	+1.8%	+0.3%
Change, FY 1994 to FY 1997	-5.0%	-2.0%	-5.3%

NOTES:

- All numbers are in budget authority.
- Current-dollar numbers are converted to constant 1997 dollars using the GDP deflators (conversion factors: FY 1994, 0.9418; FY 1995, 0.9593; FY 1996, 0.9785; FY 1997, 1.000).
- R&D includes FS&T (if FS&T were excluded from the calculations, R&D would have increased 3.5 percent from FY 1996 to FY 1997 and 2.7 percent since FY 1994).
- The discretionary budget numbers include R&D and FS&T.
- The discretionary budget numbers do not include emergency appropriations for federal disaster relief, peacekeeping missions or military operations, and the like, which vary greatly from year to year and are not in any case available for FS&T or other programs.

SOURCES:

- FS&T numbers from Table A.1.
- Federal R&D numbers calculated from current-dollar numbers in Table 1 in Koizumi et al. (1996), and for FY 1994, from an unpublished AAAS table, "Historical Data on Federal R&D," November 5, 1996.
- Federal discretionary budget numbers calculated from current-dollar numbers in an unpublished table provided by the Score Keeping Unit, Budget Analysis Division, Congressional Budget Office, "Total Discretionary Action Attributed to Enacted Appropriation Bills," November 20, 1996.

Table A.4. Differences Between the President's FS&T Budget Request and the Final Appropriations Acts, FY 1997 (budget authority in millions of 1997 dollars)

Agency	President's Budget Request	Final Congressional Appropriation	Difference between Request and Appropriation	
			Amount	Percent
DOD	7,221	7,816	595	8.2
DHHS	12,620	12,998	378	3.0
NASA	9,700	9,263	(437)	-4.5
DOE	5,796	5,426	(370)	-6.4
NSF	2,479	2,424	(55)	-2.2
USDA	1,495	1,543	48	3.2
DOC	1,226	1,004	(222)	-18.1
DOT	671	626	(45)	-6.7
EPA	628	593	(35)	-5.6
DOI	580	573	(7)	-1.2
All Others	1,207	1,114	(93)	-7.7
TOTAL	43,623	43,380	(243)	-0.6

SOURCE: Koizumiet al. (1996), Table 1, with the same adjustments for DOD and DOE as made in Table A.1 (see methodology discussion above).

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

This project was internally funded.

Copyright 1997 by the National Academy of Sciences. All rights reserved.

Printed in the United States of America.