

7. RESEARCH AND DEVELOPMENT EXPENDITURES

Scientific and technological advances have left few facets of life untouched. Great leaps in the speed and economy of transportation, enormous increases in farm productivity, global flows of information and services, advances in health treatment and prevention and in environmental protection—all these changes have created a world at the dawn of the 21st Century that is vastly different from the world our grandparents knew. As numerous studies show, technological innovation and scientific discovery have been responsible for at least half of the Nation's productivity growth in the last 50 years, generated millions of high-skill, high-wage jobs, and substantially improved the quality of life in America.

The Federal government has played an important role in spurring and sustaining this scientific and technological advance. Among other feats, Government-sponsored research and development (R&D) has put Americans on the moon, explored the oceans, harnessed the atom, devised more effective treatments for cancers, found the remains of lost civilizations, tracked weather

patterns and earthquake faults, and discovered the chemistry of life. No other country in history can match the United States' record of achievement in science and technology. Because these investments have paid such rich dividends, and because the next century will bring new challenges, opportunities and problems that science and technology can help address, continued U.S. leadership in science and technology is a cornerstone of the President's vision for America. The Administration is proposing \$76.4 billion in outlays for R&D activities in 1999, including \$36.4 billion for civilian R&D—a six-percent increase over 1998. University-based research will increase to roughly \$13.5 billion, an eight-percent increase over 1998. The "Federal Science and Technology" (FS&T) budget is an alternative measure of the Federal investment in science and technology proposed by the National Academy of Sciences. By this alternative accounting method the FS&T budget total would be approximately \$45 billion in 1999. Chapter Six of the *Budget* includes a lengthier discussion of R&D activities and shows budget authority data.

Table 7-1. FEDERAL RESEARCH AND DEVELOPMENT EXPENDITURES

(Outlays, dollar amounts in millions)

| | 1997 Actual | 1998 Estimate | 1999 Proposed | Dollar Change: 1998 to 1999 | Percent Change: 1998 to 1999 |
|---|---------------|---------------|---------------|--------------------------------|---------------------------------|
| By Agency | | | | | |
| Defense | 37,844 | 36,592 | 36,714 | 122 | 0% |
| Health and Human Services | 11,407 | 13,096 | 14,127 | 1,031 | 8% |
| National Aeronautics and Space Administration | 9,811 | 9,769 | 9,618 | -151 | -2% |
| Energy | 6,572 | 6,289 | 7,002 | 713 | 11% |
| National Science Foundation | 2,343 | 2,370 | 2,607 | 237 | 10% |
| Agriculture | 1,478 | 1,561 | 1,599 | 38 | 2% |
| Commerce | 792 | 820 | 837 | 17 | 2% |
| Interior | 572 | 622 | 632 | 10 | 2% |
| Transportation | 561 | 517 | 908 | 391 | 76% |
| Veterans Affairs | 563 | 608 | 664 | 56 | 9% |
| Environmental Protection Agency | 537 | 596 | 617 | 21 | 4% |
| Other | 1,050 | 1,007 | 1,108 | 101 | 10% |
| TOTAL | 73,530 | 73,847 | 76,433 | 2,586 | 4% |
| By R&D Type | | | | | |
| Basic Research | 14,113 | 14,549 | 15,805 | 1,256 | 9% |
| Applied Research | 13,898 | 15,030 | 15,787 | 757 | 5% |
| Development | 43,062 | 41,800 | 42,112 | 312 | 1% |
| Equipment | 731 | 698 | 828 | 130 | 19% |
| Facilities | 1,726 | 1,770 | 1,901 | 131 | 7% |
| TOTAL | 73,530 | 73,847 | 76,433 | 2,586 | 4% |
| By Civilian Theme | | | | | |
| Basic Research | 12,981 | 13,456 | 14,684 | 1,228 | 9% |
| Applied Research | 9,785 | 10,733 | 11,219 | 486 | 5% |
| Development | 8,118 | 8,166 | 8,384 | 218 | 3% |
| Equipment | 582 | 552 | 684 | 132 | 24% |
| Facilities | 1,411 | 1,336 | 1,423 | 87 | 7% |
| SUBTOTAL | 32,877 | 34,243 | 36,394 | 2,151 | 6% |

Table 7-1. FEDERAL RESEARCH AND DEVELOPMENT EXPENDITURES—Continued

(Outlays, dollar amounts in millions)

| | 1997 Actual | 1998 Estimate | 1999 Proposed | Dollar Change: 1998 to 1999 | Percent Change: 1998 to 1999 |
|-----------------------------------|---------------|---------------|---------------|--------------------------------|---------------------------------|
| By Defense Theme | | | | | |
| Basic Research | 1,132 | 1,093 | 1,121 | 28 | 3% |
| Applied Research | 4,113 | 4,297 | 4,568 | 271 | 6% |
| Development | 34,944 | 33,634 | 33,72 | 894 | 0% |
| Equipment | 149 | 146 | 144 | -2 | -1% |
| Facilities | 315 | 434 | 478 | 44 | 10% |
| SUBTOTAL | 40,653 | 39,604 | 40,039 | 435 | 1% |
| R&D Support to Universities | 11,748 | 12,458 | 13,455 | 997 | 8% |