Research and Development in the FY 2010 Federal Budget

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for the House Research and Development Caucus

AAAS R&D Budget and Policy Program
http://www.aaas.org/spp/rd

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The FY 2010 Budget

- $3.6 trillion total budget, $1.3 trillion unified deficit
- $1.4 trillion discretionary spending (9.1% increase)
  - $704 billion nondefense spending (16.0% increase)
- Includes military costs for activities in Iraq and Afghanistan
- Focuses on “stable and broad economic growth” by investing in:
  - Education
  - Healthcare
  - Energy
Composition of the Proposed FY 2010 Budget

Total Outlays = $3.6 trillion

outlays in billions of dollars

- Social Security: $696
- Medicare: $452
- Medicaid: $290
- Nondefense Discretionary: $640
- Defense Discretionary: $623
- Defense R&D: $84
- Nondefense R&D: $64
- Other Mandatory: $596
- Net Interest: $136

Source: Budget of the United States Government FY 2010
Projected unified deficit is $1.3 trillion.
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Trends in Discretionary Spending, FY 1976-2014
outlays in billions of constant FY 2009 dollars

FY 2009-2014 data are budget projections.
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Federal R&D in Context

- The federal R&D investment is spread across over two dozen departments and agencies
  - Only two manage more than 10% of the investment
    - Department of Defense (54.2%)
    - Department of Health and Human Services (21.0%)

- Role of federal R&D
  - Supports federal missions
  - Drives U.S. innovation
Character of Defense and Nondefense R&D, FY 2010
Budget Authority in Billions

Source: OMB R&D budget data and agency budget justifications.
Defense R&D = DOD + DOE defense.
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U.S. R&D Funding by Source, 1953-2007

expenditures in billions of constant 2007 dollars

Source: NSF, Division of Science Resources Statistics, National Patterns of R&D Resources (NSF 08-318)

2007 figures are preliminary.

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Character of R&D, 2007

expenditures in billions of dollars

Source: NSF, Division of Science Resources Statistics, National Patterns of R&D Resources (NSF 08-318)
2007 figures are preliminary.
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Counting the FY 2010 Budget

1. H.R.1: American Recovery and Reinvestment Act (ARRA)
2. Double Funding for Basic Research Agencies from 2006–2016
3. 3.0% of GDP Investment in R&D
4. R&D Investment Priorities
1 H.R.1 - ARRA

- $18.4 billion in R&D (12.5 percent of FY 2009 Investment)
  - National Institutes of Health - $10.4 billion
  - National Science Foundation - $3.0 billion
  - DOE Office of Science - $1.6 billion
  - National Institute of Standards and Technology - $600 million
- ARRA Obligation Deadline: September 30, 2010
- Different agencies, different mechanisms
- Buoys the 0.3% increase in R&D investment from FY 09-10
Trends in Federal R&D, FY 1976-2010

in billions of constant FY 2009 dollars

Source: AAAS analyses of R&D in annual AAAS R&D reports.
* FY 2010 figures are latest AAAS estimates of FY 2010 request.
R&D includes conduct of R&D and R&D facilities.
1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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Doubling Funding for Basic Research Agencies

- **National Science Foundation**
  - 8.5% increase to $7.0 billion
  - R&D – 9.5% increase to $5.3 billion

- **DOE Office of Science**
  - 3.5% increase to $4.9 billion
  - R&D – 3.3% increase to $2.2 billion

- **National Institute of Standards and Technology**
  - 2.4% increase to $849 million
  - R&D – 15.8% increase to $637 million
FY 2010 R&D Budget Request
Percent Change from FY 2009

DOD "S&T" = DOD R&D in "6.1" through "6.3" categories plus medical research.
DOD weapons = DOD R&D in "6.4" and higher categories.
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Trends in Research by Agency, FY 1976-2010
in billions of constant FY 2009 dollars

FY 2009 and FY 2010 figures are latest estimates.
Research includes basic research and applied research.
1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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Total R&D by Agency, FY 2010

budget authority in billions of dollars

DOD, $80.0
HHS (NIH), $30.9
NASA, $11.2
DOE, $10.7
NSF, $5.3
USDA, $2.2
DHS, $1.1
All Other, $6.1

Total R&D = $147.5 billion

R&D includes conduct of R&D and R&D facilities.
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Trends in Defense R&D, FY 1976-2010

in billions of constant FY 2009 dollars

FY 2009 and FY 2010 figures are latest estimates.
R&D includes conduct of R&D and R&D facilities.
DOD S&T figures are not comparable for all years because of changing definitions.
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NIH Budget by Institute, 1996-2010

budget authority in billions of constant FY 2009 dollars

FY 2009 and FY 2010 figures are latest estimates.
R&D includes conduct of R&D and R&D facilities.
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Trends in NASA R&D, FY 1995-2010
in millions of constant FY 2009 dollars

Source: AAAS analyses of R&D in AAAS Reports VIII- XXXIV.
FY 2010 figures are latest AAAS estimates of FY 2010 request.
Program budgets include associated support costs.
R&D includes conduct of R&D and R&D facilities.
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Trends in DOE R&D, FY 1990-2010

in billions of constant FY 2009 dollars

FY 2009 and FY 2010 figures are latest estimates.
R&D includes conduct of R&D and R&D facilities.
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National Science Foundation Budget, FY 2000-2010

budget authority in billions of constant FY 2009 dollars

FY 2009 and FY 2010 figures are latest estimates.
R&D includes conduct of R&D and R&D facilities.
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3.0% of GDP Investment in R&D

- Goal set by President Obama
  - April 27, National Academy of Sciences Annual Meeting
- 3.0% of GDP also chosen as EU goal in 2000
- Many Asian nations’ investment in R&D is increasing
- Significant share of U.S. R&D investment is for defense
  - 57.0% at $84 billion
Shares of Total World R&D, 2007

Total World R&D = U.S. $1,054 billion

- US, $369
- China, $102
- Korea, $42
- Japan, $148
- Other EU, $152
- Germany, $72
- U.K., $39
- All Other, $130

Source: OECD, Main Science and Technology Indicators, May 2009.
World = OECD members plus Argentina, China, Israel, Romania, Russian Federation, Singapore, Slovenia, South Africa, Taiwan.
Calculated using purchasing power parities.
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Trends in Federal R&D as Percent of GDP, FY 1976-2010

FY 2010 figures are latest AAAS estimates of the FY 2010 request.
R&D includes conduct of R&D and R&D facilities.
Data to 1984 are obligations from the NSF Federal Funds survey.
GDP figures are from OMB, Budget of the U.S. Government FY 2010.
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4 R&D Investment Priorities

- Investing in the Sciences for a Prosperous America
  - General increases in science funding, especially basic research (3.4% increase, plus ARRA)
- A Clean Energy Future
  - DOE Energy Programs (5.4% increase, plus ARRA)
- Healthy Lives for All Americans
  - National Institutes of Health (1.5% increase, plus ARRA)
- A Safe and Secure America
  - Homeland Security Funding (23.8% increase)
FY 2010 R&D Budget Request by Function
percent change from FY 2009

- Commerce: 15.9%
- General Science: 6.3%
- Health: 5.9%
- Energy: 5.9%
- Transportation: 2.4%
- Environment: 0.7%
- International: 0.0%
- Justice: -1.1%
- Defense: -2.0%
- Agriculture: -8.2%

Source: OMB and agency budget data.
Environment includes natural resources R&D
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Federal Homeland Security R&D by Agency
budget authority in millions of constant FY 2009 dollars

Source: OMB R&D data.
Includes conduct of R&D and R&D facilities.
DOD expanded its reporting of HS spending beginning in 2005.
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The Federal R&D Investment for FY 2010

- **1** H.R.1: The American Recovery and Reinvestment Act
- **2** Double Budget for Basic Research Agencies
- **3** 3.0% of GDP Investment in R&D
- **4** R&D Investment Priorities
- **Next Steps**
  - Legislative Branch Appropriations Conference Report with attached Continuing Resolution
  - Senate has seven appropriations bills to pass, then conferences
For More Information…

The AAAS R&D web site is http://www.aaas.org/spp/rd

The AAAS Forum on Science and Technology Policy is May 13–14, 2010 in Washington, DC