The Federal R&D Budget in FY 2013: An Update

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For the Council on Governmental Relations

AAAS R&D Budget and Policy Program
http://www.aaas.org/spp/rd
National R&D Investment
percent of GDP

Source: OECD, Main Science and Technology Indicators, April 2011.
2009 data for South Korea is not yet available.
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Trends in Federal R&D
percent of GDP

1995 to Present - AAAS Report: Research and Development series;
GDP figures are from Budget of the U.S. Government FY 2013.
FY 2012 and FY 2013 figures are latest estimates.
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Trends in Research by Agency, FY 1975-2013

Billions of FY 2012 Dollars

Source: 1975-1994 figures are from the NSF federal funds survey; remainder is from AAAS R&D reports. FY 2012 figures are latest estimates, FY 2013 is the President's budget.
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R&D as Percent of the Federal Budget:
FY 1962-2013, in outlays

Source: AAAS, based on Budget of the U.S. Government FY 2013
Historical Tables. FY 13 data are budget proposals.
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FY 2013 Budget Projections
outlays in billions of constant FY 2012 dollars

Source: Budget of the United States Government FY 2013.
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Key Admin R&D Priorities

- Jobs / Innovation + Science
  - COMPETES Agencies: $13.1 billion (+4.4% from FY2012)
  - $2.2 billion for advanced manufacturing
  - Permanent R&D Tax Credit (~$8 billion per year)
  - ~$65 billion for research (+1.7% basic, +3.6% applied)
  - 100,000 STEM Educators

- A Low-Carbon Economy
  - $6.7 billion for clean energy RDD&D

- Infrastructure
  - Wireless Innovation Fund / NextGen / Surface Transport

- Climate / Natural Resources
  - Global Change Research Program: +5.6% ($2.6 billion)
Total R&D by Agency, FY 2013

budget authority in billions of dollars

**Total R&D =**
$142.2 billion

- **DOE**, $11.9
- **NASA**, $9.6
- **NSF**, $5.9
- **USDA**, $2.3
- **Commerce**, $2.6
- **All Other**, $6.0
- **DOD**, $72.6
- **HHS (NIH)**, $31.4

Source: OMB R&D data, agency budget justifications, and other agency documents.

R&D includes conduct of R&D and R&D facilities.

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FY 2013 R&D Budget Request by Function

percent change from FY 2012

- Commerce: 19.3%
- Energy: 15.9%
- Environment: 5.6%
- General Science: 4.9%
- Space: 2.3%
- Health: 0.9%
- Agriculture: -0.9%
- Defense: -1.9%

Source: OMB R&D data, agency budget justifications, and agency budget documents.
Environment includes natural resources R&D.
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FY 2013 R&D Budget Request by Function

percent change from FY 2003, Constant FY 2012 Dollars

- Commerce: 25.6%
- Energy: 56.3%
- Environment: -11.7%
- General Science: 27.6%
- Space: -24.3%
- Health: -8.0%
- Agriculture: -22.2%
- Defense: -2.7%

Source: AAAS Reports, OMB R&D data, agency budget justifications, and agency budget documents. Environment includes natural resources R&D.

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Defense R&D: Recent Decline

- President’s Budget
  - DOD: $72.6b (-2.5%)
    - Weapons R&D main driver
    - S+T Continuing Declines (-7%)
  - DOE Atomic Weapons:
    - $4.7b (+9.6%)
- Approps So Far...
  - House Cmte: Smaller cuts than Admin
  - Basic research = flat
Health R&D: Flat Funding = Decline

- NIH: Flat Budget ($30b)
  - 10-year trend: -9%
  - Except for NCATS (+11%)
    - Cures Acceleration Network
  - Same money, more grants?
  - Declining success rates (all-time low in FY11)
    - Special focus on early-stage investigators
- No Approps action yet
- Defense Health Research:
  - Cut by Admin, restored by House
- VA R&D flat
Energy R&D: Growth Area 1

- President’s Budget:
  - DOE Energy Programs: $2.6 billion (+16%)
  - 10-year trend: +60%
  - Driven by EERE; Fossils down, nukes flat
  - ARPA-E: +27% (to $350 million)

- Approps So Far...
  - House Cmte: Big Cuts to all but fossil energy
  - Senate Cmte: Splits difference between House and Admin

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**DOE Energy Programs**

*in billions of constant FY 2012 dollars*
General Science: Growth Area 2

- President’s Budget:
  - NSF: $5.9B for R&D (+4.6%)
  - 10-year Trend: +20%
  - Across all priority areas
  - OneNSF Framework
  - STEM ed: +5.6% for EHR

- Approps So Far...
  - Admin getting (mostly) what they want
  - Climate Change, PoliSci programs cut in House

Source: National Science Foundation budget requests. Does not include ARRA funds obligated in FY 2009 and FY 2010. FY 2012 and FY 2013 figures are latest estimates. © 2012 AAAS
General Science: Growth Area 2

- President’s Budget:
  - DOE SC: $4.6B for R&D (+2.4%)
  - 10-year trend: +19%
  - Physics losing out
    - ITER prioritized
  - Bio, BES, Advanced Computing up

- Approps So Far...
  - Mixed cuts in House Cmte
    - Fusion research restored
  - Basically flat in Senate
  - Neither meets Request
NASA R&D: Slow Decline

- President’s Budget:
  - $9.6B: +2%
  - Planetary Science (-21%)
  - Webb ST, Space Technology continue growth
  - Commercial crew / industry partnerships

- Aprops so far...
  - Small increases
  - Science, Space tech fairing well
  - Senate satellite proposal?
Agriculture R&D: Recent Decline

- President’s Budget:
  - USDA: $2.3B for R&D (-1.5%)
  - 10-year trend: -21%
  - ARS (intramural), NIFA (extramural) basically flat
  - Agriculture and Food Research Initiative: $325B (+23%)

- Approps so far...
  - Senate matches Admin
Environment R&D: Steady Decline?

- President’s Budget:
  - Small to large increases for EPA, USGS, NOAA
  - All either flat or down since FY 2003
  - US Global Change Research Program

- Approps so far...
  - Only action on NOAA: House short of request, Senate about even
  - Senate satellite proposal
Manufacturing, Innovation, Technology: Growth Area 3?

- President’s Budget:
  - NIST R&D: +18% disc, +240% total
  - 10-year trend: +9%
  - Manufacturing Network ($1b); Wireless Innovation Fund ($300m)
  - Plus DOE Adv. Manufacturing, NASA Space Tech, Interagency Initiatives...

- Approps so far...
  - Big increases for NIST in both chambers + other programs
  - Wireless Fund authorized
What it all adds up to...

- Continued growth in General Science, plus Innovation
- Clean energy is a big question: House vs. Senate/Admin
- Admin seeking gains in environment/nat resources
- Generally, Appropriations has been solid so far
What it all means...
R&D in the FY 2013 Budget
percent change from FY 2012

- NIST: 18.1%
- DHS: 17.0%
- DOT: 16.2%
- DOE Energy: 12.1%
- NOAA: 9.3%
- DOE Defense: 9.6%
- Other HHS: 7.6%
- USGS: 4.6%
- NSF: 2.4%
- DOE Science: 2.2%
- NASA: 1.4%
- EPA: 0.2%
- VA: 0.0%
- NIH: -1.5%
- USDA: -1.5%
- DOD Other: -1.5%
- DOD S&T: -7.4%
- TOTAL: 1.2%

Inflation: ~1.7%

Source: OMB R&D data, agency budget justifications, and other agency documents.
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R&D in the FY 2013 Budget + Sequester?
percent change from FY 2012

- NIST          10.1%
- DHS           9.0%
- DOT           8.2%
- DOE Energy    -0.4%
- NOAA          1.3%
- DOE Defense   -0.4%
- Other HHS     -3.4%
- USGS          -5.6%
- NSF           -5.8%
- DOE Science   -6.6%
- NASA          -8.0%
- EPA           -9.5%
- VA            -11.5%
- NIH           -17.4%
- USDA          -7.8%
- DOD Other     -17.4%
- DOD S&T       -7.8%
- TOTAL         -17.4%

Inflation: ~1.7%

Source: AAAS estimates based on OMB R&D data, agency budget justifications, and the Budget Control Act.

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R&D Through 2021: House Budget + Alternative Sequester

Difference between House and Administration Budgets Over Nine Years

- Veterans: +2%
- Health: -22%
- Transportation: -35%
- Ag: -22%
- Nat Res: -33%
- Energy: -67%
- Gen Sci, Space, Tech: -29%
- Defense: +3%

Source: AAAS estimates based on President's Request, House FY 2013 budget recommendations, and CBO analysis of Budget Control Act.
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Next Steps...

- Spending bills moving, but will they get any done?
- How do we avert the sequester?
  - Defense v. Nondefense
- Waiting for the Lame Duck
- OMB: Additional 5% cuts in FY14
U.S. R&D INVESTMENT

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