Science in its Rightful Place: Much Accomplished, Much Still to Do

John P. Holdren
Science and Technology Advisor to the President
Director, White House Office of Science and Technology Policy

AAAS Forum on Science and Technology Policy
Washington, DC • April 14, 2016

The new President’s pledge in 2009

“We will restore science to its rightful place…”
Barack Obama, January 20, 2009
“Science” in that line was short for “Science, Technology, & Innovation” (ST&I)

What he’s done to keep the pledge

- Placed early priority on...
  - scientific integrity
  - STEM education & inclusion
  - open data & public access
  - tech innovation for economic recovery & growth
  - energy & climate change
  - advancing biomedicine & public health
  - strengthening international cooperation in S&T
  - rebalancing NASA in favor of science, advanced tech
  - exploiting modern IT and private-sector innovation talent to improve the responsiveness & effectiveness of govt
Keeping the pledge (continued)

- Put a huge boost for ST&I in the Recovery Act, then protected annual ST&I budgets despite tight constraints
- To help implement it all, rebuilt White House leadership in ST&I
  - Created new WH positions: CTO, CIO, CDS, CDO
  - Restored OSTP Director’s dual hat as AP for S&T
  - Restored Environment and National Security & International Affairs to status as full OSTP divisions
  - Increased OSTP staff to an all-time high
  - Revitalized President’s Council of Advisors on S&T (PCAST) and National S&T Council (NSTC)

OSTP today

Staff is ~ 130, 90 technical, mostly detailees, IPAs

FY2016 budget ~$5.6 million/yr

*Both Director Holdren and CTO Smith have the rank of Assistant to the President*
Keeping the pledge (continued)

- Recruited top ST&I talent to POTUS-appointed posts
  - 5 Nobel Laureates in science; another 25+ members of National Academies; VPs of NAS & NAE to PCAST, plus Schmidt, Mundie
  - scientists & engineers heading Dept’s of Energy & Interior, as well as EPA and NIH, NSF, NOAA, NIST, USGS

- Used bully pulpit & WH venue to promote ST&I
  - Both inaugural addresses & every State of the Union, two addresses to NAS annual meetings; multiple major speeches on ST&I around the country (on space, energy, manufacturing...)
  - 6 White House Science Fairs, 2 WH Astronomy Nights for Kids, East Wing ceremonies & Oval Office welcomes for Medalists of Science and Technology & Innovation, US Nobelists & Kavli Prize winners, Intel finalists, middle-school mathletes...

- Launched unprecedented number of ST&I initiatives focused on national & global challenges
Initiatives on nat’l & global challenges

STEM EDUCATION
- Educate to Innovate
- STEM Master Teacher Corps
- 100kin10
- STEM Inclusion Initiative
- Computer Science for All

INFOTECH / COMPUTING
- ConnectED
- Big Data Initiative
- Nat’l Strategic Computing Initiative

INNOVATION FOR THE ECONOMY
- American Innovation Strategy
- Startup America
- Data.gov
- Challenge.gov
- Advanced Mfg Partnership / Nat’l Network for Mfg Innovation

BIOMEDICINE & HEALTH
- Neuroscience / BRAIN Initiative
- Combating Antimicrobial Resistance
- Precision Medicine Initiative (PMI)
- Cancer Moonshot

ENERGY & ENVIRONMENT
- New fuel-economy/CO₂ standards
- ARPA-E, Energy Innovation Hubs
- National Ocean Policy
- Arctic Initiative / AESC
- Pollinator Initiative
- Climate Action Plan & COP21

NAT’L SECURITY / INTERNAT’L S&T
- Cybersecurity Initiative
- Space Weather Strategy
- Science Envoys
- Mission Innovation

The unfinished ST&I agenda: a partial list

- Ensuring sufficient, safe, secure, sustainable, affordable food, water, & energy for all, while reducing GHGs
- Minimizing harm from changes in climate that are no longer avoidable
- Fashioning materials from abundant elements to substitute for current uses of scarce ones
- Understanding the brain & curing its ailments
- Controlling infectious & vector-borne diseases
- Defeating cancer
- Facilitating graceful aging
- Defending the planet from killer asteroids
- Sending humans into space not just to visit but to stay
Some persistent obstacles
- Inadequate funding for R&D (public & private)
- Inadequate translation of R&D advances into practical applications
- Under-representation of females & ethnic minorities in STEM fields
- Under-representation of ST&I talent in many Federal departments, agencies, and offices
- Poor public & policy-maker understanding of ST&I
  - the role of ST&I in meet societal challenges
  - the importance of basic research
  - the value of international cooperation

Some big opportunities on the path ahead
- Harness the full potential of partnerships (local/state/federal, public/private/academic/civil-society, international) to overcome many of the obstacles.
- Continue the “infiltration” across the gov’t of ST&I talent by aggressive recruiting, PIFs, AAAS fellows, etc.
- Apply research on “what works” in STEM inspiration, teaching, mentoring, training to increase participation in STEM careers and create a science-savvy citizenry.
- Exploit recent advances in biomedical sciences & “big data” to drastically improve healthcare.
- Build on the momentum of COP21 and the recent rapid growth of renewable-energy deployments worldwide to fashion a global revolution in clean energy.