

U.S. Technological and Economic Leadership at Risk: Act Now on U.S. Competitiveness

The Challenge

- America faces a critical talent gap in science, technology, engineering and math, and is not keeping pace with foreign competition.
- Maintaining U.S. scientific and technological leadership is vital to America's economic competitiveness.
- Other nations around the world are investing in education and research and challenging U.S. leadership.
- Meeting the challenge requires national leadership and the combined efforts of public- and private-sector leaders.

The Opportunity

- Innovation derived from scientific and technological excellence drives productivity, economic growth and high-wage employment, giving Americans the tools to succeed in an increasingly competitive world economy.
- A more competitive America means faster economic growth, greater national security and a better future for our children.

Policy Actions

- **Improve U.S. student achievement in math and science** through increased funding of proven programs and incentives for math and science teacher recruitment and professional development;
- **Renew America's commitment to discovery** by doubling basic research budgets at the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy's Office of Science and the Department of Defense;
- **Welcome highly educated foreign professionals**, particularly those holding advanced science, technology, engineering or mathematics degrees from U.S. universities, by reforming U.S. visa and green card policies.

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Facts and Figures

Workforce Outlook and Trends

- Between 2008 and 2018, computer and mathematical science occupations are expected to grow at a speed more than double the average for all other occupations in the economy. (*BLS, 2010*).
- China and India accounted for 31% of global R&D staff in 2007 (est.), up from 19% in 2004 (*INSEAD, 2007*).
- More S&P 500 CEOs (23%) have a degree in engineering than in any other field (*SpencerStuart, 2006*).
- Unemployment is very low for scientists and engineers, 2.5% in 2006 vs. a national average of 4.7% (*NSF, 2008*).

Math and Science Education

- U.S. 15-year-olds ranked 19th in science literacy and 26th in math out of the 65 countries that participated in OECD's 2009 Programme for International Student Assessment.
- 84% of U.S. middle school students would rather clean their rooms, eat their vegetables, take out the garbage or go to the dentist than do their math homework (*Raytheon, 2005*).
- In China, nearly all high school students study calculus, compared to 13% in America (*Asia Society, 2006*).

Immigration – Highly Educated Workers

- Foreign-born students earned 42% of master's degrees and 53% of Ph.D.s awarded in U.S. university engineering programs during the 2009-2010 academic year (*AAES, 2010*).
- The percentage of foreign students who stay in the U.S. after receiving a graduate degree today is approximately 50%, compared with 70-80% 25 years ago (*CGS, 2006*).
- The 65,000 H-1B visa cap was hit on *the first day* applications were accepted for FY 2009, the fifth year in a row the cap was reached before the start of the fiscal year.

Basic Research Funding

- With 2.8% of its GDP devoted to research and development, America ranks eighth among OECD countries (*OECD, 2011*).
- Federal support for basic research at U.S. universities declined, in real terms, between 2004 and 2005 and between 2006 and 2007, the first multi-year decline since 1982 (*NSF, 2008*).