

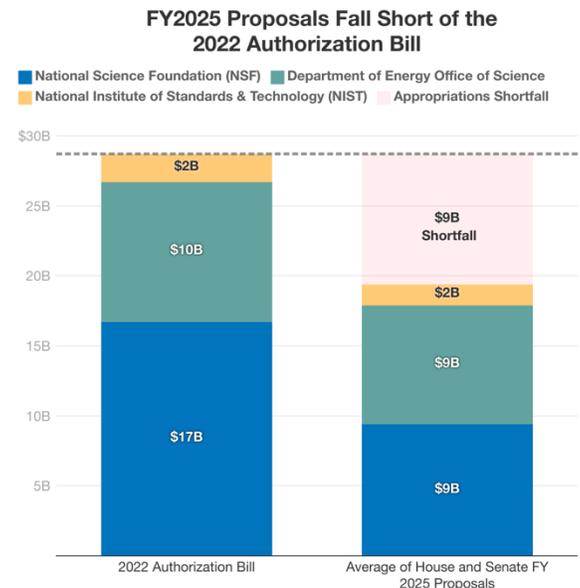
The United States became the world's scientific, economic, and military leader in the 20th century by making bold and sustained investments in scientific research – and we must renew that commitment now to ensure that China doesn't take our place at the forefront of global science and innovation. The National Science Foundation (NSF) and the Department of Energy's Office of Science conduct research and development critical for the U.S. to remain at the forefront of science and innovation.

The new presidential administration and Congress have repeatedly said they want to ensure America is the world's leader – but chronic underinvestment in scientific research has put us in danger of losing our global leadership role in science, technology, talent, and innovation. As our economy has grown, our investments in life-changing science have declined. [In fact, federal science budgets for the National Science Foundation \(NSF\), Department of Energy \(DOE\) and the National Institute for Standards and Technology \(NIST\) are at a 25-year low](#) as a share of GDP, and projections for the coming fiscal year continue that trend. In the meantime, advancements in technologies like AI are rapidly transforming many industries, from education to quantum computing, and other nations are meeting the moment and boosting investments in their own science, technology, and innovation enterprises as well as talent development and recruitment.

What's at stake: The United States risks losing its status as the global leader in science and innovation.

The average rate of increase in Chinese R&D investments over the decade from 2010 to 2019 (the most recent years available) was *triple* the U.S. rate. This means that, at current rates of investment, China may surpass the United States in scientific investment soon. In evaluating the share of research publications which rank among the world's most cited documents, China has already surpassed the United States.

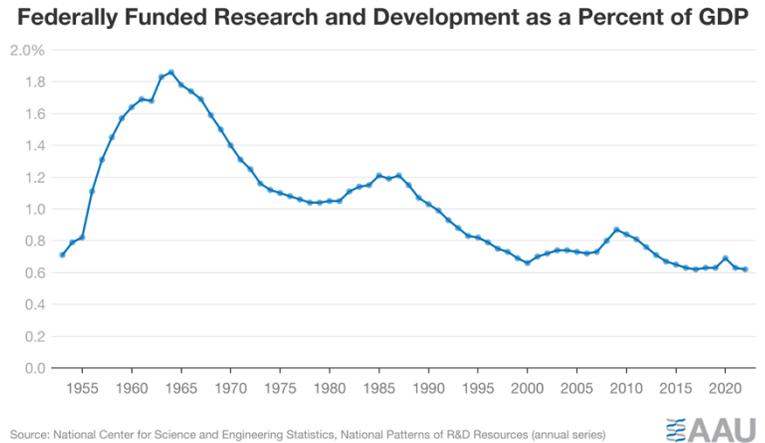
Let's put America back on track to be the global leader in science and innovation by fully funding the amounts Congress has already authorized in the 2022 CHIPS and Science Act for DOE's Office of Science and the NSF through Fiscal Year 2027. Congress authorized – but so far has not appropriated funds to make – these investments to address key technology needs and national security concerns and to strengthen America's competitiveness on the global stage. Even in times of fiscal constraint, funding for fundamental scientific research must be a top priority if we are to stay ahead in this race – which is pivotal to our economic and national security.



Source: AAAS R&D Appropriations

Key Facts:

- In the mid-1960s, the overall share of GDP that the federal government invested in R&D was approximately 2%. Since then, this share has declined to less than 1%; at the same time other countries such as China have increased their R&D investments as a share of GDP. While our economy has grown, our country has not valued federal R&D as we did historically.



- From 2000 to 2020, China had the highest rate of growth of any country in public and private R&D spending – an astounding 1,669%.
- From 2000 to 2020, China’s share of total global R&D expenditures (public and private) rose from 4.9 percent to 24.8 percent; during the same period, the U.S. share fell from 39.9 percent to 30.7 percent. We are in critical danger of losing dominance in many emerging technology sectors. China is already pushing the United States in wireless communications, advanced materials, quantum sensing, biotechnology, advanced robotics and other key areas.
- The latest [National Science Board Science and Engineering Indicators report](#) shows China’s annual increase of R&D spending has averaged 10.6% over the last decade, while the United States’ annual average increase was only 5.4% over the same period.
- Despite the bipartisan vision of CHIPS And Science to supercharge U.S. science and innovation, funding for the “And Science” portion has fallen woefully short of authorized levels. When comparing actual appropriations for FY23 and FY24 for NSF and DOE Office of Science, funding is cumulatively **\$11B** below the CHIPS and Science authorizations. If these trends continue, we anticipate almost a \$50 billion shortfall in the aggregate across the five years authorized under CHIPS And Science.
- The United States is facing a significant shortage of technicians, computer scientists, and engineers, with a projected shortfall of 67,000 of these workers in the semiconductor industry alone by 2030 and a gap of 1.4 million such workers throughout the broader U.S. economy.
- The United States must grow its domestic talent base. Currently more than half of doctoral students in key U.S. science and engineering fields are foreign-born. One of America’s great strengths is our ability to attract the best and brightest students from abroad, but we also need to make sure that we are leveraging our home-grown talent through investments in education and research.

Now is the time for Congress to prioritize investments in NSF and DOE Office of Science research and educational programs. Resources provided to these agencies are essential to ensuring America’s future economic competitiveness and national security.