Center for American Progress Action Fund

Obama's and Romney's Science Policies: How Do They Stack Up?

Sean Pool November 2, 2012

Economic growth is front and center in this presidential election, but the two candidates haven't spent much time talking about two of the most important drivers of the economy: science and technology. Science is not only at the root of our increasing prosperity but it is also the best tool we have to understand our own health, our planet, and our future.

Both President Barack Obama and former Massachusetts Gov. Mitt Romney have paid lip service to supporting science and technology. But as this fact sheet makes clear, President Obama, who has been endorsed by 68 Nobel prize-winning scientists,[1] space leaders, and high technology executives,[2] offers an impressive science policy record and vision for the future, while Gov. Romney's shifting positions are all talk.

FIGURE 1

Obama administration science policy achievements

Investing in science	Set key science research agencies on path to double budgets.
Biomedical and stem cell research	Ended Bush administration ban on embryonic stem cell research.
Clean energy research	Made largest investments in clean energy research in history; created new strategic clean energy innovation agency modeled after the Defense Department's advanced research and development agency.
Connecting research to market	Implemented dozens of new public-private partnerships across the country to help connect university ideas to industry outcomes.
Innovation in the business sector	Set a national target to increase public and private investments in research and development to 3 percent of GDP; created the "Startup America" initiative.
Space technology	Increased science funding to NASA while winding down old programs and transferring responsibility to the private sector.
Science education	Set a national goal of recruiting 100,000 new science and math teachers and raised $700 in private capital to help make it happen.
Environmental science	Finalized limits on mercury pollution, toxics, smog, and soot that scientists predict will save 21,600 lives annually.
Climate change	Understands that climate change is "not a hoax" and has put in place nation's first-ever carbon pollution safeguards for new cars and power plants.
Cyber security	Pushed for passage of the bipartisan Cyber Security Act of 2012 to strengthen government-industry collaboration to protect critical infrastructure.
Internet freedom	Implemented common-sense Internet freedom policies that compromise between industry needs and consumer demands.
Scientific integrity in government	Restored "science to its rightful place" in government by implementing unprecedented government-wide scientific integrity guidelines.

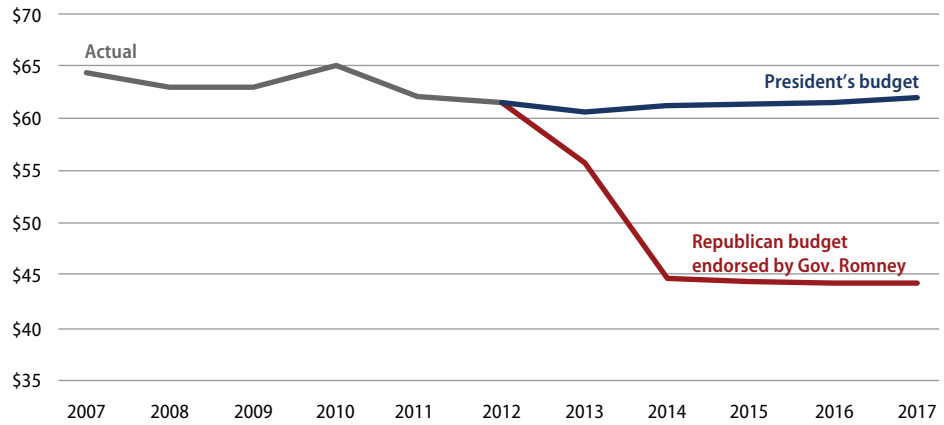
Investing in science

Public investments in science and technology pay themselves back in the form of greater economic growth, new businesses, new industry, new jobs, and ultimately new tax revenue. About half of every dollar of economic output we enjoy today can be traced back to past investments in science and technology, according to Nobel Prize-winning economist Robert Solow.[3] And in the 21st century global innovation economy, discovery, invention, and innovation will only become more crucial to our long-term growth and competitiveness.

FIGURE 2

Nondefense research and development through 2017

In billions of constant FY 2012 dollars



Source: American Association for the Advancement of Science estimates based on President's Request, House FY 2013 budget recommendations and Congressional Budget Office analysis of Budget Control Act. Historial data from AAAS Research and Development series. Because the Romney campaign has not released specific funding level proposals, the figures above are based on the House Republican budget plan, which his running mate authored and Gov. Romney endorsed.

Talk: Gov. Romney said "research is great," but his budget plan would invest only 75 cents in nondefense research and development for every dollar the president has proposed.[4]

Action: President Obama proposed a budget to double research budgets of three key science agencies (the National Science Foundation, the Department of Energy's Office of Science, and the National Institute of Standards and Technology) and increase nondefense research and development overall by 5 percent. And despite the intransigence of the Republican House majority, he has secured some increases in these key budgets.[5] The president also understands that we need investments in "research and technology that are key to a 21st century economy."[6]

Biomedical and stem cell research

Science investments aren't just keys to growth and competitiveness—they also help us discover and develop new cures to disease.

Talk: Gov. Romney said he supports medical research but supports a budget that would fund 16,000 fewer biomedical research grants in next decade.[7] Also, as governor, Mitt Romney vetoed a bill to allow stem cell researchers more flexibility, and drafted regulations to actually criminalize the work of stem cell researchers developing medical cures.[8]

Action: President Obama ended the Bush administration ban on embryonic stem cell research to allow scientists more flexibility to develop game-changing medical science while respecting ethical boundaries.[9]

Clean energy research

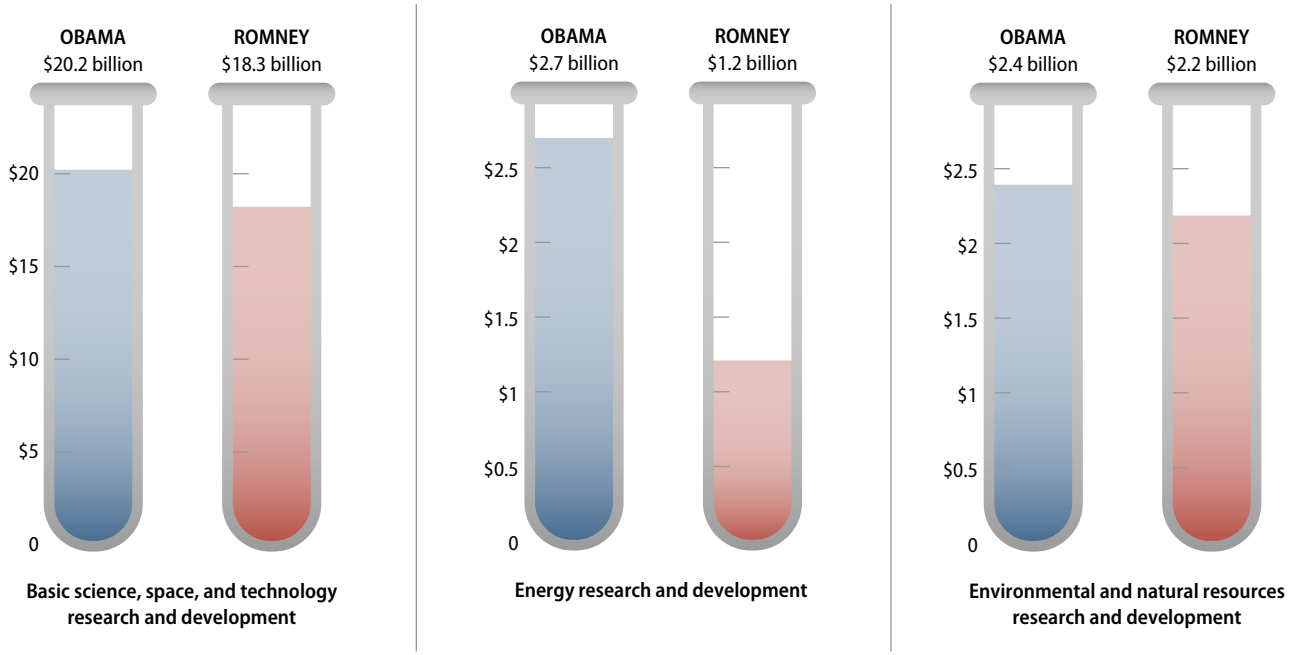
The clean energy economy supports millions of well-paying American jobs and is an important strategic industry for our country as we continue to develop domestic sources of energy while reducing planet-warming carbon pollution.

Talk: Gov. Romney says he supports clean energy as well as fossil fuels, but advocates for keeping billions in subsidies for oil companies while supporting a budget that would cut energy research in half.[10]

Action: President Obama created the Advanced Research Projects Agency-Energy, or ARPA-E—an efficient, nimble agency to make strategic investments in breakthrough energy technologies—in addition to dozens of new energy research centers, innovation hubs, and public-private partnerships. He also passed the American Recovery and Reinvestment Act, which invested more in clean energy than any legislation in U.S. history. Contrary to his opponents' claims, the president's investments in clean energy have not failed. In 2012 the United States is seeing the lowest level of foreign oil imports and the highest level of renewable energy generation in decades.

FIGURE 3

Comparing President Obama and Gov. Romney on research and development investments



Source: American Association for the Advancement of Science estimates based on President's Request, House FY 2013 budget recommendations and Congressional Budget Office analysis of Budget Control Act. Historial data from AAAS Research and Development series. Because the Romney campaign has not released specific funding level proposals, the figures above are based on the House Republican budget plan, which his running mate authored and Gov. Romney endorsed.

Connecting research to market

As the technologies that drive the global economy become increasingly complex and interconnected, the path from scientific discovery to useful new product in many fields has become lengthier, more expensive, and more uncertain. To lead the 21st century, we must not only invest in science but also in development and entrepreneurship that help bring new scientific discoveries to market.

Talk: Gov. Romney indicated he misunderstands the shared role of public research and the private sector in driving innovation when he suggested he would end critical supports for technology commercialization, such as the energy loan guarantee program that is leveraging private capital to support dozens of innovative new clean energy companies.[11]

Action: President Obama proposed and implemented dozens of public-private partnerships through the Departments of Energy, Commerce, and Defense, and the National Science Foundation, and reformed the Small Business Innovation Research program to help connect university researchers with private-sector finance to bring new ideas to market.[12]

Innovation in the business sector

Innovation does not just happen in laboratories. Businesses large and small play an essential role in developing the technologies of the future and competing to manufacture and deploy them at the lowest cost to consumers.

Talk: Gov. Romney agrees with the president's position of expanding the research tax credit but has consistently mischaracterized and opposed public-private partnerships that help innovative businesses grow.[13] Spending cuts necessary in his tax plan would likely cut investments in the building blocks of long-term business innovation, such as education and research.

Action: President Obama set a target to increase public and private investments in research and development to 3 percent of GDP, and supported making permanent the research and experimentation tax credit, which encourages the private sector to invest to help us get there. He also passed the American Invents Act to reform the U.S. patent system with massive bipartisan support, and created the Startup America Initiative to support and encourage innovation and entrepreneurship across the country.[14]

Space technology

Space is not only the "final frontier"—it's also a major source of U.S. competitiveness. In 2011 the private U.S. aerospace industry had the largest positive trade balance of any U.S. industry, and our public investments in space play a big role in determining whether or not we will stay on top.[15]

Talk: Gov. Romney released an eight-page document that even conservative pundits said contained "empty platitudes" for more "focus" for NASA, but it contained no specifics. Budget cuts necessitated by his tax plan would likely mean deeper cuts to NASA. [16]

Action: President Obama oversaw the first-ever docking of a commercial space capsule with the international space station. He also implemented a new "National Space Policy" that increased science funding to NASA while allowing the private sector to compete to take more responsibility for some aspects of the space program and "freeing up NASA" to take on new challenges, like sending astronauts into deep space, to asteroids, and eventually to Mars.[17]

Science education

Science education isn't just "nice to have"—it's a must-have. In the 21st century innovation economy, education is everything. The United States can't continue to lead the world in innovation and create the jobs of the future if we aren't training the world's best scientists, engineers, and entrepreneurs. Unfortunately, American students' performance in science and math has fallen behind that of other nations' students, according to many metrics.[18]

Talk: Gov. Romney says we need to invest in education but at the same time supports his running mate Rep. Paul Ryan's (R-WI) budget, which would cut education funding by as much as 33 percent, with even deeper cuts for low-income students and special education.[19] Gov. Romney's budget cuts could deprive 1 million students of Pell Grants to help afford college.[20]

Action: President Obama made a "national commitment to science education and training" and set a goal of recruiting 100,000 new science and math teachers over the next decade. Then he convinced private businesses and foundations to invest $700 million to improve science and math education across the country through the "Educate to Innovate" program without costing taxpayers a dime. The president demonstrated in the Florida debate that he understands the link between science and math education and long-term economic prosperity.[21]

Environmental science

Clean air and clean water affect our health in serious ways. Pollution causes sickness and even death, which together represent both an emotional and economic burden for Americans. Implementing balanced pollution safeguards is vital to healthy communities, healthy ecosystems, and a healthy economy.

Talk: Gov. Romney says he wants to "aggressively" develop coal—one of our countries' dirtiest energy sources—and block recent EPA public health safeguards. Scientists say blocking these safeguards would lead to 21,600 fatalities and 200,000 asthma attacks per year. [22]

Action: President Obama finalized and proposed limits on mercury pollution, toxics, smog, and soot that scientists predict will save 21,600 lives annually.[23]

Climate change

Climate change is one of the greatest challenges of our time, and many economists believe it is already responsible for billions of dollars in costs to farmers, homeowners, businesses, and local governments for its influence on increased droughts, wildfires, floods, and heat waves.[24] In the long run, scientists believe unabated climate change could threaten our way life.[25]

Talk: Gov. Romney incorrectly believes the science of climate change is unsettled and has said that carbon dioxide is not "harmful." He is opposed to even market-based policies to cap carbon pollution and would reverse EPA carbon pollution standards put in place by President Obama.

Action: President Obama understands that climate change is "not a hoax," and has put in place our nation's first-ever greenhouse gas regulations to reduce pollution from new cars and power plants.

Cyber security

Cyber security presents a grave threat to our national security. Some have even compared the growing threat of a cyber attack on our critical infrastructure to the 9/11 terrorist attacks.[26]

Talk: Gov. Romney has paid lip service to cyber security but has not announced concrete plans. Republican allies call for voluntary rather than mandatory steps by private industry, which may not go far enough to improve protection of critical infrastructure.

Action: President Obama has made cyber security a top priority, pushing for passage of the bipartisan Cyber Security Act of 2012, which would strengthen role of the Department of Homeland Security in managing government-industry collaboration to protect critical infrastructure while also protecting privacy and civil liberties. He has also prepared an executive order in case Congress does not act to ensure agencies effectively coordinate to protect critical infrastructure.[27]

Internet freedom

"Neutrality" has been one of the defining characteristics of the Internet, and it has allowed the ideas and content of regular people to compete with that of wealthy corporations. But lobbyists in Washington would like to increase the control that Internet service providers have over the content that Americans can or cannot see. How to encourage innovation while ensuring the Internet remains free and open to everyone's ideas is an unresolved issue in the 21st century.

Talk: Gov. Romney opposes the Obama administration's Internet freedom policies that ensure Internet service providers can't pick and choose what content web users can access.[28]

Action: President Obama implemented common-sense Internet freedom policies that are a compromise between industry and consumer groups.[29] He also appointed the nation's first-ever chief technology officer to coordinate technology modernization efforts across government.[30]

Scientific integrity in government

We are a nation of science, and science is the best tool we have to make critical decisions about how to manage our public health, our environment, our natural resources, and even our economy. Yet it's not a given that government will use sound science in its decision making—ideology can cloud scientific reasoning. A good president will ensure U.S. government agencies rely on sound science, rather than political convenience, to make regulatory and other decisions.

Talk: Gov. Romney has paid lip service to science in government but has appointed top oil and coal executives and lobbyists to advisory positions on his campaign, instead of appointing scientists and engineers.[31] He said he would also change regulatory procedures to make it easier for regulatory agencies to ignore scientific findings by citing "cost."[32]

Action: President Obama promised to restore "science to its rightful place" in government, and then took action by implementing the first-ever government-wide set of scientific integrity guidelines to increase transparency and rigor of federal decision making across

dozens of agencies.[33] He also appointed many distinguished scientists to high-profile leadership positions within government, including a Nobel laureate, a MacArthur Genius, and two former heads of the American Association for the Advancement of Science.

Conclusion

The United States is a nation of science. Many of the founding fathers were themselves scientists in their day.

One can draw a line of intellectual descent from Isaac Newton, the greatest scientist of his day, to Benjamin Franklin, the greatest scientist of his, and the founder of one of our nation's great research universities, the University of Pennsylvania. Thomas Jefferson was preoccupied with astronomy and went on to found another great research institution, the University of Virginia. And Alexander Hamilton, before becoming a statesman, was intent on a medical career and attended all the lectures on natural philosophy that he could in his days at university.

But leadership across the frontiers of scientific knowledge is not merely a cultural tradition of our nation—today it is an economic imperative. Science isn't just spending—it is a wise investment in future economic growth that pays off in unexpected yet inevitable ways. Economists today know that the application of new technological knowledge to the economy is responsible for between 50 percent and 90 percent of the economic growth in the long term.

Science shouldn't be a political issue. We must all be the constituency of the future. We have a duty—to ourselves, to our children, to future generations—to make these farsighted investments in science and technology for a better America and a stronger economy.

Sean Pool is a Policy Analyst for Science and Innovation Policy at the Center for American Progress Action Fund, and managing editor of Science Progress Action.

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