

For future prosperity, US should strengthen efforts to maintain world-class research universities

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American research universities are essential for U.S. prosperity and security, but the institutions are in danger of serious decline unless the federal government, states, and industry take action to ensure adequate, stable funding in the next decade, says a new report by the National Research Council, the operating arm of the National Academy of Sciences and National Academy of Engineering. As trusted stewards of public funds, universities must also meet "bold goals" to contain costs, enhance productivity, and improve educational pathways to careers both within and beyond academia, the report says.

Congress requested the report, which was written by a committee that includes industry CEOs, university presidents, a former U.S. senator, and a [Nobel laureate](#). It recommends 10 strategic actions that the nation should take in the next five to 10 years to maintain top-quality U.S. [research institutions](#). The report builds upon Rising Above the Gathering Storm, a landmark Academies' study on U.S. competitiveness.

"The talent, innovative ideas, and new technologies produced by U.S. research universities have led to some of our finest national achievements, from the modern [agricultural revolution](#) to the accessibility of the World Wide Web," said Charles O. Holliday Jr., chair of the committee that wrote the report, chairman of the board of Bank of America, and former chair and CEO of DuPont. "Especially in these tough [economic times](#), the nation cannot afford to defer

investment in our best asset for building prosperity and success in the future."

Beginning with the Morrill Act, which established land-grant [public universities](#) 150 years ago, and strengthened after [World War II](#), the partnership between government, industry, and U.S. universities has positioned these institutions to be the best in the world. By most measures, U.S. universities still maintain that status, the report says, and 35 to 40 of them consistently rank among the top 50 globally. However, universities are facing critical challenges -- magnified by the financial crisis -- that threaten to erode the quality of research and education these institutions can provide.

Federal funding for research has flattened or declined, the committee found, and state funding for research institutions has dropped by 25 percent to as much as 50 percent in some cases. U.S. colleges have had to raise tuition, threatening to put a college education out of reach for many. At the same time, other countries have increased R&D funding and are pouring significant resources into their own institutions. For instance, U.S. R&D expenditures, both public and private, have hovered between 2.5 percent and 2.8 percent of GDP over the last three decades, while Japan and South Korea have increased their R&D expenditures to well over 3 percent of their respective GDPs in recent years.

To renew the critical partnership between the federal government and universities, Congress and the administration should fully fund the America COMPETES Act. This would double the level of basic research conducted by the National Science Foundation, U.S. Department of Energy, and National Institutes of Standards and Technology. In addition, Congress should at least maintain current levels of funding for basic research across other federal agencies, including the National Institutes of Health. Such support would achieve a balanced research portfolio and ensure that universities would be able to educate "the

scientists, engineers, physicians, teachers, scholars, and other knowledge professionals essential for the nation's security, health, and prosperity," the report says.

States must maintain high-quality regional research institutions in order to compete in an increasingly knowledge- and innovation-driven economy, the report adds. As budgets recover from the recession, state governments should strive to restore and maintain per-student funding for higher education to levels equal to the period of 1987-2002, as adjusted for inflation. Federal programs aimed at stimulating innovation and work-force development at the state level should be accompanied by strong incentives to sustain state support for public universities.

The report calls on the nation's research universities to play their part by significantly increasing cost-effectiveness and productivity in both operations and academic programs. In addition, reducing federal and state regulatory burdens on universities will help reduce their costs. These savings can be used to constrain tuition increases or to increase financial aid. The federal government should also invest in infrastructure -- particularly cyber-infrastructure -- that has the potential for improving productivity in administration, research, and academic programs.

Universities should make doctoral programs more effective by reducing attrition and the time it takes to obtain degrees. Doctoral programs should also be aligned with the careers inside and outside of academia. In a time of constrained budgets and delayed faculty retirements, the government should support a faculty chairs program to open opportunities for early- and mid-career faculty.

Businesses, which have long relied on research universities for talent and technology, should also play a bigger part in ensuring their health, the report says. Federal and state policies should encourage collaboration between U.S. national laboratories, businesses, and universities in order

to enable large-scale, sustained research projects.

Provided by National Academy of Sciences

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