



RISING ABOVE THE GATHERING STORM TWO YEARS LATER

*Accelerating Progress Toward a Brighter Economic Future.
Summary of a Convocation (2009)*

In October 2005 the National Academies released *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, urging the United States to make the investments needed to “*compete, prosper, and be secure in the global community of the 21st century.*” The report recommended 20 specific actions in four broad areas: K-12 Science and Mathematics Education, Science and Engineering Research, Science and Engineering Higher Education, and Incentives for Innovation.

Since its release, the report has inspired and guided the actions of policymakers, business leaders, and educators. President Bush incorporated ideas from the report into his American Competitiveness Initiative, and Congress included many of the report’s recommendations in the 2007 America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (America COMPETES Act). The private sector has created organizations like the National Math and Science Initiative (NMSI), and many states have taken actions of their own. A 2006 convocation of state leaders and other stakeholders highlighted state achievements and catalyzed multistate collaborations.

Most progress stemming from the report, however, has occurred outside the U.S.. Little action has been taken in this country to strengthen education, research, and innovation systems. The America COMPETES Act authorized expenditures and programs in research and education, but appropriations for these programs are not yet available. In addition, short-term concerns have distracted policymakers from investing in the nation’s future.

On April 29, 2008, about 500 representatives of business, government, and academia met in Washington, D.C., for a second convocation organized by the National Academies, with support from the National Math and Science Initiative. This convocation reviewed the key recommendations made in the report, the main achievements made so far, and possible next steps for moving forward.

K-12 Science and Mathematics Education. The *Gathering Storm* report recommended efforts to attract undergraduate students majoring in science and math into teaching, to upgrade the skills of existing teachers, and to expand access to more demanding Advance Placement (AP) and International Baccalaureate science and math courses in U.S. high schools. The America COMPETES Act authorized a program called Teachers for a Competitive Tomorrow to encourage undergraduate students to take courses in science, mathematics, and engineering while also earning a teaching certificate. The program would also support current teachers to return to college to receive a science or math degree. Through grants, the private sector is also supporting teacher recruitment and training programs. The America COMPETES Act also authorized the Math Now program, proposed by the administration but not yet funded. The program would strengthen math education in elementary and middle schools to better prepare students for high school.

Teacher training would be an essential part of this program. Finally, convocation participants reported that individual schools, school districts, and states have been encouraging more students to take AP courses so they are better prepared for college-level work. The program in Dallas is a model for similar programs throughout the country, and Congress has authorized such an expansion.

Support for Basic Research. The report called for the federal government to increase investment in long-term basic research by 10 percent each year over the next seven years. The American Competitiveness Initiative established a trajectory to double the collective budgets of the National Science Foundation (NSF), the laboratories of the National Institute of Standards and Technology (NIST), and the Department of Energy's Office of Science over ten years. In turn, the America COMPETES Act authorized funding that would achieve this doubling in seven years. However, several participants noted that the FY 2008 appropriations bills severely disappointed the expectations of research supporters. The report also called on the federal government to provide research grants to early-career researchers; support research instrumentation and facilities; allocate funding to high-risk, high-payoff research; institute awards to stimulate scientific and engineering advances; and create an Advanced Research Projects Agency-Energy (ARPA-E) to address environmental, energy, and security issues. Appropriations have not yet been made to enable these actions.

Science and Engineering Higher Education. The report recommended expanding the pool of U.S. citizens earning degrees in science, technology, engineering, and mathematics (STEM), as well as steps to allow the U.S. to remain an attractive place for talented foreign students to earn STEM degrees. As minority groups come to represent a larger fraction of the U.S. student population, many convocation participants emphasized that outreach and support for members of those communities will become more important to increase their representation in the science and engineering workforce. The Hispanic Engineering, Science, and Technology (HESTEC) program at the University of Texas-Pan American has become a model program for promoting STEM careers among Hispanic students in South Texas. The reauthorization of the Higher Education Act includes a program called Youth Engagement in STEM Partnerships that is designed to replicate the success of HESTEC at minority-serving institutions across the country. The America COMPETES Act also emphasizes increasing the numbers of minorities and women in STEM fields and expanding minority-serving institutions' participation in education, research, and development.

Incentives for Innovation. Finally, the *Gathering Storm* report called on policymakers to improve the innovation environment in the U.S. by strengthening intellectual property protection, making permanent the research and development tax credit and enacting other tax incentives, and ensuring broadband Internet access. Progress on these fronts has been disappointing. The U.S. Patent and Trademark Office continues to have enormous backlogs of work. The existing R&D tax credit expired and had not been renewed at the time of the convocation (although it was renewed retroactively later in 2008). Other countries are offering R&D tax credits and other tax incentives to companies that establish or enlarge R&D operations that, in the view of many convocation participants, have led to U.S.-based companies establishing R&D facilities abroad. Progress on providing more widespread broadband Internet access has also been minimal. Many participants expressed hope, though, since the U.S. has historically been open to new immigrants and new ideas, and has a long history of successful innovation and cooperation between the public and private sectors.

PLANNING COMMITTEE FOR THE CONVOCATION ON RISING ABOVE THE GATHERING STORM: TWO YEARS LATER : Norman R. Augustine (Chair), Lockheed Martin Corporation; Thomas W. Luce III, National Math and Science Initiative; Charles M. Vest, National Academy of Engineering; Tom Arrison, Staff Director, National Research Council.

For More Information

Copies of *Rising Above the Gathering Storm Two Years Later: Accelerating Progress Toward a Brighter Economic Future. Summary of a Convocation* are available from the National Academy Press; call (800) 624-6242 or (202) 334-3313 (in the Washington metropolitan area), or visit the NAP website at www.nap.edu. For more information on the project, contact staff at (202) 334-3755 or visit the Policy and Global Affairs website at www.nationalacademies.org/pga.