Rising Above the Gathering Storm Revisited:  
Rapidly Approaching Category 5

President’s Council of Advisors on Science and Technology

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November 4, 2010
National Academies Recommendations

A. 10,000 Teachers Educating 10 Million Minds: K-12 Science and Mathematics Education

B. Sowing the Seeds Through Science and Engineering Research

C. Best and Brightest in Science and Engineering Higher Education

D. Incentives for Innovation
RISING ABOVE THE GATHERING STORM

Energizing and Employing America for a Brighter Economic Future

NATIONAL ACADEMY OF SCIENCES, NATIONAL ACADEMY OF ENGINEERING, AND INSTITUTE OF MEDICINE OF THE NATIONAL ACADEMIES

2005
RISING ABOVE
THE GATHERING STORM,
REVISITED

Rapidly Approaching Category 5

By Members of the 2005 “Rising Above the Gathering Storm” Committee
Prepared for the Presidents of the National Academy of Sciences,
National Academy of Engineering, and Institute of Medicine

NATIONAL ACADEMY OF SCIENCES,
NATIONAL ACADEMY OF ENGINEERING,
AND INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES
“Gentlemen, we have run out of money. It is time to start thinking.”

Sir Ernest Rutherford, Nobel Laureate (Physics)
Filled with Fact-checked Factoids

Followed by Pithy Perspectives

Painting an Unhappy Picture

But ...
We know what the problems are.

We know what most of the solution is.

The political will must be established.
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2010
Gentlemen, we have run out of money. It is time to start thinking.

Sir Ernest Rutherford, Nobel Laureate (Physics)
“Gentlemen, we have run out of money. It is time to start drinking.”

Dr. John Holdren,
Presidential S&T Advisor
RAGS Revisited

The need.

Requested by the NAS, NAE, and IOM Presidents

The methodology

Review Process

Publication
Major Sections

1.0  The Gathering Storm Revisited

2.0  Efforts to Avert the Storm

3.0  Changing Circumstances

4.0  The Ingredients of Innovation

5.0  A Category 5 Storm
2.0 Efforts to Avert the Storm

Enhance K-12 Education: Fallen far short of RAGS recommendations

Strengthen Basic Research: Substantial, but funding seems tenuous going forward.

Other:
- Increase H-1B Visas
- Permanent R&D Tax Credit
- Intellectual Property Laws
- Export Control Reform
3.0 Changing Circumstances

New S&T university with $10 billion endowment has been established.

>200,000 students will study abroad.

A new Innovation City is built for 40,000 people.

Create a global nanotechnology hub with 14 “world class universities.”

High-level commission patterned on RAGS established to create jobs
3.0 Changing Circumstances

- Saudi Arabia
- China
- Russia
- India
- United Kingdom
3.0 Changing Circumstances
Global Challenges in a Global World

All nations face difficult challenges.

But most do not face the challenge of sustaining our lifestyle.

A nation that does not embrace innovation will soon be left behind in the 21st century economy.
4.0 The Ingredients of Innovation

Knowledge Capital

Survey: 80% of U.S. firms’ CFOs would cut R&D to meet the next quarter’s profit projections.

The U.S. ranks 5th in basic research as % of GDP.

Human Capital

The U.S. is 20th in high school graduation rate among industrialized nations.

Each year we graduate: 8,000 Engineering PhDs, 150,000 MBAs, and 44,000 Lawyers.

Women and minorities are still far behind in S&E enrollments.

Environment

Many gov’t controlled factors strongly impact a nation’s ability to create jobs in a competitive Marketplace.

U.S. democracy and free enterprise are great advantages, but also self-imposed disadvantages.
5.0 A Category 5 Storm

A Tale of Two Job Seekers

Candidate A: Lower quartile of class
    Expects $17 per hour

Candidate B: Near top of class
    Speaks two languages
    Eager for $1.50 per hour

Trends in Competitiveness

Our higher education system is being seriously challenged.

Our Real growth rate is -2.6%.

Overall Assessment
In balance, it would appear that overall the United States long-term competitiveness outlook (read jobs) has further deteriorated since the publication of the Gathering Storm report five years ago.
National Academies Recommendations

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C. Best and Brightest in Science and Engineering Higher Education

D. Incentives for Innovation
Responses

A. 10,000 Teachers Educating 10 Million Minds: K-12 Science and Mathematics Education
   No real implementation
B. Sowing the Seeds Through Science and Engineering Research
   Substantial Progress, ... but sustained?
C. Best and Brightest in Science and Engineering Higher Education
   Far short.
D. Incentives for Innovation
   Nothing much new.
We are in a very serious strategic Crisis.

This is the most exciting era in human history for Science and Engineering.

We have democracy, free enterprise, diversity, and a stunning history.

It is time to be great again.