

The Role of Science and Scientists in Advising Governments, Advancing Diplomacy, and Contributing to Sustainability

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George Brown



Paul Doty and Pief Panofsky



Ezra F. Vogel

Japan as Number



One

Lessons for America

U.S. National Academy of Sciences Charter (1863)



The academy shall, whenever called upon by any department of the government, investigate, examine... and report upon any subject of science or art ,... but the Academy shall receive no compensation whatsoever for any services to the government of the United States”.

F. Sherwood Rowland



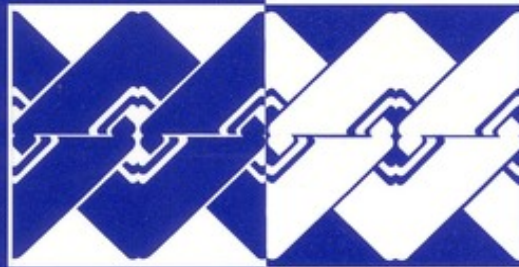


Maximizing U.S. Interests in Science and Technology Relations with Japan

Committee on Japan Framework Statement
and
Report of the Competitiveness Task Force

National Research Council

U.S.–Japan
Technology
Linkages in
Biotechnology



Challenges for the
1990s

NATIONAL RESEARCH COUNCIL

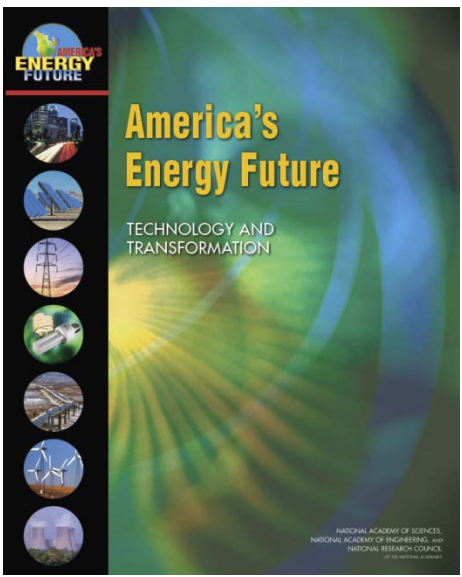
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RISING ABOVE THE GATHERING STORM

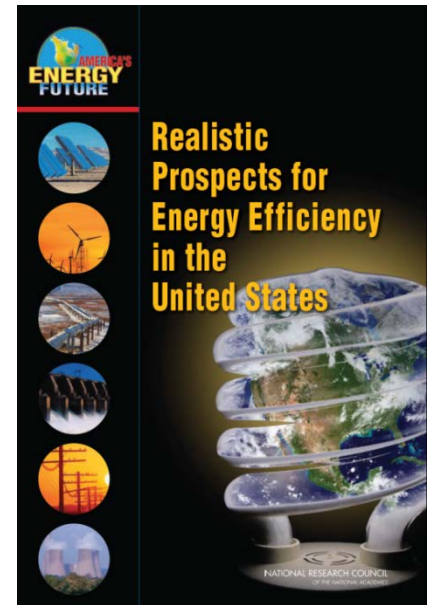
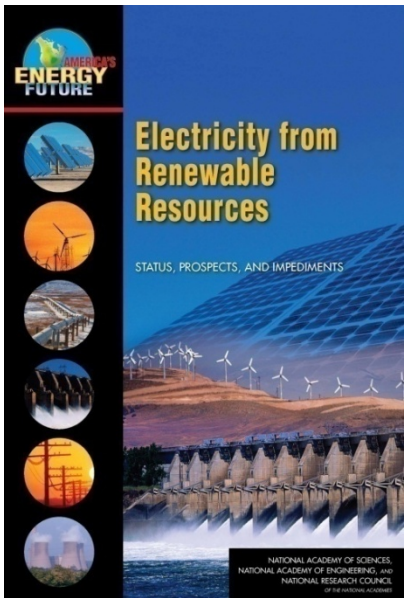
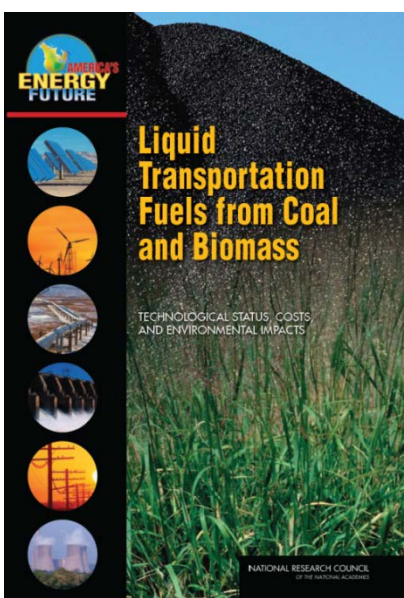
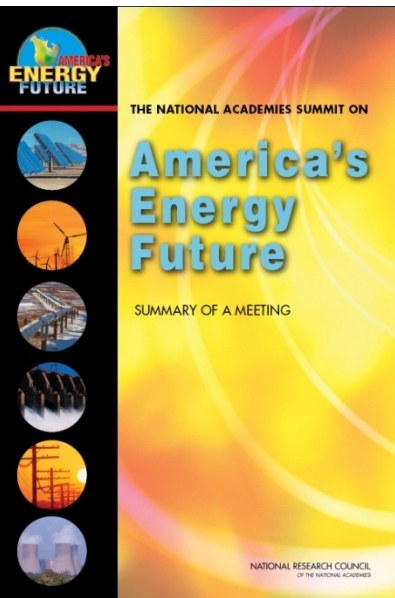
*Energizing and
Employing America
for a Brighter
Economic Future*

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

America's Energy Future: Technology Opportunities, Risks and Tradeoffs



Assessment of the potential of existing and emerging technology options that could be deployed in transforming the nation's patterns of energy supply and use to address national security, economic, and environmental concerns.



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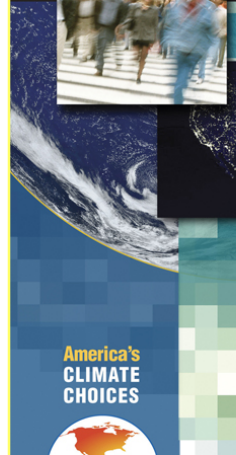


Limiting the Magnitude of Future Climate Change

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Informing an Effective Response to Climate Change



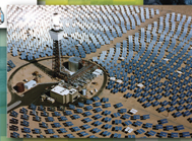
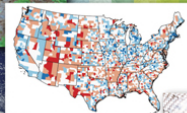
America's
CLIMATE
CHOICES



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Advancing the Science of Climate Change



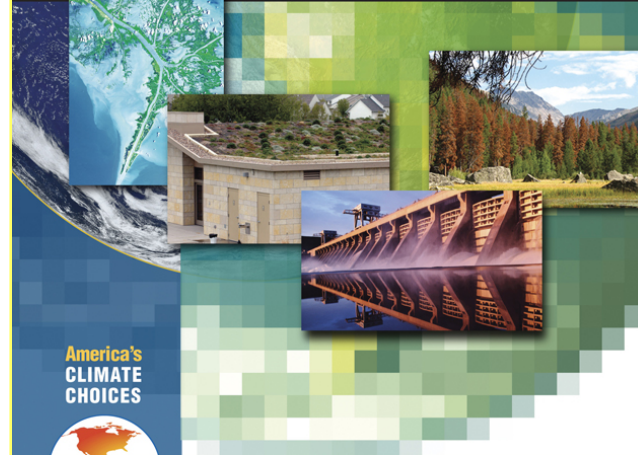
America's
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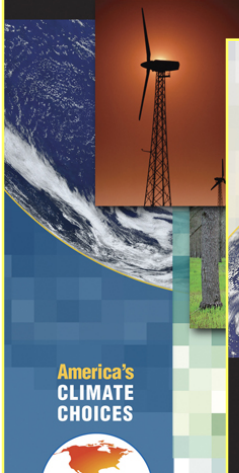
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Adapting to the Impacts of Climate Change



America's
CLIMATE
CHOICES



America's
CLIMATE
CHOICES





Comparative Innovation Policy

21ST CENTURY INNOVATION SYSTEMS FOR JAPAN AND THE UNITED STATES

Lessons from a Decade of Change

Report of a Symposium

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES



Comparative Innovation Policy

RISING TO THE CHALLENGE

U.S. Innovation Policy
for the Global Economy

NATIONAL RESEARCH COUNCIL
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The background of the cover is a complex, abstract composition. The top half features a perspective view of a structure with many thin, dark lines radiating from a central point, set against a bright yellow and green gradient. The bottom half shows a globe with a green wireframe overlay, also set against a similar gradient. The overall color palette is dominated by vibrant greens and yellows.

S&T STRATEGIES OF SIX COUNTRIES

IMPLICATIONS FOR THE UNITED STATES

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城市

ENERGY
FUTURES

AND URBAN
AIR POLLUTION

Challenges for China and
the United States

NATIONAL ACADEMY OF ENGINEERING AND
NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES
IN COLLABORATION WITH
CHINESE ACADEMY OF ENGINEERING
CHINESE ACADEMY OF SCIENCES

空气



THE AFRICAN SCIENCE ACADEMY
DEVELOPMENT INITIATIVE



PROGRESS AND PROMISE

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

U.S.-Iran Symposium on Resilient Cities: June 2014





Our Common Journey

a transition toward

SUSTAINABILITY

NATIONAL RESEARCH COUNCIL

THE PERVASIVE ROLE OF SCIENCE,
TECHNOLOGY, AND HEALTH
IN FOREIGN POLICY

Imperatives for the
Department of State



NATIONAL RESEARCH COUNCIL

History of Science at State

- Science Advisor position at State Department from Truman to Kennedy Administrations
- Combined with other offices (peaceful uses of space and nuclear) to become OES Bureau
- National Academy of Sciences study in 1999 recommended S&T Adviser to the Secretary
- Second NAS study in 2015 recommended further strengthening S&T at State

Science Diplomacy

- **Science** and technology aiding, informing, and **advancing diplomatic goals**
- **Diplomacy** advancing the national (and global) **science and technology** enterprise
- **Science, technology, & innovation (STI)** “leapfrogging” over **diplomatic hurdles** to solve critical national and global challenges

Joint Strategic Plan

State Department & USAID FY 2014-17

- Strengthen America's Economic Reach and Positive Economic Impact
- Strengthen America's Foreign Policy Impact on Our Strategic Challenges
- Promote the Transition to a Low-Emission, Climate-Resilient World while Expanding Global Access to Sustainable Energy
- Protect Core U.S. Interests by Advancing Diplomacy and Human Rights and Strengthening Civil Society
- Modernize the Way We Do Diplomacy and Development

STAS Priorities in Science Diplomacy

- Promote Science, Technology, and Innovation (STI) to Support Economic Growth
- Enhance Scientific Capacity in the Department
- Build Effective Public-Private STI Partnerships
- Empower Women through Science
- Track Emerging Scientific Trends and Transformational Technologies for Better Long-Term Decision-Making

Highest Priority Topic In All My Diplomatic Engagements

- How science and technology can stimulate innovation and economic development in this globalized interconnected world
- Every country making ambitious plans to compete at world-class level for prosperity, competitiveness & security
- Willing to modify policies and investments to build a knowledge-based society and innovative nation
- Fundamental pillars well-known, but challenging to implement and sustain
- All want to collaborate in STI with the most innovative nations (asset for American and Japanese diplomacy)

2030 AGENDA of the United Nations



Opportunity for S&T Communities Worldwide

- UN recognizes critical importance of STI for making progress on the 17 SDGs by 2030
- Every country focused on strengthening STI to improve competitiveness & economic growth
- Opportunity for STI communities to help solve many societal challenges and strengthen science-policy interface everywhere
- STI roadmaps and public-private partnerships needed to make progress on the SDGs

Harnessing the Contribution of STI for the SDGs

- Advising on challenges
- Providing indicators for monitoring progress
- Advising on policies & actions with periodic feedback on what is working and not working
- Searching for new innovative solutions
- Building a robust science-policy interface in every country and internationally

Transforming Our World: 2030 Agenda

- UN High Level Political Forum (HLPF)
- 17 SDGs, 169 Targets, and 229 (?) Indicators
- Global Sustainable Development Reports
- Technology Facilitation Mechanism (TFM)
- Collaborative annual Multi-Stakeholder Forum on STI for SDGs (June 6-7, 2016; May 15-16, 2017)
- Online Platform for STI initiatives, mechanisms, programs, technologies, and R&D outcomes

Global Sustainable Development Report: 2015 Edition



10-Member Group for TFM



STI Forum & Youth Panel



Six Recommendations for Countries

- Strengthen STI and Human Capacity Building
- Strengthen the Science-Policy Interface
- *Develop Societal Action Plans and Roadmaps*
- Utilize ICT Tools and Forums for Learning
- *Expand Partnerships Between Public and Private Sectors*
- Implement STI Tools to Aid Those Left Behind

Three Recommendations for Greater Focus by STI Community

- *Identify Knowledge Gaps and Initiate Solutions-Oriented Research*
- *Conduct Integrated Assessments Linked to Transparency and Accountability*
- Develop STI Tools for Assisting in Building Peaceful/Secure/Accountable Societies and Institutions and for Resolving Conflicts

Example of Target with Tier I Indicators

- Target 9.5. Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

Example of Target with Tier II Indicator

- Target 4.3. By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
- Indicator 4.3.1. Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex.


Many Targets with Tier III Indicators

- Target 12.6. Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
- Target 13.2. Integrate climate change measures into national policies, strategies and planning.
- Target 15.2. By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.



DIPLOMACY FOR THE
21ST CENTURY

EMBEDDING A CULTURE OF
SCIENCE AND TECHNOLOGY
THROUGHOUT THE
DEPARTMENT OF STATE



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Importance of Diplomacy for International STI Collaboration

- Essential to Address Challenges Facing Our Countries and the World
- Needed in Research and Development, especially in Pre-Competitive Fundamental Research
- Staying at the Cutting-Edge Requires Engaging with Best Scientific and Engineering Minds Everywhere

What Diplomacy Can Do to Support International STI Collaboration

- Advocate for international STI collaboration
- Reduce barriers and roadblocks to collaboration
- Facilitate new international STI linkages
- Seek new seed funding for STI collaboration
- Provide more STI trained personnel in embassies
- Advertise domestic STI strengths to potential foreign partners
- Survey foreign STI capabilities for potential collaboration
- Help foreign STI institutions to find the right domestic partners for collaboration

Frances Colon



Our Legacy to Future Generations

- 1987 Bruntland Report could have highlighted the important role of STI by saying:
- Sustainable Development “meets the needs of the present while expanding the ability of future generations to meet their own needs” (instead of saying “..without compromising the ability of future generations to meet their own needs”)

A Personal View

- Our greatest legacy to future generations, besides avoiding wars, terrorism, and conflicts, may be building knowledge-based societies and accelerating expansion of scientific knowledge and useful technologies
- Japan and U.S. can utilize our impressive STI capabilities to advance the 2030 Agenda, influence the STI development of other countries, and increase the role of scientific evidence in decision-making worldwide

For more information

bcolglaz@aaas.org

- W. Colglazier, “Sustainable Development Agenda: 2030,” *Science*, p. 1048-1050, 4 September 2015.
- “The Role of Science, Technology, and Innovation Policies to Foster the Implementation of the Sustainable Development Goals,” Report of the Expert Group “Follow-up to Rio+20, notably the SDGs,” European Commission, November 2015.
- W. Colglazier, “Diplomacy for Science and Science for Sustainable Development,” March 2016, and “The Art of Science Advice,” June 2016, *Science & Diplomacy* (www.sciencediplomacy.org).
- W. Colglazier, “Science Diplomacy in the USA: Perspective of a Former Science and Technology Adviser to the U.S. Secretary of State,” *Asian Research Policy Journal*, 2016 (www.arpjournal.org).
- <https://sustainabledevelopment.un.org/TFM> (Statement of 10 Member Group for the STI Forum and Colglazier Remarks to U.N. High Level Political Forum, June and July 2016).
- Bill Colglazier, “Encourage Governments to Heed Science Advice,” *Nature*, p. 587, 29 Sept 2016.
- Indicator status report (<http://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-03/Provisional-Proposed-Tiers-for-SDG-Indicators-24-03-16.pdf>)