

The following draft summary does not necessarily reflect the positions of the National Science Board.

**A Summary of Presentations and Discussion
from the National Science Board Task Force on International Science
Roundtable Discussion on International Science and Engineering Partnerships**

March 9, 2007
Brussels, Belgium

Participants addressed three main focal topics, including identifying structures and mechanisms to facilitate international science and engineering (S&E) partnerships, leveraging international S&E partnerships to build scientific capacity in developing nations, and leveraging international S&E partnerships to improve international relations (Appendix A). The agenda for the March 9 roundtable discussion is included in Appendix B, and a list of participants appears in Appendix C.

Identifying Structures and Mechanisms to Facilitate International Science Partnerships

Meeting participants identified several structures and mechanisms to facilitate international science partnerships. Building global scientific capacity is a shared responsibility of the U.S. and Europe, and both entities should work to empower developing countries with their own scientific capacity. Government leaders, along with non-governmental organizations (NGOs), academia, and industry, should build long-term partnerships with developing countries and work to support global science programs that combine research with building scientific infrastructure and human capacity in partner countries.

Clearly Define Roles and Funding Schemes

Creating a clear and concise definition of partner roles, contributions, and funding schemes between partner countries should be one of the first steps when developing an international science agreement. Roles must be defined so that all participants receive benefits and contribute significantly to the research objectives. An equally important feature of international science partnerships is to understand clearly the research funding scheme. All partners must be willing and able to meet their financial obligations throughout the course of the project. Finally, the beneficiary of the commercial value of the research should be clearly stated in advance to prevent any confusion or ill will. Each partner should know what resources – human, infrastructure, and financial – it will have to contribute for the success of the partnership.

Encourage the Mobility of Scientists

Governments, particularly the U.S., should encourage its scientists and researchers to travel abroad to participate in joint research ventures and international science partnerships. Brain drain from developing countries to Europe or the U.S. is a phenomenon that can be countered by encouraging scientific exchanges, such as those established by the German Research Fund, that require the researcher to return home after their international exchange. This concept, called brain circulation, is designed so that the exchange of researchers creates tangible benefits for both partner nations and organizations including knowledge sharing, data transfer, and network creation. Participants emphasized that the U.S. is particularly resistant to researcher exchange since the benefits of international research are not as highly valued within the U.S. scientific community. Participants suggested that U.S. policymakers create incentives for U.S. scientists to participate in research studies abroad.

Increase Data Sharing Efforts

Many national data centers do not have the funding to make data accessible on an international level. Participants encouraged European and U.S. governments to create policies that allow for increased data sharing with the international scientific community. The creation of scientific knowledge has historically been built on the concept of open data sharing and peer review. Access to new data, scientific publications, and research studies would also yield tangible benefits to many developing nations.

Incorporate NGOs and Academia in Facilitating International Science Partnerships

Incorporating NGOs and academia in international science partnerships yields positive benefits to both partners. NGOs have a wealth of knowledge about the international community and are an untapped resource that should be included more frequently in international science partnerships. Although NGOs do not necessarily have major funding to contribute to research projects, there is an intellectual tradeoff. NGOs can aid partner countries in better understanding the economy, history, culture, infrastructure, geography, government, military, and transportation issues that pertain to each respective partner. Such subjects may be important factors to consider when initiating – and later sustaining – international science research partnerships. Additionally, NGOs can identify key resources and people and help navigate the governments of partner countries through negotiations for international cooperation. While the assistance of NGOs would substantially enrich the process and subsequent outcomes of international science partnerships, this synergy will only be possible if the missions of governmental organizations and NGOs are aligned into one coherent strategy.

In the midst of challenging and oftentimes conflicting perspectives and priorities within individual countries, governmental organizations should support initiatives to foster the inclusion of universities in international science partnerships. Academia provides an enormous opportunity for cooperation and capacity building. Universities are often a-political organizations with strong intellectual, if not financial, resources. Collaborating with universities has the benefit of facilitating capacity building in that knowledge is not restricted to a specific group of researchers, but is shared with the next generation of scientists and engineers. Additionally, universities often have broad networks with other universities, NGOs, and industry. These elements make academia a rich environment for promoting international science partnerships.

Leveraging International Science Partnerships to Build Scientific Capacity in Developing Nations

Discussion group participants identified several critical components of successfully building scientific capacity in developing countries, including creating mutually beneficial partnerships, balancing contributions among partners, aligning missions, goals and personnel between all partners, and involving the broader science community.

Creating mutually beneficial partnerships

Creating a mutually beneficial partnership is critical to the success of any cooperation, but is especially important when engaging developing countries. As some of the participants noted, the developing world cannot be viewed as a single block of countries with the same needs and abilities. Therefore, these participants stressed that it is important to recognize the individuality of each

country and understand there is no “one size fits all” solution to development or partnerships. In order to ensure that the partnership is mutually beneficial, there must be a conscious effort to avoid adopting a colonial attitude when cooperating with developing countries. The partners must structure the agreement to meet the goals of each player in addition to the goals of the initiative.

Balancing contributions among partners

Partners must also contribute significantly to the agreement, including the funding and labor, to engender a sense of ownership. Though it was noted that the developing countries might not be able to contribute an equal amount of funds as their developed partners, it was stressed that they should still provide some funds throughout the course of the initiative.

Aligning goals and personnel

Participating organizations should align their goals and priorities to create one coherent strategy to build capacity and economic growth in developing countries. Once the priorities of the research and development agencies are aligned, the sponsoring partner will be able to provide the others with an integrated and coherent plan that is focused on quality research and capacity building.

All partners involved in a cooperative agreement should also be involved from its inception. Participants cautioned against allowing “tokenism” to occur in research projects. “Tokenism” is the practice of adding new partners to an initiative after it has already begun in order to achieve a political goal, minimizing the partner’s ability to make significant contributions. One of the most important reasons to engage developing nation partners from the onset of the agreement is to give the developing nation partner a view of how to plan and execute a project in its entirety. Adding partners after the initiation of a project damages the ability of developing countries to learn from the project.

Involving the broader science community

Involving the broader science community is especially important for international science partnerships. Ensuring that all pertinent agencies and organizations - ranging from development organizations to governmental agencies to research universities - have been involved in the development of a research project, fellowship, or program ensures that there is buy-in from all partners and that all participants are committed to the project. One participant cited an example of a failed partnership where not all players were involved in the planning stage of the project. The project was terminated during the final planning stages due to fears of brain drain.

International science partnerships should not just focus on government-to-government interactions, but should include universities, NGOs and industry. One mechanism recommended by participants to ensure the active participation of a nation’s scientific community is the creation of consortium or tripartite partnerships. Governments should engage a variety of organizations, such as NGOs, academia, industry and other players to create partnerships that are more balanced.

Leveraging International Science Partnerships to Improve International Relations

Providing Leadership in International Collaboration

The U.S. and Europe are both leaders in the scientific research community and each has a responsibility to support and empower capacity building in developing countries. The relative wealth, knowledge, and well-developed infrastructure of the U.S. and Europe bring a shared responsibility to empower developing nations to strengthen their scientific capacity that supports the intellectual and economic welfare of developing nations.

Science and technology initiatives are critical components of a nation's intellectual and economic development. International science partnerships are an excellent mechanism for sharing knowledge, ideas, expertise, and abilities necessary to build scientific capacity. Participants agreed that the U.S. and Europe need to play a greater role in building strong partnerships with developing nations to foster capacity building.

Europe and the U.S. must develop a shared vision of research goals and develop integrated strategies between scientific and development agencies to successfully engage developing nations. Building scientific capacity within developing countries will be most successful when the priorities of government agencies are aligned and research programs are linked to education and development organizations. The U.S. and Europe should build long-term relationships between partner countries, NGOs, and academia to coordinate and maximize the benefit of scientific and development initiatives. A successful partnership requires the scientific and development communities to combine their strategies and resources in working with developing nations. Additionally, both the U.S. and Europe should develop mechanisms for ensuring long-term commitments to partnerships.

Finally, while Europe and the U.S. government have a special responsibility to promote international cooperation with developing countries, there is also an appropriate time and place for the government to allow NGOs, academic institutes, and industry to take the lead in building international science partnerships. Participants noted that one of the most prominent barriers to international cooperation is politics and bureaucracy. The scientific community should be trusted to find and create the best possible conditions for international science partnerships. Moreover, some initiatives benefit from greater distance from official government agencies, especially when engaging nations with difficult political relations. However, while some participants have advocated a "hands-off" approach to creating international science partnerships, they admit that the government still plays a critical role in providing the mechanisms that enable cooperation including defining intellectual property rights, simplifying the mobility of scientists across international borders, enabling the sharing of information, as well as creating avenues to ease the creation and funding of partnerships.

Bridging Cultural and Political Divides Using International Science Partnerships

International science partnerships yield many benefits that include generating understanding and building positive relations between nations. International science alliances have the ability to reach across religious, cultural, and political differences to begin an exchange of ideas and knowledge.

International science partnerships, both as large initiatives and small bilateral projects, are a form of diplomacy that history has shown to be effective in easing tensions and strengthening relations

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between nations. Some successful models of large international science initiatives include the European Organization for Nuclear Research (CERN), which brought scientists together after World War II; the International Space Station; the International Polar Year; and the International Geophysical Year. One participant described another example, in which the Netherlands, while holding the chair for the EU, released a report criticizing human rights abuses in China. In response to the paper, China broke relations with the Netherlands. Despite the tense political climate, the Chinese science and technology mission in the Netherlands continued to operate and was later the point from which political relations were re-established between the countries. This is due in part to the strong professional identity that scientists have regardless of political and cultural barriers. Scientists exchange knowledge and information to obtain the best results possible regardless of their political and cultural identities. These and other examples show that science is an important bridge for resolving political and cultural tensions.

The participants debated whether international science partnerships should be undertaken primarily as a means of fostering better relations between countries. Both the European Union (EU) and the NSF consider the societal impact of the research initiatives they fund. Some participants expressed concern that involving political objectives in research initiatives could compromise the goal of conducting excellent research. On the other hand, other participants argued that the societal impact should not be considered since much research produces benefits beyond what can be expected at its start. The participants concluded that all funding choices for science initiatives are ultimately based on some kind of societal expectation or vision and that international science partnerships can foster better international relations between countries.

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Appendix A: Focal Topics for the March 9 Roundtable Discussion

FOCAL TOPICS AND DISCUSSION QUESTIONS

UNITED STATES NATIONAL SCIENCE BOARD TASK FORCE ON INTERNATIONAL SCIENCE

ROUNDTABLE DISCUSSION ON INTERNATIONAL SCIENCE AND ENGINEERING PARTNERSHIPS

**Brussels, Belgium
March 9, 2007**

Identifying Structures and Mechanisms to Facilitate International Science Partnerships

1. What role should governments play in facilitating international partnerships? What kinds of governmental structures are in place to facilitate these partnerships?
2. What role should non-governmental organizations play in facilitating international scientific cooperation? What mechanisms do NGOs use to facilitate these partnerships?
3. How can the U.S. and Europe best facilitate scientific cooperation with both developed and developing nations using university exchange and private sector/industry programs?

Leveraging International Science Partnerships to Build Scientific Capacity in Developing Nations

1. What kinds of partnerships failed to achieve their objective in the past? What were the critical flaws that led to its failure?
2. How can scientific partnerships between the U.S. and Europe foster the growth of the science and engineering educational systems in developing nations?
3. How should scientific partnerships be structured by the U.S. and Europe to encourage scientific capacity building in developing nations while minimizing brain drain?

Leveraging International Science Partnerships to Improve International Relations

1. How can international science partnerships be used to create a channel of positive communication between countries with difficult political relations? Are there any historical examples that could be used as a model today?
2. How can policy makers build momentum within the science and engineering community to enhance international cooperation?
3. How can international science partnerships be used to help resolve issues of global concern including climate change, renewable energy resources, and environmental protection? How can the U.S. and Europe best engage the developing world on these issues of global importance?

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Appendix B: Agenda for the March 9 Roundtable Discussion

AGENDA

UNITED STATES NATIONAL SCIENCE BOARD TASK FORCE ON INTERNATIONAL SCIENCE

ROUNDTABLE DISCUSSION ON INTERNATIONAL SCIENCE & ENGINEERING PARTNERSHIPS

Brussels
Berlaymont Building
March 9, 2007

- 09:00 Registration**
Salle Jean Rey, 1st Floor
- 09:30 Welcoming Comments**
Dr. Steven C. Beering, Chairman, National Science Board
Mr. Daniel Jacob, Deputy Director-General, Directorate General for Research,
European Commission
- 09:45 Overview of Proceedings and Introductions of Participants**
Dr. Michael P. Crosby, Executive Director, National Science Board
- 10:00 Perspectives of the National Science Board on the value of international science
and engineering partnerships**
Dr. Jon C. Strauss, Chairman, Task Force on International Science,
National Science Board
- 10:10 Panel Discussion Topic #1: Identifying Structures and Mechanisms to Facilitate
International Science Partnerships**
*[Each lead discussant will provide their perspective on the focal topic for
approximately 10 minutes, each. Following completion of all presentations in each
panel, 45 minutes of roundtable discussion by all participants will take place]*
- Mr. Alessandro Damiani, Head of Unit, the International Dimension of the Framework Programme, Directorate General for Research, European Commission
 - Prof. David Livesey, Secretary General, League of European Research Universities
 - Dr. Aglaja G. Frodl, International Affairs Division, German Research Foundation

11:25	BREAK
11:45	Panel Discussion Topic #2: Leveraging International Science Partnerships to Build Scientific Capacity in Developing Nations <i>[Each lead discussant will provide their perspective on the focal topic for approximately 10 minutes, each. Following completion of all presentations in each panel, 45 minutes of roundtable discussion by all participants will take place]</i>
	<ul style="list-style-type: none">• Dr. Carthage Smith, Deputy Executive Director, International Council for Science (ICSU)• Dr. Antonio Pita-Szczesniewski, International Constituency Director, Sigma Xi, The Scientific Research Society
13:00	LUNCH
14:30	Panel Discussion Topic #3: Leveraging International Science Partnerships to Improve International Relations <i>[Each lead discussant will provide their perspective on the focal topic for approximately 10 minutes, each. Following completion of all presentations in each panel, 50 minutes of roundtable discussion by all participants will take place]</i>
	<ul style="list-style-type: none">• Dr. Janez Potočnik, Commissioner for Science and Research, European Commission• Prof. Pär Omling, President, European Heads of Research Councils (EuroHORCs)• Dr. Horst Soboll, Chairman, European Union Research Advisory Board (EURAB)
15:50	Open Roundtable discussion by all invited participants
16:30	Summaries of Discussion and Next Steps for the Task Force Dr. Strauss and Dr. Crosby

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Appendix C: List of Participants for the March 9 Roundtable Discussion

LIST OF ROUNDTABLE PARTICIPANTS

UNITED STATES NATIONAL SCIENCE BOARD TASK FORCE ON INTERNATIONAL SCIENCE

ROUNDTABLE DISCUSSION ON INTERNATIONAL SCIENCE AND ENGINEERING PARTNERSHIPS

Brussels, Belgium
March 9, 2007

Participant	Affiliation
<i>National Science Board</i>	
Dr. Steven Beering	Board Chairman
Mr. Arthur K. Reilly	Board Member
Dr. Jon C. Strauss	Board Member Chairman, Task Force on International Science
Dr. Michael P. Crosby	Board Executive Director
<i>Invited Participants</i>	
Mr. Alessandro Damiani	International Dimension of the Framework Programme, Research Directorate-General, European Commission
Mr. Jan Alexander Dekker	European Union Research Advisory Board (EURAB)
Prof. Jüri Engelbrecht	Estonian Academy of Sciences, EURAB Member
Dr. Peter Fischer-Appelt	The University of Hamburg
Dr. Aglaja G. Frodl	German Research Foundation (Deutsche Forschungsgemeinschaft, DFG)
Ms. Sigi Gruber	International Dimension of the Framework Programme, Research Directorate-General, European Commission
Dr. Peter Heffernan	Marine Institute of Ireland

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Dr. Ashley Ibbett	UK Office of Science and Innovation
Dr. Daniel Jacob	European Commission
Ms. Angelika H. Lange-Gao	European Commission
Prof. David Livesey	League of European Research Universities
Mr. Jean-Paul Malingreau	Joint Research Centre
Mr. Tony Mayer	European Science Foundation
Prof. Pär Omling	European Heads of Research Councils
Dr. Antonio Pita	Sigma Xi, The Scientific Research Society
Commissioner Janez Potočnik	European Commission
Dr. Hendrik Schlesing	European Association of Research and Technology Organizations (EARTO)
Ms. Brigitte Serreault	Industrial, Research, and Technology Directorate, European Aeronautics, Space and Defence Company (EADS), EURAB Member
Dr. Carthage Smith	International Council for Science
Dr. rer.nat. Horst Soboll	European Union Research Advisory Board (EURAB)
Dr. Mark Suskin	U.S. National Science Foundation, Europe Office