



**National Science Foundation  
Advisory Committee for International Science and Engineering (AC-ISE)  
May 15–16, 2017  
Suite 1155, Main Conference Room  
Stafford II  
4201 Wilson Boulevard  
Arlington, VA**

**Meeting Minutes**

**AC-ISE Members in Attendance**

Susan Avery, José Fortes, Julio Ibarra, Steven McLaughlin, Anne Petersen, Caroline Wagner, Nai-Chang Yeh

**AC-ISE Members Not in Attendance**

Jay Cohen, Meg Lowman

**MONDAY, MAY 15**

**Welcome and Opening Remarks**

**Susan Avery, AC-ISE Chair**

Dr. Susan Avery opened the meeting with welcoming remarks and requested brief introductions of AC-ISE members, NSF Office of International Science and Engineering (OISE) staff, and guests. She introduced the newest AC-ISE member, Dr. Caroline Wagner, who provided an overview of her background and current position. Bios of AC-ISE members were provided with the meeting materials. The AC-ISE approved the November 28-29, 2016, committee meeting minutes.

**Overview of Office of International Science and Engineering**

**Rebecca Keiser, OISE Head**

Dr. Rebecca Keiser provided an overview of OISE, including a reminder of the new OISE organization as discussed in detail at the November 28-29, 2016, AC-ISE meeting. She highlighted recent and upcoming international activities and previewed topics on the AC-ISE meeting agenda. Dr. Keiser also discussed the NSF enacted budget for Fiscal Year (FY) 2017, with information on changes from the FY 2017 President's budget request. The overview presentation was provided with the meeting materials.

In response to an AC-ISE question on how staff changes at the Department of State (State) may impact interactions with NSF, Dr. Keiser noted that many career professionals remain at State. NSF maintains a very good relationship with the Bureau of Oceans and International Environmental and Science Affairs, as well as individual country desk officers. NSF is awaiting high-level international policy direction on interactions with some countries, such as China, but is proceeding with international collaborations overall.

Regarding the U.S.-Israel Binational Science Foundation (BSF), the AC-ISE asked whether the term “BSF” applies to a specific arrangement. Dr. Keiser replied that Congress appropriates BSF, and the Department of State manages and administers the body. NSF does not set aside funding for BSF activities.

### **Programs and Analysis Cluster Update**

#### **Anne Emig, OISE Acting Cluster Lead**

Dr. Anne Emig provided an overview of activities under the Programs and Analysis Cluster. Streamlining of programs continues, with a focus on OISE strategic priorities to advance research, develop the STEM workforce, and leverage resources. OISE is strengthening its programmatic impact by combining small programs with similar objectives and defining clear measures of progress. Dr. Emig noted that the full proposal stage of the Partnerships for International Research and Education (PIRE) program is underway, with awards expected in September 2017. The next PIRE competition will be in FY 2019–2020. She informed the AC-ISE that the solicitation for the International Research Experiences for Students (IRES) program is being updated and is expected for release in the summer of 2017. OISE is planning an external evaluation of IRES, as well. NSF is awaiting approval from the Office of Management and Budget (OMB) prior to announcing additional programmatic activities. Dr. Emig noted that OISE is building increased capacity to conduct analytics on NSF awards, including improving confidence in data and training OISE staff on analytics tools. Additional analyses that could be conducted on NSF data include student engagement, topic and network analyses, and horizon scanning. Dr. Emig concluded by noting OISE’s community engagement efforts, which are targeted at improving understanding of priorities and challenges related to international collaboration for NSF stakeholders. The overview presentation was provided with the meeting materials.

In response to AC-ISE questions on IRES, Dr. Emig explained that principal investigators submit proposals through their institution then recruit students to participate in the research. A key characteristic of IRES is the vertical integration of undergraduate and graduate students. IRES awards typically are \$250K over 3 years and involve four to eight students per year participating in 4 to 8 weeks of research abroad.

The AC-ISE expressed interest in the IRES evaluation and suggested that OISE work with the committee on the evaluation design.

### **Countries and Regions Cluster Update**

#### **Jessica Robin, OISE Acting Cluster Lead**

Dr. Jessica Robin highlighted recent Countries and Regions Cluster representation activities, including

- NSF Director’s participation in the World Science Festival in Australia;
- Delegations from Belgium and the United Kingdom (UK);
- NSF Director’s meeting with the Canadian Science Minister;
- NSF delegation to Ottawa, Canada;
- OISE participation in the Sustainable Smart Cities International Workshop in Egypt;
- OISE participation in the U.S.-Egypt Joint Science and Technology Fund;
- NSF participation in Hot Topics Chemistry conference in Cuba;
- Delegations from the Czech Republic on Genetics and Nanotechnology; and
- Global Brain Initiative engagement with Canada, Germany, Japan, and the UK.

She also noted the Cluster's inreach and outreach efforts, highlighting the OISE spring 2017 networking reception, OISE-hosted roundtable with the Department of State, international collaborations brownbag for NSF program staff, development of NSF policies and practices for international engagements, and OISE participation in the National Science Board's Science and Engineering Policy Committee. The overview presentation was provided with the meeting materials.

The AC-ISE noted the NSF Director's interest in greater connectivity with the Department of State. Dr. Keiser commented that increased coordination will result from enhancing relationships at both high levels and working levels.

In response to a question on activities in Asia, Dr. Robin noted that there has been much activity with China. She reiterated Dr. Keiser's statement that NSF is waiting for policy direction on interactions with China. Dr. Emig commented on an NSF Dear Colleague Letter (DCL) inviting supplements to NSF awards for collaborations with Japan. Dr. Keiser added that two members of China's National Science Foundation are participating in a panel for NSF's Dimensions in Biodiversity.

The AC-ISE noted that the OISE science diplomacy role has become more prominent. Members asked whether OISE plans to compile a reference list of U.S. researchers working abroad, including information on areas of expertise and intellectual property, to provide others with guidance. Dr. Robin replied that OISE has been working on this type of compilation and is considering the best approach for a cohesive presentation of such information.

### **Community Engagement Part I: Comprehensive Plan for Reforming the Federal Government and Reducing the Federal Civilian Workforce**

#### **Anne Peterson, AC-ISE Member**

Dr. Anne Peterson reminded the AC-ISE that on April 12, 2017, OMB issued a memo to Heads of Executive Departments and Agencies with guidance on reforming Federal agencies and reducing the Federal civilian workforce. She noted that OISE requested AC-ISE input on NSF's workforce, organization, processes, and IT, along with specific advice for OISE in contributing to NSF's response to the memo. Dr. Peterson stated that it is important to explain NSF's mission to stakeholders. She added that the role of the U.S. in science and technology (S&T) leadership may be challenged, with many other countries pursuing that position. Dr. Peterson observed that with the recent reorganization of OISE into a matrixed model, OISE has already accomplished what OMB is requesting. She added that there is little room for OISE to gain additional efficiency without losing the capacity it needs to address international S&T matters. She commented on a need to optimize both efficiency and effectiveness across the agency, and suggested NSF consider using OISE as a model to update its organization. She noted the need for a strategic perspective and enhanced communication efforts, including messages on the importance of international collaboration and NSF's role in that collaboration. Highlighting NSF's mission and its accomplishments should be the priorities.

Dr. Keiser commented on taking a holistic approach to how OISE serves NSF in the context of the Foundation's primary lines of business and improving efficiency. Dr. Peterson observed a challenge for OISE is that international activities are not centrally structured in NSF, so OISE expends effort to bring in international aspects. Dr. Keiser noted the importance of preserving international collaboration and the need to be strategic in explaining the value of this collaboration to the Nation. Dr. Peterson suggested OISE determine indicators of its leveraging role and mechanisms for documenting its efforts. Other AC-ISE members agreed with this suggestion, noting that the leveraging effort of international collaboration can be shown with indicators. AC-ISE members commented that the capacity to do great research has

grown across the world, providing the U.S. with access to world-class research beyond its own borders. Dr. Peterson reiterated the importance of the U.S. leadership role in S&T. AC-ISE members commented on the recognized value of OISE's expertise and service across the agency, but there is a need to quantify that value.

The AC-ISE discussed the stages of government reform referenced in the OMB memo and the need for a strategic approach to each stage. This approach should include explanation of the OISE reorganization and the reality of doing more with less due to personnel cuts over the past few years. The committee agreed on the need to highlight OISE's cross-agency work that eliminates redundancies across the NSF Directorates and to clearly identify OISE core functions. While there is a temptation to use individual success stories to show OISE's value, there is a need for quantification and demonstration of additionality. The AC-ISE suggested developing an "additionality equation" for OISE as was done for the European Research Commission.

Dr. Keiser noted that a challenge with international collaborations is compliance issues, such as those related to intellectual property. She explained that NSF as an agency looks to the entities it funds to ensure compliance, but that is not always a satisfactory situation. In response to a question regarding information on cybercrimes related to scientific data and patents, Dr. Keiser commented that information on intrusions is available but not on the impacts of what was taken. The AC-ISE raised a question regarding whether NSF could partner with the Department of Defense (DOD) on cybersecurity. Dr. Keiser replied that NSF does communicate with DOD, but there is still the matter of the NSF role versus the grantees' role. She acknowledged the value of improved communication with grantees on their responsibility in intellectual property concerns.

The AC-ISE noted that open data access is a critical tenet of science and is how the science community addresses reproducibility. Discussion of reproducibility should be framed in terms of integrity and the importance of the scientific enterprise as a whole. The National Academies recently issued a report [Fostering Integrity in Research](#) that could be a useful reference.

AC-ISE members discussed the need to ensure alignment of the NSF role in international S&T engagement with the overall NSF strategy. They noted the value of international engagement to the scientific enterprise in the U.S. and the strength of the Nation's S&T workforce. The AC-ISE agreed that OISE plays a key role in informing the science enterprise on how to conduct international science, including matters such as intellectual property and exports.

The AC-ISE discussed the importance of considering outreach audiences in terms of balancing the presentation of statistics versus narratives. The committee suggested OISE work with the NSF Office of Legislative and Public Affairs (OLPA) to incorporate international aspects in outreach materials.

## **Community Engagement Part II: OISE International Engagement Roundtables**

### **Libby Lyons, OISE Program Manager**

Dr. Libby Lyons provided an overview of OISE roundtable discussions with academic organizations and professional societies regarding their experiences with international S&T. Take-away messages from the roundtable participants included confirmation of the value of international engagement, identification of opportunities and challenges, and suggestions for how NSF could work with organizations and societies. Dr. Lyons noted that OISE is considering additional roundtables with industry, philanthropic, and regional/state-level entities. The overview presentation was provided with the meeting materials.

The AC-ISE commented on the importance of incorporating diversity and inclusiveness in international collaborations. While elite or high-profile researchers are likely to be active internationally, there is an issue of local inclusion and connectivity with local communities. Many societies have student components that are naturally engaged locally. As student populations are becoming more globalized, NSF and societies could consider opportunities that tie in with student entities and student aspirations for international connections. Many universities have student exchange programs, which could be an opportunity for leveraging activities and impacts. The AC-ISE suggested convening roundtables with representatives of the high-tech industry and philanthropic entities.

### **NSF International Student Programs**

#### **Anne Emig, OISE Acting Cluster Lead**

Dr. Emig provided background information on NSF's international student programs. She noted that STEM workforce development is a long-standing priority for OISE. Evaluation of OISE international student programs indicates positive impacts, but there is a need for further analyses such as through longitudinal studies. Inconsistent demand for international student programs suggests barriers to participation. Universities offer such programs, but opportunities vary greatly institution to institution. Questions posed to the AC-ISE focused on members' experience with the challenges and opportunities international student programs present, whether these programs should be a priority for NSF, and potential approaches NSF should pursue. The overview presentation was provided with the meeting materials.

AC-ISE members noted the unique and important role NSF international student programs play in focusing on meaningful research experiences for students. They highlighted student engagement in research as being the core of educating the next generation of the S&T workforce. Additional comments focused on organizations that already exist in this space, such as national research and education networks. These organizations have a mission to serve research and education, while NSF's role is to fund research. NSF and OISE have been successful in facilitating interactions. The AC-ISE suggested further exploration of opportunities for NSF engagement with these organizations, and noted that OISE could identify gaps and support mechanisms to bring communities together. The committee also suggested that NSF engage other sectors, such as partnering with high tech companies that provide internships. This arrangement could help students better understand the professional world.

AC-ISE members discussed opportunities for NSF to be proactive in increasing the number and scope of international student opportunities. The committee suggested that OISE could catalyze change by increasing the extent to which international collaboration is in the forefront of students' and researchers' thinking early in their education and careers. One approach could be to support a "priming" event for students coupled with the IRES solicitation. Select immersion workshops at research facilities could be one priming mechanism. Dr. Emig noted that funding for student participation in workshops typical comes from the NSF Directorates and varies by discipline.

Dr. Emig asked the AC-ISE whether funding is in fact a barrier to international student programs. The committee highlighted OISE's unique knowledge, broad perspective, and ability to bring communities together.

### **Overview of Advisory Committee for Environmental Research and Education**

#### **Leah Nichols, Executive Secretary**

Dr. Leah Nichols provided an overview of the NSF Advisory Committee for Environmental Research and Education (AC-ERE). Key AC-ERE activities focus on Biocomplexity; Dynamics of Coupled Natural and

Human Systems; Science, Engineering and Education for Sustainability; Innovations at the Nexus of Food, Energy, and Water Systems; and Risk and Resilience. The AC-ERE has released three visioning reports since 2003 addressing complex environmental systems, transitions and tipping points for these systems, and environmental research and education for the future. The AC-ERE March 2017 meeting included discussion of a white paper with key research and education questions to supplement the committee's "Gold Report" titled [\*America's Future: Environmental Research and Education for a Thriving Century\*](#). Dr. Nichols noted potential areas of interaction between the AC-ERE the AC-ISE, including international science and partners in the ERE portfolio, the NSF Big Idea "Navigating the New Arctic," activities related to the Belmont Forum and Future Earth, and connections with national security. The overview presentation was provided with the meeting materials.

Dr. Keiser noted the potential to have members in common between the two committees and/or a joint meeting or session. AC-ISE Members expressed interest in pursuing future interactions with the AC-ERE.

### **AC-ISE Meeting Day 1 Wrap-up**

#### **Susan Avery, AC-ISE Chair**

Dr. Avery requested that the AC-ISE members consider strategic suggestions for leveraging the NSF budget in preparation for discussion with the NSF Director on Day 2 of the AC-ISE meeting. AC-ISE members suggested that one priority could be support for young researchers in areas considered riskier or more vulnerable for loss of U.S. leadership. AC-ISE member Dr. Caroline Wagner volunteered to present an overview of such areas on Day 2 of the AC-ISE meeting. Committee members suggested that the next AC-ISE meeting could include discussion of outreach on the value of U.S. engagement in international S&T.

*Dr. Avery adjourned Day 1 of the AC-ISE meeting at approximately 4:45 p.m.*

## **TUESDAY, MAY 16**

### **Increases in International Research Collaboration**

#### **Caroline Wager, AC-ISE Member**

Dr. Wager provided an overview of the rise of international research collaboration. She discussed examination of publishing data and citation rates through tools such as the Web of Science, Scopus, and Elsevier, and researcher mobility data from the Organization for Economic Cooperation and Development (OECD). She noted that all scientific growth for highly developed countries is international. The more open a country is, the more scientific impact it has.<sup>1</sup> A bias toward the English language could have a small impact on openness in some countries. International growth is seen in all disciplines, with the emergence of a global science system. She added that U.S. publishing has decreased, in part due to factional counts for publishing. Scientific results correlate to GDP (per capita and government investment), but citation rates do not correlate to GDP.

AC-ISE discussion of the presentation included a suggestion to use patent data to determine more creative scientific impact, though patent data can be noisy. AC-ISE members suggested that the U.S. undertake global scanning to make knowledge more available beyond the elite level of scientists. Global scanning and the ability to integrate knowledge are keys to U.S. strength, which is enhanced with

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<sup>1</sup> Openness in this context was measured by how many multi-author papers include international authors, plus OECD's mobility data for researchers.

international engagement. AC-ISE members agreed that OISE should be more engaged in scanning and information sharing.

Discussion then shifted to city-level scanning that could be used to understand where and under what circumstances cities are cited, achieve wider research inclusion, sustain funding and local impact, and identify research fields where the U.S. is losing ground. The committee suggested a metrics project to analyze the correlation between academic output and economic measures. Such a project could also consider which U.S. hubs are more international and whether the most productive cities or states are the most internationally engaged.

The AC-ISE agreed that the U.S. should not back away from international collaboration. There is a need to enhance the Nation's absorptive capacity to better position the U.S. for engagement in international collaborations. The AC-ISE discussed support for international research teams, noting that teams tend to start off slowly but become significantly more productive over time. Evaluation of PIRE indicated that productivity is slow in years one and two, normalizes in year three, and greatly expands in years four and five. Language and geographic barriers can slow progress, but establishment of a team increases the absorptive capacity of the project.

The AC-ISE advised OISE to organize goals by topics. The office could then consider where the U.S. is challenged, emerging spaces where the U.S. needs to lead, and support for early career researchers in riskier areas.

### **International Vignettes and Science Communications**

#### **Rebecca Keiser, OISE Head**

Dr. Keiser provided an overview of the OISE "strategic implementation brochure." The AC-ISE recommended including a range of vignettes on OISE-funded projects to demonstrate the breadth of impact in the areas of discovery, economic connectivity, environmental resilience, and student training. The committee also recommended including examples of projects funded by other NSF units but enabled by OISE.

In response to a question on challenges for young investigators, Dr. Emig noted that OISE principle investigators are rarely junior personnel. OISE does not have data on funding for young investigators through the NSF Directorates, though proposals for the NSF Faculty Early Career Development program (CAREER) rarely involve international aspects.

*The committee prepared to meet with the NSF Director and Chief Operating Officer (Acting)*

### **Conversation with France A. Córdoba, Director, NSF, and Joan Ferrini-Mundy, Chief Operating Officer (Acting), NSF**

#### **AC-ISE Chair and Members**

Dr. France Córdoba thanked the AC-ISE members for their service. She noted that NSF's position in international engagement is more important than ever as changes at the White House Office of Science and Technology Policy (OSTP) and the Department of State have resulted in some uncertainty about directions and limited collaboration with those entities for the time being. Dr. Córdoba expressed her appreciation for the AC-ISE's input on NSF's role and how to advance it.

Dr. Avery noted the AC-ISE's recognition of the positive change the OISE reorganization has had. She commented on OISE's capabilities in analytics as a great tool in helping NSF understand the impact of

the awards the Foundation makes. She added that international collaboration and long-term funding are important, along with building international team capital. There could be value in increasing international connections in certain NSF programs, such as Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE) and Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES). She concluded by noting that OISE has evolved over the past few years and is more important now than ever, which is a credit to the Director and her vision.

Dr. Wagner noted that all scientific growth in developed countries is at the international level. For top countries, it is critical to expand international engagement, which is growing in all fields. Science is now a global network system, with 58 countries heavily involved. This global system has its own norms and rules that differ from local norms. An analysis of Europe found a direct correlation between more open countries and the impact of their science. The more open a country is, the more it is able to participate in the generation and discussion of ideas and have more highly cited science. The U.S. share in top science is decreasing. Looking at the most highly cited research, this decrease is significant in some fields. Dr. Córdova requested a summary of this information, including graphics. She stated that the information should be connected with the work of the National Center for Science and Engineering Statistics (NCSES) to ensure it is considered in the center's publications. Dr. Wagner noted that she works with NCSES.

Dr. Steve McLaughlin and Dr. Nai-Chang Yeh commented on opportunities for partnerships, new models, priorities, and personnel in a flat or reduced budget scenario. Partnerships are key, and NSF should leverage them even more than the agency already is doing. U.S. universities are great resources, especially those with strong international engagement. NSF could engage more with philanthropies and large companies with significant overseas operations, including partnering with high tech industries to enhance student internships. It is also important to partner with NSF's counterparts on other countries.

Rather than maintaining overseas offices, NSF could consider sending OISE personnel to U.S. embassies and/or consulates to help establish regional networks and monitor activities. Establishing mobile officers through an international Interagency Personnel Act (IPA) model could be another option. Faculty could be recruited for IPA-like international experiences to serve as liaisons for NSF, which would add value for NSF and for the faculty's home institution.

In a time of limited resources, NSF should prioritize early career researchers, especially in establishing international connections. The AC-ISE does not recommend focusing on a few regions because research across the globe is important. NSF could, however, prioritize topics within a region. Improving links with other agencies for global scanning of science would provide timely awareness of what is going on globally and where opportunities for engagement lie.

The AC-ISE believes that OISE is ahead of the curve with respect to reorganization of programs and staff. In the past 3 years, OISE has reduced staff, increased efficiency, and effectively adjusted its focus toward accountability and service. The office has already accomplished the restructuring called for in the OMB memo. There is a clear understanding of what OISE should do and how best to serve NSF. OISE's reorganization should be kept in mind during discussions across the Foundation. Some of the vacant positions in OISE, however, are critical. Efficiency and productivity of the office under its new, much more efficient structure would be diminished if the positions are not filled.

Drs. McLaughlin and Yeh noted that if any OISE functions are eliminated, those functions would have to be taken up by the individual NSF Directorates, which would introduce duplication and inefficiency. People are NSF's main asset for remaining agile and knowledgeable. There is a need to preserve the accumulated unique expertise in OISE, which is essential for NSF as a whole.

Communication to all stakeholders is extremely important, and information on international collaborations must be included in outreach materials. Vignettes and data are the validators of scientific growth. OISE has a good plan for presenting the benefit of its work. A valuable addition would be to link narratives to Congressional districts. The AC-ISE suggested that the Directorates' narratives could note the value-add of OISE in entering into and sustaining international engagements.

Drs. McLaughlin and Yeh noted that the AC-ISE appreciates the current uncertainty of budget and direction. There is an opportunity, however, to demonstrate to the Nation the value of scientific discovery and international engagements. NSF should not shy away from highlighting its role in international S&T. Dr. Peterson commented that framing the message is key and should present benefits to the Nation. Dr. Córdova stated that she will ask OLPA to develop a short film that focuses on the value of international engagement.

Regarding the NSF overseas offices, Dr. Córdova noted that the NSF senior leadership group recently discussed options for a different kind of presence. She commented that a 2-person office has limited capacity and raised the question of whether NSF is getting the information needed to help form the most effective collaborations. She requested input from the AC-ISE on how and where NSF should start on global scanning and where to send teams for international engagement.

Dr. Córdova noted that NSF is divesting some resources, such as large telescopes. There is a question, however, of what NSF would do if an international partner wanted to take on responsibility for such facilities. Would that partner then be able to look at U.S. satellites and other infrastructure important to national security. It is not clear what the capabilities are in other countries and what other countries can already do. NSF is a small agency and these are big issues. Dr. Córdova agreed NSF needs to engage in global scanning, likely in collaboration with the Department of State and others, to walk carefully through that landscape. Dr. Keiser stated that OISE will work with the AC-ISE to assess topics and provide input on global scanning.

In response to a question on whether it is possible to work with the U.S. intelligence community in assessing global S&T issues and opportunities for engagement, Dr. Keiser noted that the Department of State now has a better understanding of NSF. NSF is engaging with State to attend and interact in international meetings and explain how science adds value to and informs policy and innovation. Dr. Peterson added that while it is difficult to engage other agencies without OSTP leadership, connections still need to be made.

Dr. Córdova noted that the next Global Research Council (GRC) meeting is scheduled for May 29–31, 2017, in Ottawa, Canada. This is the fifth year of GRC meetings and will be an opportunity to consider what is working and what needs revisiting. Each member country has been asked to assess what it wants to get from participation in the GRC. While there have been different opinions, the common thread is the value of international interaction through the GRC. Dr. Córdova commented that it is helpful to have those connections. The upcoming meeting will include 60 heads of research councils, with 100 countries participating in regional meetings. The GRC has produced valuable papers on principles regarding open access, women in science, and other current issues.

Dr. McLaughlin noted that the AC-ISE is impressed with the community engagement roundtables OISE has organized. The NSF convening power is one mechanism to enhance learning and bring about positive change. Dr. Córdova noted that other Federal agencies do not always recognize how well NSF is regarded abroad. For example, when NSF announced the Big Ideas, there was a significant international impact, which revealed opportunities for partnering. The world does watch NSF.

Dr. Julio Ibarra asked whether the National Science Board (NSB) appreciates the role of international engagement in S&T. Dr. Keiser replied that the NSB members do understand the benefits, but like most boards, each member has his or her own experience with international partnerships. She added that OISE will work with OLPA to develop talking points, including how international engagement links back to and benefits Congressional districts.

### **AC-ISE Meeting Wrap-up**

#### **Susan Avery, AC-ISE Chair**

AC-ISE members agreed on the need to improve connections to DOD, State, and other U.S. intelligence entities. They discussed NSF information needs from forecasting and how to move ahead as OSTP is in transition. Dr. Peterson recommended reading publications from the National Academy of Sciences [Policy and Global Affairs](#) group, on which she serves.

## **SUMMARY OF RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

### **Recommendations to OISE from the AC-ISE**

- Work with the AC-ISE on design of the IRES evaluation.
- Determine indicators of OISE’s leveraging role and mechanisms for documenting OISE efforts.
- Develop an “additionality equation” for OISE activities as was done for the European Research Commission.
- Improve communication with NSF grantees on their responsibility regarding intellectual property.
- Work with OLPA to incorporate international aspects in outreach materials.
- Convene roundtables with representatives of the high-tech industry and philanthropic entities.
- Further explore opportunities for NSF engagement with national research and education networks, including identifying gaps and support mechanisms to bring communities together.
- Explore opportunities for NSF engagement with other sectors, such as partnering with high tech companies that provide internships.
- Catalyze change in the number and scope of international student opportunities. One approach could be to support a “priming” event for students coupled with the IRES solicitation, such as immersion workshops at research facilities.
- Facilitate interactions between the AC-ISE and the AC-ERE.
- Engage in global scanning and information sharing.
- Consider a metrics project to analyze the correlation between academic output and economic measures. Such a project could also consider which U.S. hubs are more international and whether the most productive cities or states are the most internationally engaged.
- Organize goals by topics then consider: where the U.S. is challenged; emerging spaces where the U.S. needs to lead; and support for early career researchers in riskier areas.

- Include a range of vignettes on OISE-funded projects in outreach materials to demonstrate the breadth of impact in the areas of discovery, economic connectivity, environmental resilience, and student training. Include examples of projects funded by other NSF units but enabled by OISE.

#### **Follow-up Actions for the AC-ISE and NSF**

- Dr. Córdoba requested a summary of Dr. Wagner’s presentation on growth in international S&T, including graphics.
- Dr. Córdoba requested that the AC-ISE provide input on:
  - How and where NSF should start on global scanning and
  - Where to send teams for international engagement.
- OISE will work with the AC-ISE to assess topics and provide input on global scanning.
- Dr. Córdoba will ask OLPA to develop a short film that focuses on the value of international engagement.
- OISE will work with OLPA to develop talking points, including how international engagement links back to and benefits Congressional districts.

*Dr. Avery adjourned the meeting approximately 12:30 p.m.*