



**National Science Foundation
Advisory Committee for International Science and Engineering
January 26, 2018
2415 Eisenhower Avenue
Room E 3410
Alexandria, VA**

Meeting Minutes

AC-ISE Members in Attendance

Susan Avery, José Fortes, Julio Ibarra, Meg Lowman, Steven McLaughlin (by video), Anne Petersen, Caroline Wagner, Nai-Chang Yeh

AC-ISE Members not in Attendance

Jay Cohen

Welcome and Opening Remarks

Susan Avery, Chair, AC-ISE

Dr. Susan Avery opened the meeting with welcoming remarks and requested brief introductions of the Advisory Committee for International Science and Engineering (AC-ISE) members, National Science Foundation (NSF) Office of International Science and Engineering (OISE) staff, and guests. The AC-ISE then approved the minutes of May 15-16, 2017, AC-ISE meeting.

OISE Cluster Activities

Anne Emig, Programs and Analysis Cluster Lead, OISE

Joe Miller, Countries and Regions Cluster Lead (Acting), OISE

Dr. Anne Emig provided an overview of activities under the Programs and Analysis Cluster. She noted that streamlining of programs is in full implementation, targeting OISE strategic priorities and focusing on core goals to strengthen impact. She then provided an update on Partnerships for International Research and Education, International Research Experiences for Students, and AccelNet. Dr. Emig also commented on the gains OISE has made in data analytics and foresight. Looking ahead, she described the Cluster goal of expanding decision making informed by both OISE expertise and data analytics. She raised a question for AC-ISE consideration of what criteria OISE should apply as the office prioritizes analytics and horizon-scanning activities.

Dr. Joe Miller highlighted recent Countries and Regions Cluster activities, including NSF leadership of U.S. engagement in the G7 Science Ministerial. He also presented information on OISE program manager portfolios and number of NSF-funded awards that involved collaboration with international partners. He posed a question for the AC-ISE regarding the criteria OISE should use to guide its work in international collaborations, noting the following as examples: science-based priorities from the NSF Directorates, U.S. government geopolitical priorities, and time and resources. He also asked the AC-ISE for feedback on whether NSF should continue in a U.S. leadership role for international multilateral activities. Dr.

Rebecca Keiser, Head of OISE, commented that Dr. France Córdova, Director of NSF, considers such leadership roles to be good opportunities for the Foundation. The G7 Science Ministerial, in particular, was well-suited to the NSF portfolio, and NSF worked with the Administration and other agencies to ensure coordination and alignment of priorities. Dr. Emig suggested that the OISE time required to staff such meetings should be recognized, as it is not insignificant. The AC-ISE agreed leadership is an important role for NSF and should be a Foundation-wide effort, and asked whether the National Science Board (NSB) could offer acknowledgement and backing. Dr. Keiser replied that OISE did brief the NSB, but there is an opportunity to better engage them. The AC-ISE raised concern regarding whether NSF could maintain its relatively neutral position while leading multilateral engagements. Dr. Keiser responded that NSF was involved in negotiating the final communique for the G7 Science Ministerial, which was an appropriate role as it allowed subject matter experts to focus on their subject areas. The AC-ISE suggested that the Science and Technology Policy Institute could assist with developing background information and other preparatory materials.

Regarding OISE criteria for guiding international collaborations, a question was raised on trends in partnership efforts skewed toward more developed nations. It was suggested that open data access and data accessibility are mechanisms that should be further explored to increase research visibility and impact over time. NSF's influence in this area is challenging, however, because the Foundation is focused on a bottom-up approach to research. Dr. Emig added that OISE is working on approaches for NSF staff to engage with international counterparts in person to better explore opportunities.

Following up on the point that NSF-funded international collaborations tend to involve developed rather than developing nations, it was noted that a contributing factor is that the science of interest to developing nations may not be the type of science NSF supports, such as applied projects. NSF has considered developing a toolkit to better inform developing nations about NSF, its processes, and opportunities.

OISE Challenges and Opportunities

Rebecca L. Keiser, Office Head, OISE

Following on the questions the OISE Clusters posed to the AC-ISE, Dr. Keiser discussed OISE challenges and opportunities, including creative mechanisms for OISE to have greater impact working across NSF; approaches to OISE engagement in global scanning and NSF international fact-finding trips; more effective communication/interaction with NSB on OISE activities; and NSF engagement with other sectors, national research and education entities and networks. She added that the goal is not only to maintain global leadership but to enhance that leadership through international collaboration.

The AC-ISE asked whether there is a way to quantify how collaborations have leveraged resources and investments. Dr. Keiser replied that NSF is considering that question and has put in place criteria for international collaboration, including: mutual benefit for all partners; true intellectual collaboration; benefits to be realized from the international counterpart; and active research engagement of U.S. students and early-career researchers. The AC-ISE noted that OISE has much experience that will grow so that investments now will pay off later. It was suggested that OISE combine a metrics approach with a principles-based approach to help identify intangible benefits of funding international research collaborations. Dr. Keiser noted that the criteria described earlier are the start of principles, and now there is a need to tell a full story of the value of international collaborations. There are challenges in focusing on cooperation not competition. The AC-ISE commented on approaches to overcome challenges, such as exploring lessons learned from non-Federal entities, engaging the science diaspora, working with the NSF Science Directorates on articulating successful mechanisms, and raising awareness

among U.S. researchers and NSF staff of science diplomacy. The AC-ISE raised the idea of whether NSF could be proactive in infrastructure, particularly “engineering the new infrastructure,” given the Administration’s interest in this area.

Read-out from December 4-6, 2017, OISE Committee of Visitors

Anne Peterson, Member, AC-ISE

Dr. Anne Peterson, AC-ISE Member and Chair of the OISE Committee of Visitors (COV), provided an overview of the COV report of recommendations. COV reviews provide NSF with external expert judgments in two areas: 1) assessments of the quality and integrity of program operations and program-level technical and managerial matters pertaining to proposal decisions; and 2) comments on how the outputs and outcomes generated by awardees have contributed to the attainment of NSF’s mission and strategic outcome goals. The full COV report is available at https://www.nsf.gov/od/oise/advisory_cov_reports_and_responses.jsp.

Regarding the COV recommendation that OISE align its efforts with the NSF Big Ideas, the AC-ISE asked whether NSF as an entity is aligning with the Big Ideas, noting a potential tension with core programs. Dr. Keiser replied that some Directorates, Divisions, and Programs are structuring around certain Big Ideas. She noted that there does need to be some focus or theme for OISE activities. In response to a comment regarding whether OISE is evaluated on how much of its funding goes to the Directorates, Dr. Keiser agreed with the need to evaluate the impact of OISE funding going to the Directorates. Dr. Emig added that more funding goes from OISE to the Directorates than vice versa. The key point to consider is how OISE can do more rather than more of the same. The AC-ISE officially accepted the COV report and thanked the Committee for its work.

Strategic Review of Directorate International Collaboration

Rebecca Keiser, Office Head, OISE

Dr. Keiser described a concept for strategic reviews of international activities within the NSF Research Directorates. She explained that most NSF international collaboration occurs on a bottom-up basis. This works well, but there is need to understand how international collaboration can help advance the work of NSF Directorates and Programs. The goal would be to identify short and long-term international collaboration opportunities to pursue intentionally and strategically. Discussions with the NSF Directorates yielded a mix of responses and receptivity. Dr. Keiser raised for AC-ISE discussion the question of whether such strategic reviews seem worthwhile. The AC-ISE suggested that OISE collect data on publication acknowledgements and link these back to NSF programs to determine where there are international collaborations and which programs are leading. The AC-ISE added that a set of effective practices for international collaboration should be part of this review. Dr. Keiser explained that the reviews would examine what makes an international collaboration successful and demonstrate the value of international collaboration as an enabler for NSF programs, not as a separate undertaking. The AC-ISE noted that one leadership role for OISE could be to change the perspective on the value of international research, and asked whether OISE already has data to develop an initial viewpoint. It was noted that there is a difference between inherently international and intentionally international collaboration. The AC-ISE suggested asking the Directorates about missed opportunities due to misalignment of funding between NSF and international funding counterparts.

In response to a question on what OISE will do with the information from these reviews, Dr. Keiser noted that the feedback will help with targeting directions and approaches to make the most impact. The AC-ISE endorsed OISE moving ahead with strategic reviews.

Preliminary Overview of AC-ISE Subcommittee on International Collaboration Report

Caroline Wagner, Member, AC-ISE

Dr. Caroline Wagner, AC-ISE Member and Chair of the AC-ISE Subcommittee on International Collaboration, provided an overview of the Subcommittee's charge and preliminary report. In September 2017, OISE released a Dear Colleague Letter (DCL) inviting individuals or groups of individuals from the U.S. research community to submit White Papers on topics in science, engineering, and/or STEM education ripe for international network-to-network collaboration. Through the DCL, OISE sought input from the U.S. research community to identify respective networks in the U.S. and abroad that could be better connected to leverage resources to stimulate critical research advances through networks of networks. Working with an Internal Study Group of NSF experts, OISE analyzed the responsive White Papers received and determined a slate of exemplar White Papers. The Subcommittee was charged with coupling input provided in the exemplars with their own knowledge and experiences in network-to-network collaboration, international and interdisciplinary science, and the science of team science to provide input to OISE for use in potential program planning.

The AC-ISE asked whether the Subcommittee considered the challenges of organizing research communities to work in a network of networks fashion. Dr. Wagner replied that the Subcommittee focused more on bringing together existing networks in a facilitating role rather than in developing new networks in a creating role. In response to a follow-up question on whether the OISE target is to enhance existing networks or establish new networks, Dr. Keiser noted that OISE is considering different approaches and options. Dr. Wagner commented that Subcommittee did not address the needs of specific research fields, but noted the importance of considering different criteria for established versus new networks.

The AC-ISE commented on the issue of "dark data" – data that exists but cannot be accessed. One outcome of a network of networks could be to bring this dark data to light by building the virtual plumbing to get to and share the data. Integrating data is both a technical and social challenge, exacerbated in the international context. A program to support networks of networks could be particularly applicable to areas where researchers are half way between bringing people and infrastructure together and realizing discovery. Dr. Keiser clarified that the intent is not to fund data centers.

The Subcommittee will submit its draft report to the AC-ISE for comment and/or approval. Once the AC-ISE approves the report, it will be official submitted to NSF and made public.

Environment and Security Joint Activities with the NSF Advisory Committee for Environmental Research and Education

Meg Lowman, Member, AC-ISE

Meg Lowman, joint member of the AC-ISE and the Advisory Committee for Environmental Research and Education (AC-ERE), provided an update on collaboration between the two Committees. She reminded the AC-ISE of the AC-ERE overview presentation during May 15-16, 2017, AC-ISE meeting, during which there was agreement to further collaborative activities. The topic of the relationship between the environment and security/economic stability emerged as likely area of common interest. The AC-ERE is developing a DCL seeking community input on critical research areas within this theme. The first product is expected to be report to NSF on priority research areas. An international component to this report would provide useful input to NSF.

The AC-ISE reaffirmed its interest in the relationship between the environment and stability, and discussed how U.S.-funded research can have a global impact. The question was raised of what is the next basic research area that supports mitigation strategies for global change, and where will this research be supported and carried out. Dr. Keiser commented on the need to consider the NSF mission to provide data to solve grand challenges.

Dr. Lowman noted two questions for the AC-ISE: 1) is there an interest in working with the AC-ERE on the DCL; and 2) what input would the AC-ISE offer. The AC-ISE expressed interest and noted that this collaboration is a good opportunity, but cautioned that it should stay within the scope of OISE and not skew OISE priorities.

Conversation with France A. Córdoba, Director, NSF, and Joan Ferrini-Mundy, Chief Operating Officer Susan Avery, Chair, AC-ISE

The AC-ISE provided Dr. Córdoba with a summary of the day's discussion, highlighting opportunities through the OISE and NSF leadership role in multilateral international activities, the value of the recommendations of the OISE COV, and the importance of an intentional and strategic approach to international engagement, working with the NSF Research Directorates. Dr. Córdoba thanked the AC-ISE for its contributions and noted the upcoming release of the President's Fiscal Year 2019 Budget Request for the AC-ISE's awareness.

Wrap Up

Susan Avery, Chair, AC-ISE

In response to a request for any additional discussion topics, Dr. Emig commented on the NSF Harassment Work Group. She noted that it has not been NSF's intent to alter its position reflecting the responsibility of the institutions in this area. She added, however, that Dr. Córdoba feels strongly about examining NSF's role. A communication from NSF to the community is expected soon.¹

SUMMARY OF RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Recommendations to OISE from the AC-ISE

- The AC-ISE supports the new leadership role NSF – through OISE – is taking in multilateral international activities, but maintaining NSF's mission and neutrality is critical, as is ensuring Foundation-wide effort in staffing such efforts. Engaging the NSB could be one mechanism to ensure acknowledgment and cross-NSF support.
- OISE should consider combining metrics with a principles-based approach to define the intangible benefits of funding international research based collaborations. OISE should also explore lessons learned from non-Federal entities, working with the NSF Science Directorates on articulating successful mechanisms, and raising awareness among U.S. researchers and NSF staff of science diplomacy.
- The AC-ISE raised the idea of whether NSF could be proactive in infrastructure, particularly "engineering the new infrastructure," given the Administration's interest in this area.
- The AC-ISE endorsed OISE in moving ahead with strategic review of international activities working with the Directorates, including examining effective practices and missed opportunities. An update should be provided at the next AC-ISE meeting.

¹ Important Notice No. 144 was released February 8, 2018. See <https://nsf.gov/pubs/issuances/in144.jsp>.

- The AC-ISE supports collaboration with the AC-ERE on the relationship between the environment and national security and economic stability. This collaboration, however, should be within the bounds of OISE's remit.

Follow-up Actions for the AC-ISE and NSF

- OISE will provide an update at the next AC-ISE on the strategic review of international activities working with the Directorates.
- OISE will work with staff of the AC-ERE on collaboration between the two Committees on the AC-ERE DCL.

Dr. Avery adjourned the meeting approximately 4:30 p.m.