

Networks of Diaspora in Engineering and Science (NODES) AAAS Meeting Forum Report Boston, MA February 14, 2013

Introduction

Diasporas, the communities of people settled in a new geographic location away from their ancestral homelands, have long been important to building stronger links between countries. Often the focus of such communities – especially in developed countries – is to send remittances to family and friends within their countries of origin, sometimes providing the only access to stable, hard currency, and allowing for increased purchasing power. In recent years, there has been a greater focus on the role that Diaspora communities can play in building stronger societal links outside of simple financial flows. The Global Diaspora Forum launched in 2011 by the U.S. Department of State in coordination with the United States Agency for International Development, illustrates the potential and diversity of Diasporas in U.S. development and diplomacy activities. This annual event aims to challenge diaspora communities to build partnerships with private sector, civil society, and public institutions so that their engagements with their countries of origin are effective, scalable, and sustainable. The inaugural Forum established the International Diaspora Engagement Alliance (IDEA), on whose website (<http://diasporaalliance.org/>), can be found proceedings from each Forum, as well as an ever growing set of diaspora knowledge resources.

It is not surprising, given the long tradition of U.S. universities attracting some of the best science and engineering talent from around the world, that there should be increased focus on building Diaspora partnerships within these communities. In this spirit, the American Association for the Advancement of Science (AAAS), the U.S. National Academy of Science and the National Academy of Engineering joined a partnership with the U.S. Department of State to promote the development of Diaspora communities in science and engineering fields. The resulting partnership – Networks of Diasporas in Engineering and Science (NODES) – was launched as part of the Secretary of State's 2012 Global Diaspora Forum. NODES aims to help science diaspora groups identify and communicate with interested participants, identify appropriate tools for networking, find institutional partners such as universities, NGOs, and professional societies, understand how to influence effective policies, and connect their talent with their homeland, all of which can yield mutual benefit of the country of origin and the United States. Central to NODES' activities is a yearly gathering at the AAAS Annual Meeting designed to mobilize new constituencies, share resources and experiences and help nascent science diaspora communities learn from better established ones how to build stronger networks for engaging with countries of origin.

During the 2013 AAAS Annual Meeting in Boston the NODES partners and the Government of Ireland marking Ireland's Presidency of the European Union, convened the first post-launch event and brought together scientists and engineers from diaspora

communities from all corners of the world. The gathering included a luncheon with speakers from Ireland and the European Union, a panel discussion by experts who shared their experiences in fostering national or multi-national science diasporas, and a networking reception. Four break-out sessions focused on such topics as, funding for science diaspora activities, building women's diaspora networks, networks and platforms for science diaspora activities and leveraging institutional support for diaspora activities. Summaries of the luncheon presentations, the panel, and of the breakout discussions are included within this document.

The information within this report represents some of the NODES initial efforts to make science and engineering diaspora activities more effective; it represents the input from an expert but small group of participants. For the NODES activity to become more effective and more useful to scientists and engineers in the U.S. and abroad, it requires regular feedback and input from wider audiences. The hope is that this report will catalyze such input. NODES welcomes sharing of information through different outlets such as the IdEA website, the AAAS Science Diaspora website (diplomacy.aaas.org/diaspora) and a newly established listserv hosted by AAAS: <http://listserv.aaas.org/mailman/listinfo/nodes>

More science diaspora activities are upcoming because NODES will be actively engaged in the 2013 Global Diaspora Forum, to be held May 13-14 in four locations - Washington, DC, Los Angeles, CA, Silicon Valley, CA and Dublin, Ireland. (More information on these events can be found on the [IdEA website](#).) Planning has started for the NODES gathering at the February 2014 AAAS Annual Meeting in Chicago, IL, where there will be updates as well as continued efforts to forge new territory in strengthening science diaspora networks.

Luncheon Speakers

The Science Diaspora event began with a lunch sponsored by Science Foundation Ireland and hosted by H.E. Ambassador Michael Collins, Ambassador of Ireland to the U.S., and Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland. They were joined at the head table by Robert-Jan Smits, European Union (EU) Director General of Innovation and Research, E. William Colglazier, Science and Technology Adviser to U.S. Secretary of State Kerry, and members of the afternoon's panel. The Ambassador delivered the welcome note and spoke of the importance of Ireland's diaspora, especially in the Boston area, noting that many of the lunch guests were members of the local Irish science diaspora. He also touched upon the importance of science, research and development to Ireland's economic recovery, and on priorities for Ireland's EU Presidency during the first six months of 2013. EU Director General Smits spoke about Horizon 2020, the EU's 2014-2020 framework program for research and innovation, and how international cooperation is an integral part of that effort to create new knowledge, growth and jobs in Europe. He emphasized that U.S. – EU research cooperation remained strong and of great mutual benefit, in part aided by programs such as Link2US and BILAT-USA, and also by strong

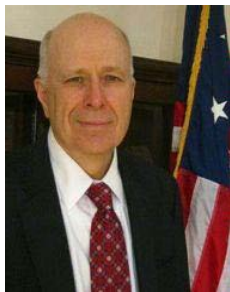
science diaspora connections between Europeans in the U.S. and their counterparts back in the EU. Mark Ferguson spoke about how Science Foundation Ireland (<http://www.sfi.ie>) is funding research excellence with impact (<http://www.sfi.ie/news-events/publications/>). He indicated that for Ireland to sustain a high level of scientific advancement, innovation, and related economic growth, it must invest in cutting-edge science, top-level infrastructure, and highly trained scientists in fields of strategic national importance. Equally, as a small country, Ireland will participate in relevant EU and international research initiatives and funding schemes. Like many of its counterparts in Europe, Ireland recognizes that because its highly trained scientists and engineers are increasingly mobile, it needs to tap that worldwide network and find ways for Ireland's diaspora to strengthen its scientific enterprise.

Panel Discussion

The panel discussion, moderated by Dr. Mark Ferguson, Director General of Science Foundation Ireland, featured six panelists:

- Dr. E. William Colglazier, *Science and Technology Adviser to the U.S. Secretary of State*
- Dr. Geneive Brown Metzger, *Former Consul General of Jamaica in New York*
- Dr. Gizem Donmez, *Member, Turkish American Scientists and Scholars Association*
- Dr. Nicholas Farrell, *President, Wild Geese Network of Irish Scientists*
- Dr. Romain Murenzi, *Executive Director, The World Academy of Science*
- Ambassador Daniel Hernández-Joseph, *Mexico's Consul General in Boston*

Diasporas as Diplomats



Dr. E. William Colglazier, Science and Technology Adviser to the U.S. Secretary of State, reviewed the tremendous scientific and economic benefits received from the many foreign-born scientists and engineers hard at work within the United States. NODES could help unleash the great potential of such science networks for the United States and countries of origin for diaspora communities, by driving economic growth and innovation in many countries; building scientific capacity around the world; fostering international cooperation to solve global problems; and empowering diasporans as scientific and cultural “ambassadors” that connect nations. Science diaspora impacts deserve to be understood, measured and multiplied to the benefit of diplomacy and development.

A Caribbean Model



Dr. Geneive Brown Metzger, Former Consul General of Jamaica in New York, described ongoing efforts to link scientists and engineers of Jamaican heritage to Jamaican individuals and institutions to drive investment, deepen engagement and foster academic collaborations between Jamaica and the United States. She challenged the notion of

“brain drain” in a transnational world and instead focused on how different innovations such as cellular technology, social media, and crowd-sourcing philanthropy could be used by science diasporas to help repatriate vital skills and knowledge to their country of origin. Dr. Brown Metzger described how the Jamaican diaspora links United States and Jamaican science and technology (S&T) communities to develop incubators for new technology entrepreneurs and she heralded science diaspora networks as an effective way to build science capacity and connectivity in the Caribbean Basin. She suggested that relevant analysis on facilitating diaspora financial flows, in particular, the World Bank Institute analysis of Diaspora Bonds would be useful to the NODES effort.

Turkey’s Science Diaspora Experience



Dr. Gizem Donmez, a member of the [Turkish American Scientists and Scholars Association \(TASSA\)](#), and a neuroscientist on the faculty of Tufts University School of Medicine, showcased the TASSA model as a vibrant scientific bridge between Turkey and the United States since its founding in 2004. TASSA’s mission is to promote educational, scientific, technological cooperation between Turkey and the United States through scientific exchange, educational programs and increased networking. It has a well-defined structure comprised of technical groups organized by scientific discipline and more than 3000 members. TASSA publishes a bi-monthly newsletter, sponsors workshops, and holds annual meetings in the United States, which are attended by leaders of Turkish universities. Funding comes from the main Turkish science funding agency, Scientific and Technological Research Council of Turkey (TÜBİTAK). In addition to building academic science linkages, TASSA facilitates linkages among U.S. and Turkish S&T professionals for its members, among them medical personnel, industrial engineers, environmental professionals, and entrepreneurs. Dr. Donmez attested to TASSA’s positive impacts on her career, raising her visibility by providing networking opportunities across U.S. and Turkish universities; increasing access to TÜBİTAK funding for international research collaborations and providing mentoring from TASSA members knowledgeable about U.S. universities and science funding thereby helping her attract more graduate school applications from very strong Turkish candidates.

A New Network of Irish Scientists



Dr. Nicholas Farrell, President of the [Wild Geese Network of Irish Scientists \(WIGNIS\)](#), and Professor of Chemistry at Virginia Commonwealth University, described the experiences of this two-year old Irish science diaspora group. With a goal of enabling connection, communication and collaboration of the Irish scientific, technological and engineering diaspora, WGNIS also links academic research with the economic enterprise. Because its 600 members are about evenly distributed across academia and industry, and spread across all career stages, he indicated that WGNIS is optimistic that it can contribute to the knowledge-based development of the Irish and U.S. economies. WIGNIS is currently assembling the first worldwide census of Irish scientific expertise. Its members have begun to be included in high-level meetings to foster international

research collaboration; consulted by the press on Irish-U.S. science issues, and increasingly used to advertise S&T related employment opportunities in the two countries. Dr. Farrell concluded by pointing to factors that have facilitated WGNIS growth, namely support from the Irish Embassy and government agencies and social media platforms. He also mentioned those that continue to challenge the organization such as priority setting and the need for financial and personnel resources to ease the burden on its highly committed volunteer network.

Science Academies in Diaspora Networks



Dr. Romain Murenzi, Executive Director of [The World Academy of Sciences \(TWAS\)](#), described how the formation of strong science networks could be bolstered by TWAS as it promotes excellence in research, strengthens South-South and South-North collaboration, addresses needs of young scientists, and disseminates scientific information. He provided examples of three TWAS Academy Fellows who as diasporans were having significant impact in the United States and in their countries/regions of origin. Dr. Ahmed Zewail, Egyptian-born Nobel Prize Winner from the California

Institution of Technology, has been the driving force behind Zewail City of Science and Technology near Cairo. Dr. Calestous Juma, a Kenyan-born professor at Harvard University, started the African Centre for Technology Studies in Nairobi and is the Director of Gates Foundation Agricultural Innovation in Africa Project. Indian-born Dr. Subra Suresh, former Director of the National Science Foundation, helped to start the [Global Research Council](#), which brings together dozens of science funding agencies (including India's) to set common standards for research funding excellence. Dr. Murenzi also described how the TWAS Visiting Scientists program was enabling diasporans to return to their countries of origin to teach and mentor young scientists and engineers.

Mexico's Science Diaspora



Ambassador Daniel Hernández-Joseph, Mexico's Consul General in Boston, described new developments in Mexico's U.S. diaspora efforts. For many years Mexico had worked to provide services for the many Mexicans in the U.S. who did not have high school diplomas. With the recent sharp increase in the number of Mexican migrants in the United States with baccalaureate and graduate degrees, Mexico is now using this highly educated diaspora to strengthen business, scientific, and technological linkages to enhance its knowledge-based economy. Eight independent NGO-based

Mexican science diaspora networks operate across the U.S. with support from the National Council of Science and Technology (CONACYT). These groups have been successful, for example in catalyzing business accelerators and developing mentoring networks, and Hernandez envisioned the consolidation of partnerships between U.S. and Mexican institutions, addition of new strategic areas of knowledge to the relationship, sharing successes and lessons learned, and harnessing new technological tools to broaden Mexico's science diaspora network within the United States and beyond.

Breakout Sessions:

The NODES Breakout Session on Institutional Partnerships explored how partnerships with scientific professional societies, embassies, universities, academies of science, and science-related non-government organizations (NGOs) can help strengthen science diasporas. Such partnerships can be mutually beneficial because science diasporas, as variable as they are, usually share many objectives (e.g., excellence in international scientific research, education, collaboration) with these well-organized and often well-supported institutions which can in turn help to identify, concentrate, and connect diaspora members. The institutions benefit because they can tap into science diaspora networks to bolster their international reach/impact.

- Scientific societies often seek to increase international membership and can have international chapters and/or can collaborate with foreign societies, including regional societies, for joint meetings and faculty/student exchange programs that could complement science diaspora efforts. (Contributions from the [American Chemical Society](#), the [American Institute of Physics](#), and the [American Society of Civil Engineers](#).)
- Embassies and consular offices can work in many ways to link diasporas, e.g., via electronic newsletters and via diaspora databases used to link STI ecosystems, network, mentor, and organize meetings attended by country-of-origin governments, academia and business. (Contributions from the [Embassy of Austria](#) and the [Embassy of France](#) in Washington, DC.)
- Academies of science, as agents of civil society, can strengthen S&T development, science-based policy, and international cooperation, especially when academies allow diasporans to be members. (Contributions from [The World Academy of Sciences](#).)
- Science-related NGOs can serve as powerful catalysts for international collaboration and capacity building, can convene scientific groups, and can strengthen networks and platforms for STI collaboration with academic and private sector partners across the world. (Contributions from [AAAS](#) and [CRDF Global](#).)
- Universities, as hubs of real and virtual international connectivity, can serve as loci for science diaspora activities by taking advantage of international student diaspora groups, large numbers of foreign-born faculty, and foreign alumni who can serve as bridges for collaboration, recruitment, mentoring, and entrepreneurship.

The NODES Breakout Session on Funding had a panel of representatives from the World Bank, the U.S. Department of State's Global Partnership Initiative, United States Agency of International Development (USAID), Seeding Labs, and the Indo-US Science and Technology Forum. This multi-sector panel provided information on their organizations and programs that facilitate international scientific engagement that can be utilized by a wide-range of Diaspora communities. In particular, the State Department's Global Partnership Initiative highlighted its [International diaspora Engagement Alliance \(IdEA\)](#) multi-stakeholder partnership program, while USAID discussed their [Development Innovation Ventures \(DIV\)](#), [Partnerships for Enhanced Engagement in](#)

[Research \(PEER\)](#), [Higher Education Solutions Network \(HESN\)](#) and [Grand Challenges for Development](#) programs. Other than these specific programs, several key lessons or best practices were shared during the session:

- The World Bank has positioned itself to be more than a lending agency, but a knowledge institution that can deliver and exchange knowledge in an effective and economical way through its online platform. Diaspora bonds may be a means for the World Bank and partners to engage with the diaspora.
- Engagement and partnership with the private sector was identified by panelists in all sectors as critical for the success of development ventures.
- Partnerships need to be co-designed, co-funded and co-managed to have the necessary buy-in and equity from key parties.
- Resources that already exist should be leveraged to capitalize on already-established initiatives and the experience of other individuals.
- Scientific diasporas can reach beyond ethnic or country boundaries. Engagement with the entire scientific community, instead of an ethnically-defined subset, will expand options for funding sources for diaspora-related initiatives.
- Virtual or in-person connections can be utilized to connect people to their countries of origin and the existing wealth of knowledge. There are challenges in securing funding, but success is possible with an entrepreneurial mindset and a concerted effort to create mutually beneficial partnerships between key stakeholders.

The NODES Session on Women in Science, Technology, Engineering and Math



Participants in the Women in STEM Diaspora Networks Break-out Group

(STEM) Diaspora Networks assembled representatives from government agencies, academia, and nonprofit organizations to discuss challenges and opportunities for engaging women in STEM diaspora networks and provide concrete follow-on recommendations. Discussion themes focused on the characteristics of women in STEM diaspora networks and strategies for promoting their engagement. Panelists also discussed best practices and models for establishing mentorships, social and professional networks, and sustainability of such networks.

- Women constitute approximately one-third of the foreign students earning science and engineering doctoral degrees, but are underrepresented in fields such as Computer Science and Engineering with the most international collaborations.
- Although more women are studying science in developing countries, many do not participate in the scientific workforce or the diaspora due to lack of investment or interest by host countries and cultural stereotypes about women scientists.
- Women science diaspora networks could be key engines for entrepreneurship and start-ups and by increasing private sector diversity in host and origin countries, could uncover new markets and opportunities for growth.
- A key way to advance women in STEM is by both increasing their participation and by focusing on gender-related issues in discussions of science diasporas. For example, social media have become powerful tools for science diasporas. Knowledge of how women use social media to connect and to drive their

networks could have great value. Women science diaspora networks can further increase their impact via mentorships and trainings in research, education, leadership, and entrepreneurship.

- International science funding and training programs such as the [USAID-NSF Partnerships for Enhanced Engagement in Research \(PEER\) program](#) should be gender-inclusive and gender-friendly to strengthen women in science diaspora networks.

The NODES Breakout Session on IT Platforms for Diaspora Engagement had a



Participants in the IT Platforms for Diaspora Engagement Break-out Group

panel of representatives from the [German Research Foundation](#), the [University of Pretoria](#), the South African [National Research Foundation](#), and [MIT](#). Each outlined their use of IT platforms and summarized their experiences with these technologies. The panel discussed a range of technology platforms for network development and knowledge management, including social networking, dissemination, and database tools. They noted when and why platforms succeeded or failed to enable science diaspora networks. Highlights of the ensuing discussion included:

- Most diasporas struggle with an effective platform for networking and strive to ensure that the network is an active online community.
- Many diaspora communities organize around focused topics, such as education or the science and engineering (S&E) workforce. [MIT Blossoms](#) has built educational communities in the United States, Jordan, Pakistan, Lebanon, Saudi Arabia, and Malaysia with an online database that shares video lessons. The [National Postdoctoral Association](#) and [National Society of Black Physicists](#) nurture select communities within the S&E workforce through bespoke web and social networking portals.
- IT platform infrastructure and/or funding are critical to effectively grow the diaspora. Resources are needed for the platform itself, the people managing it, its maintenance, and information storage/dissemination information. Both the [South African Network of Skills Abroad](#) and [German Academic International Network](#) confirmed that the challenging task of creating and maintaining a database of nationals abroad, is essential for diaspora engagement.
- Diaspora IT platforms need to match its objectives. A diaspora focus on developing basic science capacity in a small country might require different technological needs than would dissemination of information to and from a large, well-developed STI community.

These insights highlight the value of a focused effort to engage and support science diaspora communities. Following the meeting, participants proposed a technology pilot. Existing science diaspora communities, such as the [Wild Geese Network of Irish Scientists](#) and [Turkish American Scientists & Scholars Association](#), could test a purpose-built platform that would facilitate networking, communication, collaboration and sharing, coordination, while being responsive to mobility, security, and community

management. The platform could provide data on what works to mobilize, organize, and network different diaspora communities.

Networking

(photos by Franklin Carrero-Martinez)



H.E. Ambassador Michael Collins chats with panelist Genevieve Brown Metzger



Ambassador Daniel Hernández-Joseph networking after the panel discussion.



Robert-Jan Smits (EU Innovation and Research), chats with Magdalena Navarro (White House Office of Science and Technology Policy, OSTP) and Mark Ferguson (Science Foundation Ireland)



Panelists Murenzi and Donmez chat at the event.



Participants, including the next generation of the diaspora, networking at the Forum.



Norm Neuriter (AAAS, and former Science and Technology Adviser to the Secretary of State) networking at the reception.