

Deputy Assistant Secretary Jonathan Margolis
Key Messages on Science Diplomacy at Federal R&D Agency Workshop
State University System of Florida
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- Introduce self – thank for this opportunity.
- Science and technology (S&T) is international. S&T capabilities exist in many countries. A central goal of the Trump Administration is to maintain U.S. leadership in S&T. S&T underpins our national security and economic prosperity.
- That is why the National Security Strategy calls for the United States to “maintain our competitive advantage... prioritize[ing] emerging technologies critical to economic growth and security,” and “to retain U.S. advantages over our competitors... to understand worldwide S&T trends and how they are likely to influence or undermine American strategies and programs.”
- It also underscores why the State Department is committed to Science Diplomacy. A major element of science diplomacy is using diplomacy to achieve our science goals. Again, the National Security Strategy says, “Diplomacy catalyzes the political, economic, and societal connections that create America’s enduring alignments and that build positive networks of relationships with partners.”
- In fact, the 2018-2022 State Department-USAID Joint Strategic Plan calls for the United States to “increase the number of partners engaged with the U.S. to promote and expand cooperation in science, technology and innovation to boost American prosperity.”
- International S&T cooperation provides American scientists the opportunity to collaborate with the best scientists around the world and be members of the most dynamic teams. It also ensures that they will have access to best facilities and locations, so scientists can work where their research leads them.
- We know that our science agencies value international cooperation for that reason.
 - The National Institutes of Health (NIH) supports more than 8,000 active grants to American investigators collaborating with more than 140 countries around the world.
 - The Department of Energy hosts tens of thousands of individuals from researchers around the world—more than 15,000 from the European Union, alone, in 2017.
 - Approximately 10 percent of the National Science Foundation’s grants—about 3,000 active projects—may be linked to some form of international collaboration.
- To support this work, the Department of State has established S&T relationships with close to 60 countries. These relationships often have a formal S&T cooperation agreement through which we bring together all the US departments and agencies that have international S&T

equities. We identify priority areas for research, common goals, and challenges that may emerge. The agreements also provide a coordination mechanism with our foreign counterparts so that when issues come up we have a way to resolve them. Also, the agreements contain provisions to protect U.S. researchers' intellectual property.

- We also negotiate agreements to facilitate multi-country science efforts. Such agreements articulate roles, responsibilities and procedures for complex, large-scale scientific undertakings. For example,
 - Last year, the U.S. government broke ground on the Long Baseline Neutrino Facility/Deep Underground Neutrino Experiment, supported by agreements facilitated and negotiated by the United States with countries and major international organizations including India, Italy, the United Kingdom, and CERN. We continue to support the Department of Energy's efforts to develop the project, which will be the first truly international research infrastructure on U.S. soil, based in Lead, South Dakota and at Fermilab in Illinois.
 - The Administration has also prioritized large-scale international projects, including upgrades to the Large Hadron Collider (LHC) as part of its budget request. Over the past 18 months, the Department of Energy has signed project annexes that facilitate hundreds of millions of dollars in in-kind support for the LHC's high luminosity upgrade and India's new neutrino detector facilities.
 - Less than a week and a half ago, the President signed into law legislation supporting contributions to the ITER fusion facility of \$132 million—up from \$122 million the previous year.
- Whether it is quantum information, artificial intelligence, virus sample sharing, science on the space station or arctic science, the State Department is integral to advancing our science diplomacy objectives.

Science for Diplomacy

- In addition to using U.S. diplomacy to advance science, we also believe science can help advance our diplomatic objectives.
- When we work with other countries on science, we build partnerships and strengthen bilateral ties through cooperation that yields joint benefits. Our work on science can help maintain relationships when other issues may be more challenging. Science collaborations can also pave the way for discussions on other matters that we want to advance.
 - It was not too long ago (20+ years) that our relationship with Vietnam was virtually non-existent. Within five years of normalization, we signed an S&T Agreement together in 2000. Now over 17,000 Vietnamese students study in and contribute to America's economy—a large number of them in STEM fields. We have been sharing American business principles and connecting markets through innovation and

entrepreneurship trainings. We have been opening agricultural markets, sharing data about disease outbreaks, and building capacities vital to global health security. Our science efforts also advance core U.S. values. The processes that define the scientific community – such as merit review, critical thinking, diversity of thought, and transparency – are fundamental values that underscore principles of good governance.

- With India, we have worked to ensure that our S&T engagement with our government counterparts enables the creation of economic opportunities for both American and Indian citizens. Through mechanisms like the U.S.-India Science and Technology Endowment Fund, or USISTEF, we are able to bring together researchers from the U.S. and India to support commercialization of empowering and sometimes life-saving technologies such as portable and affordable MRI machines, modular and low roofing made out recycled materials, ultra-high performance and low cost prosthetics. The aim is to make them accessible and affordable in the American and Indian markets to the point of broad social impact. As the products come into the U.S. and Indian market and as more people become aware of the grant opportunity, there is recognition of from both the government and public that this collaboration is a result of the U.S. government commitment to the broader bilateral relationship.
- When we advance those scientific processes internationally we are advancing U.S. values and U.S. diplomacy.
- The State Department, through our educational and cultural affairs bureau, supports numerous opportunities for advanced study around the world and in the United States.
 - More than 360,000 Fulbrighters from the United States and other countries have participated in the Program since its inception in 1946. Each year, faculty and practitioners at all career stages have access to more than 150 awards in science, technology, engineering, and mathematics fields.
 - Each year nearly 5,000 International Visitors come to the U.S. on the International Visitor Leadership Program (IVLP). Last year, this included a visit of 50 women from 48 countries under the Hidden No More program, which received broad media attention.
 - Hidden No More participants traveled to the United States for three weeks to collaborate with U.S. counterparts and develop strategies to strengthen the participation of women and girls in STEM. It was so successful that we are working to repeat the program later this year.
- The State Department has also appointed Science Envoys from leaders in academia, Nobel prizewinners, distinguished authors and government advisors. Their areas of expertise include chemistry, physics, agronomy, medicine, and engineering and evolutionary biology.
 - Since 2010, 23 Science Envoys have visited 47 countries across all six continents, and have engaged with dozens of government officials, including Heads of State. They have delivered presentations at more than two dozen universities to hundreds of

students and faculty. Their travel consistently garners positive media coverage overseas including national TV broadcasts and front-page news articles.

- This summer we also announced the appointment of five new science envoys, including a former NASA Administrator and some of our premiere experts covering space, innovation, health, and air quality.
- Another program, the Embassy Science Fellows, send U.S. government scientists to our embassies for up to three months to work with host governments on joint S&T priorities. Our Posts identify key issues of interest in their countries, and then the State Department works with the U.S. agencies to identify the scientific staff to deploy. To date, we have dispatched over 500 U.S. government scientists and engineers as Embassy Science Fellows to work on shared S&T projects around the world. In 2017, the 15th year of the program, 55 Fellows traveled to 41 posts contributing to science policy development and to long-term collaboration with host governments and non-governmental bodies.

How we approach cooperation with countries that do not share our values

- One of the reasons that American science and innovation can advance our diplomacy is because we lead by example. Our S&T enterprise values a “bottom up” approach to R&D. We follow meritocratic principles that mean the best ideas move forward, and open science that ensures that new ideas move into the marketplace as quickly as possible.
- However, with the rise of new actors in the international science arena, we have seen that not all countries share these principles. In fact, the American research enterprise, which to be successful, must be open, transparent, and trustworthy, can face threats because it is so open.
- One of our goals is to maintain the U.S. as the destination for scientific talent. We welcome the foreign students and experts who bring valuable skills and knowledge to our educational institutions and workplaces.
- We know that some in the science community have raised concerns about the attractiveness of the United States. For example, the American Institute of Physics has reported a significant drop in the number of international graduate students applying to U.S. physics programs.
- We are watching this closely. According to the Council of Graduate Schools, first time enrollment of international graduate students in the U.S. accounted for 24% of all enrollments in 2017, a 1% decline against the previous year.
- The data from certain countries show that from 2016 to 2017, applications from Japan, Canada, and China fell by 11 percent, 9 percent and 1 percent respectively. However, applications from Europe increased 18 percent from the same period. These declines are consistent with the last years of the Obama administration, with the exception of the surge in applications from Europe.

- We use a variety of tools, including the visa system, to ensure that we are not letting individuals into the country for purposes that are inconsistent with our values.
- Every visa decision is a national security decision. And one core objective is to ensure that applicants do not pose a risk to U.S. interests. We are constantly working to find ways to improve our screening processes and to support legitimate travel and immigration to the United States, while protecting U.S. citizens and national interests
- We work closely with the Department of Homeland Security and other partner agencies to shape visa policy, which through a layered border and visa security vetting system, aims to identify applicants who are ineligible for visas under the Immigration and Nationality Act and other related laws.
- Our scientific and innovation ecosystems thrive because of talent from other countries. You probably all know well the statistic from the tech start-up community that over 40% of founding teams have at least one immigrant or first generation American.
- The Department continues to engage all stakeholders to ensure an effective approach to visa security, based on an increasing knowledge of threats and our ability to identify and interdict those threats, while supporting lawful travel and immigration to the United States, including the best and brightest from abroad.
- There are other challenges to our system. In late August, Dr. Francis Collins, the Director of the National Institutes of Health (NIH) produced a letter identifying concerns specific to his agency. Among the concerns raised were:
 - Theft, misappropriation and forced transfer of intellectual property by some entities, including countries.
 - Behaviors that may undermine the peer review process through the inappropriate release of use of information.
 - Situations where incomplete disclosures on grant applications may have led to foreign influence and undue access to the results of taxpayer-funded research.
- NIH went so far as to encourage universities seeking funds to reach out to an FBI field office to schedule a briefing on the matters identified.
- We think it is important to discuss these issues. We want to and must maintain our scientific enterprise and its core principles of openness, meritocracy and transparency. Simultaneously, we need to be aware of the challenges so that we can forge ways to address them.
- I am hopeful that through continued discussions and partnership we can achieve our common goal of maintaining U.S. scientific preeminence.