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A New Era of Forging Connections and Trust with North Korea’s Scientists

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For nearly a quarter of a century, North Korea has whipsawed between provocations and negotiations over the fate of its nuclear program. As a result of the long standoff, the impoverished nation has faced escalating sanctions and continued isolation from the global community. Diplomatic efforts have had mixed results, with the latest multilateral iteration, known as the Six Party Talks, unraveling in early 2009.¹ Since then, North Korea has rapidly built up its nuclear arsenal and developed a long-range ballistic missile capacity, raising tensions and instability in the region and with the United States.

Kindling hopes for a peaceful outcome, diplomatic engagement with North Korea developed at a dizzying pace in 2018. Summits between North Korean leader Kim Jong Un and his counterparts in China, South Korea, and the United States have held out the prospect of fundamentally new relations between North Korea and the rest of the world. At the heart of this diplomacy is Kim’s pledge that his nation will do its part to denuclearize the Korean Peninsula.

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Goodwill gestures—down payments on what could become a grand bargain—have included the suspension of U.S.–South Korea military exercises and North Korea's dismantlement of a rocket launch facility as well as its return of remains of U.S. soldiers lost during the Korean War. Many analysts expect that major milestones on the path to denuclearization will occur in concert with measures to normalize relations—particularly between the United States and North Korea—including a long-sought aspiration of formally ending the Korean War and, eventually, the phasing out of international sanctions on North Korea's economy.

As these extraordinary events unfold, and as North Korea and major powers probe each other's sincerity toward solving the decades-long crisis on the peninsula, a steadfast band of professionals continues to build bridges with North Korea's scientific community. Although the political winds could shift at any moment, the possibilities for strengthening science engagement with North Korea are greater than they have been in years. But significant hurdles remain, preeminently sanctions that constrain most interactions with North Korea's scientific community.

Summary of Past *S&D* Articles

Several pieces in *Science & Diplomacy* over the years have shone a spotlight on science engagement with North Korea. These articles have explored the relationship between a U.S. university and its North Korean counterpart, and a U.S. consortium that overcame hurdles to build a productive collaboration with North Korea's State Academy of Sciences.² Other articles have looked at science cooperation in the areas of biodiversity protection and volcanology.³

In examining these articles and other accounts of science engagement with North Korea, including the establishment a decade ago of the Pyongyang University of Science and Technology by Korean Americans working with North Korean counterparts, common themes emerge. One is the important role that nongovernmental sectors play, especially in surmounting political barriers, but another is the need to have some link to official diplomatic channels. North Korea's mission to the United Nations has been pivotal in advancing efforts involving U.S. citizens, just as North Korea's embassy in London and the UK embassy in Pyongyang have facilitated academic exchanges involving UK citizens.

For NGOs and academic institutions, high-level support from the leadership of organizations is needed to sustain efforts, especially in light of the complexity and challenges in navigating legal issues and finding funding independent of the government. Like many examples of successful science diplomacy, the continuity of partners, both individual and institutional, helps produce long-term success, as does the clear need for mutual scientific benefits from the engagement. Finally, the

examples demonstrate the importance of understanding that different and distinct political systems can result in mismatched science priorities and a corresponding potential for mistrust. Thus, trust-building and open lines of communication are crucial.

On the Paektu Project

One well-established effort in science engagement with North Korea is conducted by the Mt. Paektu Geoscientific Group (MPGG).⁴ Mount Paektu is a volcano on the China–North Korea border that in 946 AD unleashed the “Millennium Eruption,” one of the biggest eruptions in recorded history.⁵ The project aims to understand the frequency and style of past eruptions and why a volcano of Mount Paektu’s potential for cataclysmic devastation exists hundreds of kilometers west of the Ring of Fire, the Pacific Ocean–girdling seam between tectonic plates that drives much of the region’s volcanism.

The collaboration, organized in part by AAAS (publisher of *Science & Diplomacy*), began in September 2011, when the project’s founding members visited Mount Paektu to explore the potential for cooperation. That initial visit paved the way for the project’s first phase, from 2013 to 2015, entailing the deployment of an array of broadband seismometers and the collection of geological samples dating to the Millennium Eruption.

One critical element of the project’s success has been the inclusion of North Korean scientists as equal partners. They have participated fully in both fieldwork and data analysis, the latter facilitated by a monthlong stay in the United Kingdom by four North Korean collaborators. The project’s first phase yielded several peer-reviewed publications, including new insights into Mount Paektu’s magma chamber and gas emissions of the Millennium Eruption. North Korean scientists coauthored the papers.⁶

Building mutual trust occurs both in the field and at the institutional level. Clearing the way for the joint research was an August 2013 memorandum of understanding signed by major nongovernmental parties involved in the collaboration. Planning for further activities in the MPGG collaboration continues.

Examination of Mechanisms of Engagement

The Mount Paektu project demonstrates the merit of a bottom-up approach to building science collaboration with North Korea. Similar efforts should be encouraged and supported both for their scientific value and for helping foster a shared understanding of how to cooperate. At the same time, consideration

should be given to broader mechanisms that can provide a framework for science cooperation across multiple disciplines and involving multiple organizations.

To the extent that future science engagement with North Korea is conducted on a bilateral basis, implementation can be facilitated through an intergovernmental science and technology agreement. Such agreements are particularly useful in situations where there is little experience in cooperation. An agreement that provides a common understanding on basic implementation issues—e.g., topics for collaboration, funding, travel approvals, access to research sites, allocation of intellectual property, visas—could provide clarity for scientists involved and accelerate the pace of collaboration.

Forthcoming science engagement with North Korea will presumably include both regional and international partners. Coordination among countries will be needed to avoid duplication of effort and system overload. One mechanism to consider is a center—either newly created or assigned to an existing organization—to serve as the focal point for coordinating, funding, and managing science engagement projects with North Korea. Models for this are the International Science and Technology Center and the Science and Technology Center of Ukraine, which were created to manage similar programs with the countries of the former Soviet Union.⁷ Such a center should be based in Pyongyang, although initially it may need to be established elsewhere in the region until opening an office in North Korea becomes feasible. This should be an international effort that involves multiple partners, both inside and outside government.

Current Opportunities

As the remarkably sustained high-level diplomacy with North Korea unfolds, the Korean Peninsula may well be on the cusp of momentous change, including in its potential science cooperation with international partners. An expanded portfolio of science engagement with North Korea, in areas of mutual benefit, could help build trust and consolidate diplomatic gains. Promising early targets for stepped-up cooperation are projects in areas such as public health and the environment, which Kim Jong Un and South Korea President Moon Jae-In affirmed as priority areas for cooperation during their September 2018 summit in Pyongyang.⁸

North Korea faces grave health challenges. According to the United Nations, some 10.5 million nationals—42 percent of the population—are undernourished. The result has been what some experts call North Korea's "biggest national tragedy": widespread stunting.⁹ Malnourishment has also abetted the spread of infectious diseases, including hepatitis B and tuberculosis. North Korea has one of the highest TB rates outside sub-Saharan Africa, with a prevalence estimated at

640 cases per 100,000 people, and a substantial burden of strains that are resistant to frontline drugs.

International organizations have worked with North Korea to tackle the TB scourge, including through the provision of drugs and the establishment several years ago of a reference laboratory in Pyongyang for identifying strains in circulation and thereby tailoring treatment regimens. However, international sanctions have inflicted collateral damage by crippling the reference laboratory, and in June 2018 The Global Fund, which had provided tens of millions of dollars for the purchase of drugs for TB patients in North Korea, ended its support for the country.¹⁰ The situation remains precarious and could spill over North Korea's borders. Beyond the acute humanitarian need for TB drugs, high priorities for science engagement include bolstering the reference laboratory's scientific capacity and heightened epidemiological surveillance of TB, hepatitis B, and other infectious diseases.

Another fertile area for science engagement is climate change resilience. Environmental degradation has deepened North Korea's vulnerability to climate change, as exemplified by disastrous flooding in 2016. Ecological restoration and ecosystems management are urgent tasks to enhance resilience. Kim Jong Un has proclaimed the need for both afforestation and forestry research; the two Koreas, in working-level talks in July 2018, agreed to wide-ranging forestry cooperation, including scientific exchanges. Scientifically guided efforts that not only restore trees but also bolster the health of forest ecosystems and watersheds will be a crucial measure for stabilizing the landscape. Other topics in the environmental sphere that are ripe for exploration include biodiversity, marine protected areas, and disaster risk and recovery.

Should substantial progress be made toward denuclearizing the Korean Peninsula, it will be vital to involve North Korean scientists engaged in the nation's defense programs. A dialogue on nuclear safety and security involving U.S. and North Korean experts is one potential starting point. There are several examples of such scientist-facilitated dialogues with other countries, including through the Committee on International Security and Arms Control at the U.S. National Academy of Sciences, Engineering and Medicine and its counterparts. And eventually, as mentioned earlier, it could be highly desirable to establish a center in Pyongyang to facilitate the involvement of North Korean scientists of all stripes in international collaborations.

As diplomacy with North Korea proceeds, science cooperation should be seen not as an optional activity, but as a necessary facet of evolving relations and an element that all sides should consider as engagement priorities are discussed.

Integrating North Korea's scientists into the global community holds the promise of enormous mutual benefits— and should be vigorously pursued.

Endnotes

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