Public-health engagement with North Korea in the COVID-19 era: challenges and opportunities

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## Abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFSC</td>
<td>American Friends Service Committee</td>
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<tr>
<td>AML</td>
<td>Anti-Money Laundering</td>
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<td>BIS</td>
<td>U.S. Bureau of Industry and Security</td>
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<td>CTF</td>
<td>Counter-Terrorism Financing</td>
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<td>DPRK</td>
<td>Democratic People’s Republic of Korea</td>
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<td>DRR</td>
<td>Disaster Risk Reduction</td>
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<td>EBF</td>
<td>Eugene Bell Foundation</td>
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<td>FAO</td>
<td>UN Food and Agriculture Organization</td>
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<td>FinCEN</td>
<td>Financial Crimes Enforcement Network</td>
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<td>FTB</td>
<td>Foreign Trade Bank (North Korea)</td>
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<td>GFATM</td>
<td>Global Fund for AIDS, Tuberculosis, and Malaria</td>
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<td>KWP</td>
<td>Korean Workers’ Party (North Korea)</td>
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<td>MDR TB</td>
<td>multidrug-resistant tuberculosis</td>
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<td>MICS</td>
<td>Multiple Indicator Cluster Survey</td>
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<td>MSF</td>
<td>Médecins Sans Frontières / Doctors Without Borders</td>
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<td>NCD</td>
<td>non-communicable diseases</td>
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<td>NGO</td>
<td>non-governmental organizations</td>
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<tr>
<td>OFAC</td>
<td>U.S. Office of Foreign Asset Control</td>
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<td>PDS</td>
<td>Public Distribution System (North Korea)</td>
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<td>TB</td>
<td>Tuberculosis</td>
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<td>UNICEF</td>
<td>UN Children’s Fund</td>
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<td>UNSCR</td>
<td>UN Security Council Resolution</td>
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<td>WASH</td>
<td>water, sanitation, and hygiene</td>
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<td>WFP</td>
<td>World Food Programme</td>
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<td>WHO</td>
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Executive summary

The effective closure of North Korea’s borders to travel and commerce since early 2020 in response to the COVID-19 pandemic makes it almost impossible for North Koreans to interact and exchange perspectives with the outside world. This situation is contrary to the interests of North Koreans and the international community alike. A new program of humanitarian aid will be needed to permit a safe reopening, and potentially also to address the human consequences of the protracted closure.

Aid should not be made conditional upon other policy goals, such as nuclear and missile nonproliferation. Implicit linkages between these issues during the 1990s and 2000s increased Pyongyang’s suspicions about the purposes of aid without providing sufficient leverage to compel disarmament.

Reopening the country will require a judgment by the North Korean leadership that it is safe to do so. First, Pyongyang must be confident that a vaccination campaign against COVID-19 would do more to prevent the spread of illness than to enable it. Toward this end, aid organizations should be prepared to demonstrate to North Korean officials how seriously they take the COVID-19 threat.

The present closure is the third time since 2002 that North Korea has closed its borders in response to an epidemic threat. This approach reflects awareness of the vulnerability of the public in the aftermath of the crisis of the 1990s and the weakness of the country’s health system, which has facilities and trained personnel, but is persistently lacking in medicines and equipment. The replenishment of these goods will be needed to avoid future closures.

To facilitate these efforts, policymakers should find ways to streamline the humanitarian exemptions processes included in sanctions regimes and create a stable banking mechanism to support the activities of aid organizations working inside the country.
Introduction

Since the end of the Cold War, humanitarian aid to North Korea has implicitly been linked to nonproliferation goals. The United States supplied large-scale energy assistance to Pyongyang as a feature of the 1994 Agreed Framework. At different times during the decade-long “Sunshine Policy” period that began in 1998, South Korea, Japan, and the United States all provided food aid to North Korea, largely through donations to the UN World Food Programme (WFP). Despite the humanitarian motives that may have been at the root of these policies, they did not survive crises in Pyongyang’s relationships with the respective aid providers. For the United States in particular, this meant the collapse in 2008 of the Six-Party Talks that dealt with North Korea’s nuclear program. The abortive “Leap Day Deal” of 2012 also involved the offer of a food-aid package, which was withdrawn as soon as North Korea announced its decision to conduct a space launch.1 The Trump’s Administration’s offers to make a “denuclearized” North Korea prosper—perhaps through development aid or by subsidizing private investment—might be understood in a similar spirit.2

After the failure of Trump’s summit meeting with Kim Jong Un in Hanoi in February 2019, hopes for a renewal of disarmament talks have gone dormant. In the United States, humanitarian aid is the one relatively uncontroversial avenue for engagement with North Korea remaining.3 North Korea’s extreme self-isolation in response to the COVID-19 pandemic specifically suggests a new opportunity for outreach: public-health engagement, most of all through a vaccination campaign.4

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Beyond its inherent merits, vaccinating North Koreans against COVID-19 might be seen as a new opportunity for outreach, reopening channels of communication and building trust gradually. Even from a strict nonproliferation perspective, allowing Pyongyang to gain enough confidence in its public-health situation to relax its national quarantine would allow economic development to become salient again. At this point, North Korea's leadership might show renewed interest in bargaining for the relaxation of nonproliferation sanctions.

Here, the implicit linkage of other forms of humanitarian aid to progress on “denuclearization” should stand as a warning. Aid has not proven to be effective as a form of leverage—or at least not effective toward a goal as ambitious as nuclear disarmament. Its past instrumentalization toward that end has tended to discredit it in Pyongyang's eyes. A reminder of this point was offered in an essay by a "senior researcher" published this July at the website of North Korea's Foreign Ministry, calling U.S. “humanitarian assistance” a “sinister political scheme.”

Other problems include a North Korean response to COVID-19 so stringent that until recently, the country has been unwilling to accept medical supplies from the World Health Organization (WHO) for fear of contamination; Pyongyang’s unexplained reticence about accepting COVID-19 vaccines; a national health system notorious for its lack of medicines and adequate equipment; and the unintended difficulties that sanctions and travel restrictions have created for humanitarian work in the country.

There are reasons for encouragement as well. These include the existence of a national network of health facilities with trained personnel, despite a lack of adequate supplies; and a record of success in vaccination campaigns supported by WHO, the UN Children’s Fund (UNICEF), and Gavi.

In this paper, we describe North Korea’s severe approach to managing epidemics, the condition of its health system, and some of the practical problems that sanctions have created for the supply of humanitarian aid. We also offer some modest recommendations in

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response to these difficulties. Public-health engagement may have few immediate benefits for nonproliferation, but nonproliferation policy—in the form of sanctions—should not interfere with the need to vaccinate all the world’s countries against COVID-19, or to protect all the world’s people from future epidemic disease outbreaks.
North Korea’s response to epidemics

The response to COVID-19 and its consequences

North Korea was quick to close its borders in response to the appearance of COVID-19 in China. In January 2020, North Korean media described the disease as an issue of “national survival” and declared that it “should never enter our country.” This declaration has set the tone for North Korean public-health policy for nearly two years.

On January 30, 2020, the news media carried a brief report announcing an “emergency measure” converting the normal “hygienic and anti-epidemic system” into a “state emergency anti-epidemic” system. In February, onerous 30-day quarantines were implemented for all foreign residents and visitors, including diplomats and employees of non-governmental organizations (NGOs).

While reporting no cases of COVID-19 within North Korea, the official news media has covered the official response intensively since about mid-February 2020, signaling the urgency of the authorities’ efforts. Regular updates on COVID-19 infections and deaths in South Korea have appeared alongside detailed reports of the North Korean authorities’ increasingly aggressive public-health activities, especially along the borders and in the capital. In the time since, the North Korean authorities have taken extraordinary measures to seal off the

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country’s borders, sharply restricting trade and nearly eliminating travel.

The severity of this self-imposed blockade has created the impression that some in Pyongyang may even see this protracted emergency as an opportunity to reassert ideological control over the population after decades of increasingly tolerated market activities. Condemnations of market activity in the guise of “anti-socialist and non-socialist practices” began to appear frequently in the official media since around December 2019, even before the start of the pandemic, and continue to appear.11 in October 2021, Kim Jong Un gave a speech calling for the strengthening of ideological purity and “the Party’s guidance” over “administrative and economic work.”12

North Korea’s approach to support from abroad has been exceptionally cautious for most of this period, preventing medical supplies from entering the country until recently,13 and even refusing offers of vaccines to be provided through UNICEF.14 Foreign analysts have suggested multiple reasons for the refusal of vaccine supplies, including national pride, the desire to avoid raising public expectations for an earlier end to the closures, the desire to avoid certain reporting requirements associated with the vaccination program, and even “snobbery” against the specific vaccine types offered so far.15 Another potential explanation, one that would be consistent with North Korea’s overall attitude to COVID-19, is simply that the public-health authorities believe the risks of admitting aid workers and goods into the country would do more to circulate the virus than to combat it.

11 The earliest observed example of this phrase occurred in “2nd-day meeting of 5th Plenum of 7th CC of WPK held,” KCNA, December 29, 2019, https://kcnawatch.org/newstream/1577674818-75655956/2nd-day-meeting-of-5th-plenum-of-7th-cof-wp­k-held/.
Near the outset of the pandemic, there were indications that Pyongyang might be open to accepting large-scale foreign assistance. In March 2020, North Korea extended conciliatory messages to Seoul\(^{16}\) and Washington\(^ {17}\) touching on the subject of epidemic control, although they did not broach the topic of aid, always a sensitive matter for a regime that is preoccupied with not offering signs of weakness. These early hints of interest in high-level engagement do not seem to have been repeated.

Nevertheless, economic problems may eventually compel the leadership to reconsider its approach. The consequences of the self-imposed blockade, compounded by widespread flooding in summer 2020, have lately achieved such severity that Kim Jong Un publicly acknowledged “worsening difficulties” in January 2021.\(^ {18}\) In April, he warned of a new “Arduous March,” alluding to the devastating famine of the 1990s.\(^ {19}\) In June, he stated that “the people’s food situation is now getting tense,” blaming the after-effects of the previous year’s natural disaster.\(^ {20}\)

**North Korea’s perception of epidemics**

The response to COVID-19, although unusual in its duration and sweep, is not unique for post-Cold War North Korea. The quarantining of foreign visitors, diplomatic personnel, and North Koreans returning from abroad began during the SARS epidemic that began in China in late 2002, and went into effect again in late 2014 in response to the outbreak of the Ebola virus in western Africa.\(^ {21}\) The success of these efforts seems to have validated the extreme COVID-19 response. One official media report claimed that the SARS experience led to the

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16 “Briefing by Senior Secretary to the President for Public Communication Yoon Do Han Regarding Personal Letter Sent by Chairman Kim Jong Un,” Cheong Wa Dae, March 5, 2020, https://english1.president.go.kr/BriefingSpeeches/Briefings/491.
establishment of a new cadre of scientists active in biomedical research and public health.\(^{22}\) Nevertheless, the imposition of a strict quarantine policy as North Korea’s default response to epidemics has persisted. A global pattern of more frequent epidemics, apparently the result of increasing habitat disruption\(^{23}\) and air travel,\(^{24}\) suggests that this policy may continue to come into play every few years.

The preference for quarantine seems to reflect an understanding of the hollowness of North Korea’s under-equipped health system, not to mention the underlying vulnerability of its under-nourished public. Epidemics are also implicitly understood as a security threat to the regime itself.

From the outset of Kim Il Sung’s regime, the North Korean government treated the control of epidemics as one of the sources of its legitimacy.\(^{25}\) In 1947, Kim favorably contrasted Pyongyang’s performance in controlling a cholera outbreak with that of the government in Seoul.\(^{26}\) Among his earliest instructions on epidemic control, from May of that year, was to establish quarantine stations at border crossing points to prevent the infiltration of infectious diseases into the country. This decision followed from Kim’s conclusion that the newly liberated Korea lacked a public-health system worthy of the name, and therefore needed to stop epidemics from spreading into the country in the first place.\(^{27}\)

Pyongyang’s present insistence that North Korea is free from cases of COVID-19 appears to reflect a fear that failing to control an epidemic could undermine the authority of the Korean Workers’ Party (KWP) and the North Korean state, creating opportunities for subversion. A hint of this thinking could be seen during the SARS outbreak, when the KWP daily newspaper, *Rodong Sinmun*, accused the underground

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Falun Gong movement of attempting to spread the disease within China in order to discredit Beijing.28

North Korea’s leaders also appear to judge that any domestic uprising, if not quelled quickly, could represent an opportunity for foreign enemies to intervene. Pyongyang sees NATO’s role in Libya in 2011 as an example of such a pincer movement: Tripoli’s relaxation of internal controls allowed the instigation of rebellion from abroad, followed by military intervention against the regime on humanitarian grounds.29 North Korea apparently sees public discussions of the collapse of its own regime as laying the groundwork for such a scenario.30

Pyongyang appears to consider the threat of epidemic-subversion-uprising-intervention to be opportunistic in nature, not engineered, although it may harbor some suspicions. No authoritative statement has blamed the United States or any other government for creating SARS, Ebola, or COVID-19, but the official media did accuse the United States of spreading Ebola in 2014.31

The crisis of the 1990s

On the eve of the SARS epidemic, North Korea was still recovering from economic crisis and famine. The end of aid to North Korea from other Eastern Bloc states in the late 1980s and early 1990s led to the collapse of centralized food distribution and also did serious harm to the national health care system. North Korea has since turned to a variety of donors to address its persistent shortfalls in both areas.

The division of the Korean Peninsula in 1945 cut the North off from the rich agricultural land in South Korea. Only about 20% of the land in the North can be cultivated, leaving little space for agricultural growth. A series of failed steps to deal with food production shortfalls after the end of aid from allies ultimately led to the famine of the 1990s.

Like most other communist states, the Democratic People’s Republic of Korea (DPRK) implemented agricultural collectivization in the 1950s. The government prohibited trade in all grains and all food was

29 Ri Hyon To, “We Must Fight Resolutely against the Tyranny of the Imperialists,” Rodong Sinmun, May 26, 2018.
rationed by the state. Until the 1990s, rations were distributed through the Public Distribution System (PDS) with “workers, miners, and workers in heavy industry” receiving 900 grams of food a day, party officials 700 grams, and others progressively less.32 Children received as little as 200 grams a day. Government officials and military officers received a higher fraction of rice than others.33

The government’s approach to agriculture emphasized mechanization, fertilizer, pesticides, and irrigation, resulting in a highly “input-intensive agricultural system”—a Stalinization of agriculture that was practiced in the Soviet Union and other Eastern Bloc countries. At great expense, small amounts of arable land were also created “filling in the shallow seas along the west coast and by clearing forested mountainsides.”34

Outside of collective farms, only small “micro-farms” (household or kitchen gardens) where people might grow fruits and vegetables and other products were permitted. These products might be grown for personal consumption or for sale on legal farmers’ markets, but the plots could be no larger than 160 square meters, limiting what could be produced.35 North Korea’s PDS was stable during the 1970s, but in 1987, when the Soviet Union began to curtail its aid, rations were cut by 10%.36 North Korea’s net import of grains also skyrocketed, tripling to 438,000 metric tons in 1987 over one year.37

North Korea was not able to grow enough rice, which is a staple food for both Koreas. In the 1980s, people sporadically did not receive rice at all, an involuntary act portrayed as patriotic “donations to the military.”38 Except for the elite class, no matter what the occupation, access to food was scarce for everyone. Later in the 1980s, delays in

34 Ibid.
38 Seth, “North Korea’s 1990s Famine in Historical Perspective.”
food delivery became commonplace, and malnutrition became widespread.

The situation became dramatically worse in the 1990s, partly on account of centralization and mismanagement of food production and distribution.\textsuperscript{39} By the end of the Cold War, the Soviet Union and China started demanding market prices for all products. Soviet oil exports to North Korea dropped from 440,000 tons in 1990 to under 40,000 tons in 1991, leading to the failure of North Korea’s mechanized system of agriculture.\textsuperscript{40} North Korea also did not have access to foreign currency to purchase foods and fertilizer. Grain imports, by then mostly from China, fell by more than half in 1994.\textsuperscript{41}

The government responded to the crisis by further reducing the PDS ration in 1992 by another 10\% and by pursuing diplomatic ties with countries such as Thailand and Vietnam in hopes of importing food.\textsuperscript{42} The DPRK government reportedly halted all food distribution to four provinces (North and South Hamgyong, Ryanggang, and Kangwon) while extracting five kg of grain per farmer from yearly rations.\textsuperscript{43}

At first, North Korea struggled to communicate its needs clearly. In the early 1990s, North Korean officials contacted the WFP, which dispatched aid workers to the country to assess its needs. The workers were told that there was no problem with malnutrition and poverty. Nevertheless, the WFP concluded that the food situation was dire and characterized it as a “famine in slow motion.”\textsuperscript{44} By 1994, North Korea had admitted to a food shortfall, and World Vision International, a Christian relief group based in California, had obtained authorization from the U.S. and South Korean governments to solicit funding for humanitarian food shipments to the North in February 1995. North Korea also sought emergency aid from its traditional enemies Japan and South Korea.\textsuperscript{45}

In July and August 1995, the country was hit by severe flooding. The floods were exacerbated by topsoil degradation and river silting as a consequence of hillside deforestation, itself the result of efforts to

\textsuperscript{39} Rhoda E. Howard-Hassmann, State Food Crimes (Cambridge University Press, 2016), p. 64.
\textsuperscript{41} Haggard and Noland, Famine in North Korea, p. 32.
\textsuperscript{44} Andrew S. Natsios, The Great North Korean Famine (Institute of Peace Press, 2001).
place more land under cultivation. The situation had become untenable, the DPRK sought further assistance from the international community. To save face, they cited the severe effects of flooding to explain the extent of their problems. In December 1995, the UN’s Food and Agriculture Organization (FAO) and the WFP reported that 2.1 million DPRK children and 500,000 pregnant women were at risk from famine. Between 1995 and 1998, foreign aid provided 2.2 million metric tons of grain, or 14% of total national food consumption.

Nevertheless, severe food shortages during this period caused a staggering 3–5% of the population to perish. The North Korean authorities would come to describe this experience as the “Arduous March.” In 1998, a study by various international organizations claimed that 60% of North Korean children were stunted and 50% were malnourished. Even today, before the COVID-19 pandemic, international organizations reported that “[n]early one in 10 children under the age of five is underweight and nearly one in five children is stunted.”

The crumbling health system

The end of Soviet aid to North Korea in the late 1980s also appears to have undermined a public health system that was already showing cracks. In 1992, North Korea published a Kim Jong II speech dated to 1985 that provided guidance for the reform of both public health and medical services. The text was littered with vague allusions to overcoming “problems” and “difficulties,” as well as specific instructions for the improvement of training and the need to carefully husband scarce resources. Among other points, Kim emphasized the need for epidemic prevention, and lamented “the generally low standards of hygiene and preventive work and of medical science and technology in the country.”

The presence of international aid workers in the country during the “Sunshine” era brought these realities to wider attention: North Koreans faced not only insufficient nutrition, but also inadequate

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46 Ibid.
47 Lee Suk (2005).
49 Lee Suk (2005).
water and sanitation, and a general lack of medicines and medical equipment.\textsuperscript{52}

Humanitarian aid and public needs

Current sources of vulnerability

The severity of North Korea’s response to COVID-19 has greatly diminished access to the country and the flow of information about actual conditions there, but enough data is available from before the pandemic to form a general impression. A lack of sufficient food; water, sanitation, and hygiene (WASH); and medicines and medical equipment remain major problems in North Korea, leaving the public highly vulnerable to epidemics. It is safe to assume that conditions have not improved since 2019 and are likely more dire.

Humanitarian needs for North Korea fall into five principal groups: food aid, nutrition, WASH, disaster risk reduction (DRR), and health care. We review the first four categories here, and discuss health care in the following section.

Food insecurity and the food gap

A 2020 assessment by the United Nations found that 40% of North Koreans need food and nutrition assistance. According to the UN, while the state-run PDS delivers rations, allotments rarely meet goal levels, and reliance on the PDS perpetuates vulnerability. Markets and microfarms, have created alternative pathways for obtaining food and other essentials, but domestic crop production typically falls short by about a million tons annually. Crop production in 2018 was reported to be at a ten-year low of 5 million tons in total production. But according to the DPRK Ministry of Agriculture, as quoted in the United Nations’ Needs and Priorities report issued in April 2020, crop production increased by 30% in 2019.

North Korea relies on commercial food imports, mostly from China, to address the large gap between food production and consumption. Trade barriers imposed both by sanctions and by the country’s response to COVID-19 have made it difficult to close the food gap. In July 2021, the FAO predicted, “With commercial imports officially planned at 205,000 tons, the uncovered food gap is estimated at

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54 Ibid.
about 860,000 tons, equivalent to approximately 2.3 months of food use. If this gap is not adequately covered through commercial imports and/or food aid, households could experience a harsh lean period from August to October, when the 2021 main season crops will be available for consumption.”

It is difficult to assess the 2021 harvest. One independent estimate comes from the Beyond Parallel program at CSIS, which issued a report in October 2021 based on commercial space imagery “to observe and monitor crop and growing conditions across the country.” The report concludes that “crop conditions from July to August point to a yield that falls short of an average or good harvest.”

In November 2021, the South Korea-based online publication Daily NK reported that the “protracted closure of the Sino-North Korean border” has had a “major impact on food provisions to North Korean troops on the border.” The report claimed that a particular border patrol unit in Ryanggang Province received fluctuating rations of as little as 400 grams a day (compared to proper rations of 750 grams) in September 2021, and “received no rations at all” between April and August 2021. In response, North Korean officials ordered all local party committees to devote all their effort to secure food ahead of winter training.

According to Rimjin-Gang, an online publication based in Japan, there is a severe shortage of rice for military use in North Korea, to the point that even commanders and their families struggle to secure rations. The situation for families in some provinces along the Chinese border is so dire that “officers’ wives took their children back to their parents’

homes, leaving the officers alone.” There are also reports that soldiers are stealing rations from farms.

**Nutrition deficits**

There is a strong link between food and nutrition and overall health. Malnutrition in all its forms increases susceptibility to foodborne diseases, zoonosis, physical injuries, and mental-health issues.

Undernourishment in North Korea was estimated by the Food and Agriculture Association of the United Nations (FAO) to affect 42.4% of the population in 2018–2020. A lack of variety in diet and low amounts of protein consumed are of particular concern. The United Nations prioritizes “pregnant and lactating women, as well as children under five” and considers these groups to be “precarious, and a long-term development challenge.”

Nutritionists around the world use “stunting” or a low height for age as a conventional sign of chronic malnutrition in a population. “Wasting,” or being underweight for height, is a common sign of acute malnutrition. Stunting and wasting are two important indications of malnutrition in a population. North Korea has significantly improved in the estimates for wasting for children under the age of five, from 4% in 2012 to 2.5% in 2017. However, stunting for children under five years old is still high, at one in five children stunted. Nevertheless, this is an improvement from an assessment in 2000, which was 2.5 times higher than the 2017 estimate for stunting, while the value for wasting was four times higher than the 2017 estimate. It is unclear what effects the pandemic is having on these trends.

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62 This data can be found on the FAO website at: https://www.fao.org/sustainable-development-goals/indicators/211/en/.
66 Ibid. See Table 1 for various health indicators from 1998 to 2017.
**Water, sanitation, and hygiene**

North Korea suffers from poor access to water resources, sanitation, and hygiene services (WASH). These deficits have severe implications for the health of North Koreans. According to the United Nations Needs and Priorities document from 2020, one third of North Koreans lack access to clean drinking water. Access to WASH facilities might vary significantly between rural and urban populations. For example, only 61% of North Korean homes, and 44% of rural households, have access to properly managed water, according to the 2017 DPRK Multiple Indicator Cluster Survey (MICS).

In households without access to running water, women and children bear the brunt of water collection. They spend an average of 30 minutes per day hauling 10-20 kg of water round trip. Low-quality WASH services are connected to incidence of pneumonia and to diarrhea. In 2015, “37 per cent of deaths among children aged between 7 days and 5 years in the 12 provinces of central hospitals were caused by pneumonia, while 34 per cent died of diarrhea.” In addition, MICS data revealed that the prevalence of stunting is 60% greater among children living in households without access to improved drinking water than among children living in households with improved drinking water. Also, sepsis is a common cause of maternal mortality, generally linked to contaminated water and inadequate postpartum hygiene. The UN estimates that 52% of households in the DPRK have improper sanitation management.

**Resilience/disaster risk reduction**

Unfortunately, North Korea is at high risk for weather-related disasters which is exacerbated by climate change, deforestation, soil degradation, and erosion. The country’s terrain, with its steep mountains, renders it susceptible to flooding. It receives heavy rainfall in the summer. In fact, half of North Korea’s annual precipitation can occur during the “rainy season,” which starts in late June and ends in mid-July. When excessive precipitation occurs, especially when typhoons bring powerful winds and drop massive amounts of rain in a

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71 Sepsis occurs when chemicals released in the bloodstream to fight an infection trigger inflammation throughout the body. This is a life-threatening disease.
short period of time, the results may include mudslides, widespread flooding, crop damage, the loss of homes and infrastructure, and deaths. Under these circumstances, it becomes especially difficult to bring in the harvest of corn, rice and soybeans, which occurs shortly after the rainy season.

**Current health needs**

High-level statistical reporting from before the pandemic portrayed the overall health situation in North Korea as fair, if not good. The UN 2020 Needs and Priorities document reported that 8.7 million people, or about one-third of the population of North Korea, have “limited access” to adequate healthcare. This represents a significant improvement in healthcare in North Korea compared to the 1990s. The latest estimate from the World Bank is that the life expectancy is 69.3 years for men and 75.7 years for women, similar to or better than other low-to-middle income countries. Nevertheless, reports from aid workers and international organizations active in North Korea have identified several problem areas.

**Communicable diseases**

**Tuberculosis and drug-resistant tuberculosis**

In recent years, North Korea has had one of the world's highest tuberculosis (TB) incidence rates (513 cases per 100,000 people). Additionally, multidrug-resistant tuberculosis (MDR TB) “is one of the most serious public health problems facing North Korea, included as one of the 30 countries on WHO’s high-burden MDR TB country list.” The Global Fund for AIDS, Tuberculosis, and Malaria (GFATM) has provided most foreign support for tuberculosis control in North Korea, but has focused on drug-susceptible tuberculosis. The nonprofit Eugene Bell Foundation (EBF), based in South Korea, has been treating thousands of patients in MDR TB, but there still is a serious gap between the numbers of people in need of treatment and the treatment available.

In 2018, GFATM abruptly ended its TB and malaria operations in North Korea, citing concerns that “resources were being diverted and that grants were not achieving their goals.” Some observers speculate

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75 World Health Organization, Global Health Observatory data repository. https://apps.who.int/gho/data/node.main.688


that the US government put pressure on the organization as part of its “maximum pressure” campaign against North Korea.78

**Hepatitis B**

Hepatitis B is a viral infection that targets the liver and can result in acute or chronic illness. It can cause chronic infection and put people at risk of contracting cirrhosis or liver cancer. In resource-constrained environments such as the DPRK, access to diagnosis and treatment of hepatitis B remains limited, and many persons are diagnosed only after they have developed advanced liver disease. Liver cancer advances swiftly, and because treatment choices are restricted, the overall prognosis tends to be bleak. With little access to interventions in low-income areas, most persons diagnosed with liver cancer die within months of diagnosis. Hepatitis B, on the other hand, can be prevented using a 95% effective vaccine which has been available since 1982. Many people in the DPRK, particularly health care personnel, still require vaccination.79

**Helminthiasis**

Helminths (parasitic worms) are transmitted through the agricultural practice of using human excrement as fertilizer, as well as improper hygiene (see WASH, above). The worms “feed on host tissues, including blood, which leads to a loss of iron and protein” as well “intestinal blood loss” can cause anemia, a loss of appetite, and other adverse health effects.80 Globally, 1.5 billion people suffer from helminthiasis. In North Korea, according to a survey from 2016, one third of all school- or preschool-attending children are infected with soil-transmitted helminthiasis. The burden of this parasite on the DPRK population has been largely overlooked.81 The prevalence of parasitic worms in the DPRK was brought to the world’s attention in 2017 when a North Korean soldier defected to the South. During medical treatment, multiple large worms were found and removed.82

**Non-communicable diseases**

The leading causes of death in North Korea are non-communicable diseases (NCD) such as cardiovascular disease and cancers.\(^{83}\) Not only wealthy countries suffer from these diseases; illnesses like cancer are increasing in the developing world in large part because of smoking, which is considered to “the most important lifestyle risk factor for NCD.”\(^{84}\)

**Child and maternal mortality**

North Korea’s under five-year child mortality is 17 deaths per 1,000, better than in India or South Africa.\(^{85}\) This is a significant improvement from the 1990s, when the child mortality rate exceeded 90 per 1,000 births. Further problems are a high proportion of women who die during childbirth as result of deliveries carried out at home. According to government statistics, the maternal mortality rate is 66 per 100,000.\(^{86}\)

**North Korea’s health system**

Kee Park and Edward Ham from Harvard University recently analyzed North Korea’s health system using the WHO’s Health Systems Building Blocks Framework.\(^{87}\) (Dr. Park is a prominent American expert on North Korea’s health system who has often worked with North Korean medical professionals.) Their study found that for many of the WHO indicators—service delivery, financing, workforce, infrastructure and information management—North Korea meets or exceeds levels of proficiency expected for low-income countries. For example, North Korea has invested considerably in an extensive workforce in the medical field (3.5 doctors, 3.9 nurses, and 0.3 midwives per 1,000 people) and infrastructure, and claims to spend “6.1% of its GDP on healthcare.”\(^{88}\)

**Health facilities**

The WHO’s Country Cooperation Report for 2014–2019 describes the infrastructure in the DPRK for medical facilities (see Table 1). There are 133 “central” and provincial hospitals (tertiary-care facilities),

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\(^{87}\) Park and Ham, “North Korea’s Surprisingly Robust Healthcare System.”

\(^{88}\) Ibid.
1,608 county (ri) hospitals (secondary-care facilities), and 6,263 clinics that provide primary care. A total of 235 hygiene/anti-epidemic health stations are located throughout the central, provincial, and county levels. Central specialist facilities treat specific illnesses like TB, hepatitis, and mental disease, and perform specialty surgeries and procedures (e.g., ophthalmology or maternal health procedures).\(^8^9\)

**Table 1: Table of health facilities in the DPRK. Adapted from the World Health Organization Country Cooperation report from 2014-2019\(^9^0\)**

<table>
<thead>
<tr>
<th>Health Facilities in the DPRK</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central and provincial hospitals (tertiary care)</td>
<td>133</td>
</tr>
<tr>
<td>County/Ri hospitals (secondary care)</td>
<td>1,608</td>
</tr>
<tr>
<td>Polyclinics/Clinics (primary care)</td>
<td>6,263</td>
</tr>
<tr>
<td>Hygiene and anti-epidemic stations</td>
<td>235</td>
</tr>
<tr>
<td>Preventive stations</td>
<td>55</td>
</tr>
<tr>
<td>Sanitoriums</td>
<td>682</td>
</tr>
<tr>
<td>Blood centers</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,988</strong></td>
</tr>
</tbody>
</table>

**Medicines and equipment**

A serious concern in North Korea is a lack of medicines and medical equipment, limiting the ability to deliver quality healthcare. North Korea’s Public Health Law (article 9) states that the “workers, farmers, working intellectuals and all the rest of the citizens have the right to free medical equipment.”\(^9^1\) Park and Ham emphasize that “[i]t is difficult to support or refute this claim due to the lack of data about the formal (and informal) costs of healthcare in North Korea.”\(^9^2\)

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\(^8^9\) Ibid.
However, in a survey of 383 North Korean defectors now living in South Korea, a wide disparity in healthcare was reported. Respondents “reported high levels of unmet need and, among those obtaining care, widespread informal expenditure.” In addition, 54% of respondents reported high informal costs and 39% reported a lack of medicines. These were “major healthcare barriers resulting in extensive self-medication with narcotic analgesics.” 3% reported using methamphetamines for self-medication. The study also found that 55% of the respondents “had received healthcare” for their most recent illness episode. Of them, 32% reported that they needed to bribe health professionals or other individuals to receive services, although 38% were able to obtain formal health services free of charge the last time it was needed.

Anecdotal accounts portray a national system with trained professionals, but a persistent lack of medicines and supplies. A recent defector who had worked as a pharmacist in North Hamgyong province called the lack of medicines and medical equipment there an “urgent problem.” The most important deficit was “the lack of disinfectants and antibiotics.” A physician who has worked extensively in North Korea for decades anonymously offered this account of the health sector:

North Korea has over 200 counties with one hospital per county. These county hospitals are the most accessible facilities for the general North Korean population. However, because of antiquated equipment, their ability to diagnose accurately is very challenging. They should be supplied with basic chemistry, hematology, x-rays and ultra-sound imaging equipment. Without these basic diagnostic tools, North Korean doctors have to rely solely on patient histories and physical examinations. Operating rooms must be refurbished with respirators and anesthesia equipment so surgeries can

94 Ibid. p. 4, Table 1.
95 Narcotic analgesics are also known as opioid pain relievers. They are only used for pain that is severe and is not helped by other types of painkillers.
96 Ibid. p. 4. The authors note the limitations of these findings: “Inevitably, caution is needed in extrapolating these results. First, survival bias is substantial in a retrospective study of the migrant population, which will almost inevitably result in under-representation of those who are unable to move easily, such as political prisoners, drug users or those with major illnesses. Meanwhile, refugees who are prepared to risk the dangers of escaping may be more likely to be socially marginalized than others in North Korea, and their experience could be overrepresented in the sample.”
97 Private communication with a former practicing pharmacist from North Korea.
be done safely under a more sanitary environment. The average North Korean surgeon has enough head knowledge and skills to perform specialized surgical procedures if given the proper equipment and sterile materials needed in a general, modern operating room. Additionally, intensive care units will have to be upgraded with high tech equipment so they can save critically ill patients from post-surgical complications or those with life threatening diseases. Reliable electrical sources and the availability of running water is a critical challenge that must be solved in North Korea if a modernized medical system is to go forward. The absence of refrigeration, for instance, presents challenges in a hospital or clinic setting for all of the obvious reasons.

In November 2021, Rimjin-Gang published an article about the current situation in North Korea. It claimed that the “number of infants dying from illnesses has increased. Imports of medicines from China have been stagnant since last year, and hospitals and health institutions are almost out of supplies and unable to treat patients.”

The news account continued, “Our reporting partner in Ryanggang Province described the local situation thusly, ‘Three children died in my neighbourhood in the course of one week at the end of October. I found out that they were two boys and a girl, ages 3, 2, and 1. The deaths were due to whooping cough, influenza, and tuberculosis. With no medicines or vaccinations, old people and children are dying quickly from colds and diarrhoea.’

Another source of insight into the inadequacies of the North Korean health system is the official, regime-controlled media itself. Kim Jong Un has given attention to these shortcomings in recent years, highlighting the need for supplies of pharmaceuticals and modern medical appliances and ordering the construction of a large new general hospital in central Pyongyang.


99 Ibid.


102 “Supreme Leader Kim Jong Un Breaks Ground First for Construction of Pyongyang General Hospital,” KCNA, March 18, 2020, https://kcnawatch.org/newstream/158458696-
The effects of sanctions

Economic sanctions imposed on the DPRK, largely in response to its nuclear-weapons and missile programs, are designed to impede Pyongyang’s ability to acquire certain goods and services. By prohibiting a variety of North Korean exports, sanctions also limit the country’s access to foreign currency. Despite efforts to maintain humanitarian exemptions, sanctions have complicated aid delivery.

Providing aid to North Korea is difficult in the best of times. Aid workers and organizations can only operate through governmental channels; as Nazanin Zadeh-Cummings and Lauren Harris have observed, “there is no known independent civil society” in the DPRK. Carla Vitantonio of CARE International observes that all humanitarian work today “must be accountable: to donors, to beneficiaries and, to some extent, to the host country, too. In this sense, even in the DPRK humanitarian agencies must abide by local rules and regulations in order to deliver assistance.”

The nature of the regime can pose serious obstacles to providing aid. In North Korea, delivery of humanitarian aid is often not permitted in wide areas of the country; entire provinces may be out of bounds. Labor camps are never accessible. Some NGOs have chosen to leave North Korea on these grounds. For example, in 1998, the NGO Médecins Sans Frontières / Doctors Without Borders (MSF) withdrew from the country, not to return for many years. At the time, MSF observed that the DPRK “refused to give the charity access to a large population of malnourished and ailing children.” MSF officials stated that they became “concerned” about the situation that the “North Korean government was adopting a double standard – feeding

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children who came from families loyal to the regime and neglecting those children who did not.”

Similarly, concerns about the potential for diversion of aid, perhaps to privileged members of society or to the military, have sparked demands for closer monitoring of delivery. For aid organizations concerned with evaluating the effectiveness of their work, the lack of transparency associated with operations in North Korea can be a source of great difficulty.

North Korea’s response to COVID-19 has further compounded these difficulties. A UN DPRK Panel of Experts report from 2021 includes accounts of the effects of North Korea’s quarantine on NGOs involved in humanitarian support there. The overwhelming sense is that the persistent border closures and travel restrictions is seriously hindering humanitarian operations both in delivery of aid but also on lack of the ability to monitor the situation and carry out in-country work. For example, one NGO noted that “COVID-19 related travel limitations have ‘severely restricted work’” resulting in delays in digging wells, which adversely affects access to water for many people.

The border closures have also caused long delays in getting resources into DPRK, in some cases requiring costly storage, especially when items must be temperature-controlled. As one NGO noted, “humanitarian work has literally come to a standstill.”

Policymakers cannot resolve any of these difficulties. Sanctions, however, are a function of policy.

**Multilateral sanctions**

Since 2006, when the DPRK conducted its first nuclear test, the UN Security Council has adopted resolutions (UNSCRs) condemning North Korea’s nuclear program and penalizing key sectors of the economy. Certain of these resolutions have components that relate to humanitarian aid, such as UNSCR 2094 and UNSCR 2397, adopted in 2017, created humanitarian exclusions and called on the DPRK to address the “humanitarian concerns of the international community.” Resolution 2397 explicitly stated that resolutions are not intended to have adverse humanitarian consequences for the

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106 Ibid.
108 Ibid.
civilian population of the DPRK and listed specific exemptions. NGOs may petition the UN’s 1718 (DPRK sanctions) Committee for exemptions through UN Member States, the UN Resident Coordinator, or the Committee Secretary, in that order, whereas UN agencies and the Red Cross may petition the Committee directly.

Zadeh-Cummings surveyed numerous NGOs and found a variety of opinions about the navigation of the UNSCR exemptions. Many NGOs felt that there was a “lack of clarity” and a “difficult and opaque bureaucracy.”

The 1718 Committee has published its response letters to NGOs requesting exemptions, making it possible to estimate their response time. The time it took to issue the exemptions at the start of 2019 was in some cases more than 100 days, but with an average response time of 17 days. Since 2020, responses are considerably faster, ranging from a few days to about one week.

**Unilateral sanctions**

Sanctions imposed unilaterally, mainly by the United States, have also had a significant effect on the humanitarian sector. To secure licenses to import materials into the DPRK, humanitarian agencies have to navigate the Office of Foreign Asset Control (OFAC), a division of the U.S. Treasury, and the Bureau of Industry and Security (BIS), a division of the U.S. Department of Commerce.

Until 2018, American NGOs active in North Korea operated under a General License #5 from OFAC, which exempted them from regulations otherwise prohibiting engagement with the North Korean government. The OFAC license issued in March 2016 stated that “Nongovernmental organizations are authorized to export or reexport services to North Korea that would otherwise be prohibited... in support of the following activities: Activities to support humanitarian projects to meet basic human needs in North Korea, including drought and flood relief; food, nutrition, and medicine distribution; the provision of health services; assistance for individuals with

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110 Zadeh-Cummings, Nazanin Azam. “Humanitarians in the Hermit Kingdom: NGOs, Aid, and Access in the DPRK.” PhD diss., City University of Hong Kong, 2019.

111 See: https://www.un.org/securitycouncil/sanctions/1718/exemptions-measures/humanitarian-exemption-requests; scroll down to section “Humanitarian Exemption(s) in Effect”. As of November 3, 2021, the Committee has approved a total of 83 humanitarian exemption requests in accordance with paragraph 25 of Security Council resolution 2397 (2017).

112 This was determined by subtracting the dates received and responded on all exemption request-approval letters. The letters can be found by accessing older version of the webpage at the internet Archive, https://archive.org/.
disabilities; and environmental programs.”\textsuperscript{113} NGOs interpreted these guidelines as a broad exemption allowing them to provide services, including exporting items to North Korea, as long as they were for humanitarian needs.\textsuperscript{114}

In 2018, however, OFAC modified their regulations to conform with the humanitarian exemptions in new legislation (31 CFR § 510.512).\textsuperscript{115} OFAC’s Frequently Asked Question (FAQ) #464 states that the only circumstance where a license is not required from the U.S. Bureau of Industry and Security is for food and medicine. For all other items, U.S. NGOs must “obtain a license from both OFAC and the Bureau of Industry and Security of the Department of Commerce (BIS).”\textsuperscript{116} The FAQ also explains that “Partnerships and partnership agreements between NGOs and the Government of North Korea or other blocked persons that are necessary for NGOs to provide authorized services are not permitted without a specific license from OFAC.”\textsuperscript{117} As noted above, any organization active in North Korea will find no alternative to dealing with the North Korean government.

The need to manage these legal issues and paperwork has diverted time, attention, and resources from the delivery of aid itself. In 2019, Daniel Jasper of the American Friends Service Committee (AFSC), one of the first international NGOs resident in North Korea, described the license process at a meeting at the Cato Institute in Washington, DC. He noted that “the special license process is something that you have to go through with the Treasury Department that essentially can take months to do. It’s a very lengthy application process. It requires the help of lawyers and so essentially we’ve gone from processes that took us a few hours to processes that take us many months to do and require expensive legal counsel and this is obviously very problematic for when you’re trying to time shipments.”\textsuperscript{118} Jasper gave the example of trying to import plastic rice seedling trays, a non-sanctioned item

\textsuperscript{113} General License #5 is not available on the Department of Treasury website but can be found on the Internet Archive at the following address: https://web.archive.org/web/20200405193813/https://www.treasury.gov/resource-center/sanctions/Programs/Documents/nk_gl5.pdf.

\textsuperscript{114} Chad O’Carroll, “Not-for-profit was targeted in U.S. sanctions investigation, sparking NGO fears,” NK News, February 5, 2020, https://www.nknews.org/2020/02/not-for-profit-was-targeted-in-u-s-sanctions-investigation-sparking-ngo-fears/.


\textsuperscript{116} See: https://home.treasury.gov/policy-issues/financial-sanctions/faqs/topic/1556

\textsuperscript{117} Ibid.

that can improve yield by as much as 10% to 20%. “However, these items can’t be shipped without a special license. Again, as I mentioned, that takes many months.”

In addition, since August 2017, the U.S. government has forbidden all travel to North Korea on U.S. passports other than “special validation passports” issued for that purpose. Humanitarian aid workers are eligible to apply, but this adds another layer of complexity to the enterprise.

Loss of a banking channel

Before the pandemic, the top concern for humanitarian agencies working in the DPRK was the lack of a stable banking channel. This problem is not unique to North Korea; humanitarian agencies operating in certain other places such as Syria and Somalia have also faced it. The need for compliance with sanctions and Anti-Money Laundering (AML) and Counter-Terrorism Financing (CTF) laws and regulations have led banks to be extremely risk-averse in dealing with high-risk countries. The BNP Paribas settlement for $8.9 billion for sanctions violations in Sudan, Cuba and Iran has left a strong impression. “De-risking” is a process where banks terminate or refrain from doing business with certain entities or individuals to comply with AML/CTF requirements and to avoid the possibility of large-scale penalties.

The result is that most banks will not participate in transactions with the DPRK, even if the specific transactions are exempt from sanctions. Until recently, Russia’s Sputnik Bank was willing to conduct business with North Korea’s Foreign Trade Bank. The UN would send
U.S. dollars to the German bank Commerzbank AG for humanitarian operations in DPRK. Commerzbank would pay the equivalent in Russian rubles to Sputnik Bank, which would in turn make a payment to the Foreign Trade Bank (FTB) in North Korea. In September 2017, Commerzbank stopped participating. Its withdrawal left the United Nations and NGOs without a reliable means to pay for goods and services in the DPRK.

This breakdown of the banking channel has resulted in a cash shortage in the country, making it more difficult for UN agencies and NGOs to carry out their missions. Aid workers have resorted to carrying large sums of cash when visiting the DPRK, an increasingly common practice for humanitarian agencies in high-risk regions. As one study has found, “rather than reducing risk in the global financial sector, de-risking actually contributes to increased vulnerability by pushing high-risk clients to smaller financial institutions that may lack adequate AML/CFT capacity, or even out of the formal financial sector altogether.”

The banking problem has significantly affected NGO operations since this time. One NGO reports that “continued lack of a banking channel has disrupted the organization’s cash-flow.” One NGO notes that: “Because of limited cash availability, reduced staffing, and in-country restrictions on travel, the organization anticipates further reductions in implementation activities.”

Sputnik Bank has worked to establish a new banking channel. In 2021, a small sum of money ($5,000) was successfully transferred. Unfortunately, FTB has insisted that the UN must unblock all of the assets of the bank before regular transactions can resume. The head of the Sputnik Bank, Pavel Nikitin, shared his frustration with NK News: “They are insisting that all sanctions must be off, their accounts must be unfrozen, and (only) then we will be able to transfer

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123 Sputnik Bank later stated to NK News that the reason was “refusal on the part of CommerzBank to participate.” See: Chad O’Carroll, “Sputnik Bank ready to offer its services to renew North Korea banking channel,” NK Pro, March 5, 2020. https://www.nknews.org/pro/sputnik-bank-ready-to-offer-its-services-to-renew-north-korea-banking-channel/.
126 Ibid.
the money to DPRK.” The DPRK’s FTB has been under sanctions since 2013 by the United States, and the UN Security Council sanctioned FTB in 2017.

Unfortunately, in November 2021, Sputnik Bank’s license was revoked by Russian authorities in response to “violations identified in the credit institution, including an overstatement of the value of assets in the reporting, as well as dubious currency and exchange transactions.”

These problems are likely to endure. There is no clear methodology for banks, correspondent banks or NGOs to quantify the risks associated with a particular transaction. Furthermore, there are no incentives for the banks to carry out the transactions except to do so for the public good. The governments cannot coerce banks to service NGO clients. As a consequence, banks often use the most cautious practices, “punishing” application of regulations rather than applying a nuanced, proportional approach to humanitarian organizations, causing outright rejections or excessive delays. The same banks would block a transaction that would be approved a short time later, with no way of appealing a rejection. A study from 2017 found that more than two-thirds of U.S. non-profits organizations working in foreign countries have struggled with financial difficulties, including not being able to open accounts, delayed transfers of funds, or closure of accounts without recourse. U.K. NGOs claimed that 80% struggle with similar financial problems related to sanctions.

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Conclusions and recommendations

The case for engaging North Korea on public-health grounds is straightforward: it is in the interests of the international community that the DPRK not remain indefinitely closed to commerce and travel. Successfully influencing Pyongyang toward a more cooperative approach—whether on nuclear weapons, human rights, or any other question—depends on the ability to interact and exchange perspectives and information. Under present circumstances, too, the possibility of a new famine cannot be dismissed.

Safely reopening the country’s doors will require, first, a decision by the North Korean leadership to do so, and second, the procurement of adequate medical supplies and equipment, starting with COVID-19 vaccines and the wherewithal to deliver them nationally.

It is not obvious when Pyongyang will decide to move toward reopening. There are reasons to suspect that the pandemic has created an opportunity to reassert ideological control over the public that the leadership wishes to exploit. At some point, regardless, a reopening will occur, for the simple reason that the country has never been able to sustain itself independently.

To encourage this decision to come sooner rather than later, aid organizations should be prepared to demonstrate to North Korean officials how seriously they take the COVID-19 threat. Dr. Kee Park has proposed that a pilot team should be ready to prove that they are free of COVID-19 infections by showing antibody tests, and not just vaccine certificates, which the authorities may not trust.\(^\text{133}\)

Providing COVID-19 vaccines and related supplies is quite reasonably the focus of immediate thinking about the issue, but the prerequisite for avoiding future closures is restocking and reequipping North Korea’s health system. As noted earlier, outbreaks of dangerous novel pathogens such as SARS, Ebola, MERS, and COVID-19 appear to be

occurring more frequently. Until North Korea has an alternative to strict quarantines, it will probably continue to experience punishing closures every few years.

What is to be provided, when, how, and by whom are beyond the scope of this paper. Multiple considerations will be involved, including sensitivity to the need to avoid transferring dual-use technologies potentially applicable to the development of biological weapons.\textsuperscript{134}

Regardless of the actors and the modalities, these efforts will face considerable hurdles. Streamlining humanitarian exemptions under both multilateral and unilateral sanctions regimes and creating a stable banking mechanism to support the activities of aid organizations working inside the country may be essential to their success over the long term.

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#52 • Scientific Risk Assessment of Genetic Weapons Systems
#51 • The Final Stretch: Tackling Remaining HEU Challenges
#50 • Making a Better Open Skies Treaty
#49 • A Guide to Investigating Outbreak Origins
#48 • US Nonproliferation Cooperation with Russia and China
#47 • Dual Use in the DPRK
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