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innovation for peace



**MAPPING OVERSEAS FORCED LABOR IN NORTH KOREA'S
PROLIFERATION FINANCE SYSTEM**

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Executive Summary

North Korean overseas forced labor is both a proliferation finance and a human rights issue. The Kim regime sends citizens to work abroad under heavy surveillance, confiscates their wages, and uses the funds to support a nuclear program and domestic economy dependent on foreign currency. Previous research on the topic has relied heavily on anecdotal reporting and focused principally on either human rights abuses or workers in low-skilled occupations. Few reports have considered high-skilled labor in the context of North Korea's labor export program, and while some investigations have connected individual labor operations to North Korea's broader illicit portfolio, no previous studies have attempted to do so at scale across multiple industries and jurisdictions. This report extends our proven methodologies for tracking North Korea's proliferation networks to the financial relationships of people and companies that facilitate its labor export program. In doing so, we leverage corporate registry documents, official labor statistics, tax filings, and trade records to demonstrate how DPRK overseas labor operations fit within North Korea's broader proliferation finance system. This approach informs three key findings:

First, many companies and individuals that employ North Korean workers are linked to activities that violate United Nations Security Council Resolutions. For example, our analysis found companies that employ North Korean workers registered as active joint ventures and cooperative entities, provided banking services to DPRK nationals, and hired North Koreans to work on sensitive defense technologies including facial recognition software, insulated nanoceramics, and armor for military vehicles. North Koreans also work openly at local subsidiaries of companies sanctioned by both the United States and the United Nations for supporting North Korea's missile program. Law enforcement can thus wield a wide range of legal instruments to drive action against commercial networks that exploit North Korean workers.

Second, firms that employ North Korean workers exhibit similar operational patterns across jurisdictions. In Russia, we map ultimate beneficial ownership and subsidiaries for all 691 people, companies, and organizations that the Russian Ministry of Labor approved to hire North Koreans between 2015 and 2018. Russian companies approved to hire North Korean workers exhibit decentralized corporate ownership structures but use common names and co-locate at a limited number of physical locations. We also identify 125 suspected North Korean restaurants around the world, more than two-thirds of which are in China. We find that, as in Russia, North Korean restaurants in China use common names and co-locate with other companies involved in an array of illicit commercial activities on behalf of the Kim regime. By examining labor operations at scale, this report offers robust empirical details about the *modus operandi* of firms that employ DPRK workers, which can empower law enforcement and civil regulators to enhance activities-based screening procedures for yet unidentified companies.

Third, despite trade restrictions, products of North Korean overseas labor—including advanced software and defense technology—continue to penetrate Western supply chains. North Korean forced laborers work overseas in sensitive industries that engage with research institutions, law enforcement bodies, and defense contractors in the United States and Europe. North Korea's overseas workers have also used false identities and local intermediaries to sell sophisticated software products through online freelance marketplaces. North Korea continues to access critical technologies through its high-skilled overseas workers, who reportedly work in the same draconian conditions as their counterparts in low-skilled occupations.

While the Countering America's Adversaries Through Sanctions Act establishes mandatory sanctions on people and companies that employ North Korean workers, the Kim regime continues to dispatch citizens abroad to work in forced labor conditions. In doing so, it continues to flout international sanctions to generate foreign currency, acquire sensitive technologies, and access the international financial and trade systems. As this report demonstrates, open source network analysis can support law enforcement and civil regulators to locate North Korea's overseas operations, identify networks of particularly high risk, and drive action against an ongoing proliferation finance stream predicated on the exploitation of workers.

Methodology

This report illustrates the effectiveness of using open source data to map and expose North Korea's overseas labor networks. Throughout our research, we have relied on official documentation like corporate registry filings and tax forms for which the source and credibility can be clearly established.

We began our investigation by creating datasets of companies that employ North Korean laborers around the world. We first collected and structured publicly reported information on instances of DPRK overseas labor from UN Panel of Experts reports, Russian Ministry of Labor documents, and Chinese social media posts. We then expanded our dataset by adding companies identified in Russian, Chinese, Arabic, Japanese, Spanish, Vietnamese, German, Korean, and English reporting. When possible, we worked with local journalists to collect additional evidence of ongoing DPRK labor activity. We later prioritized leads for targeted investigation by assessing their evidentiary strength, proximity to North Korea's broader illicit operations, and potential to elicit action upon discovery.

We focused our research on Russia and China, where as many as 80% of North Korea's overseas laborers reportedly work.ⁱ For all 691 entities that the Russian Ministry of Labor approved to hire North Korean workers between 2015 and 2018, we mapped ultimate beneficial ownership and subsidiary holdings using documents from the Russian business registry in order to identify clustered network activity within the broader system.ⁱ We structured our findings in Palantir Gotham, a network analysis platform, which we used to understand system trends and select targets for focused investigation. For companies of particular interest, we accessed records from corporate, tax, property, maritime, and trade databases to map corporate holdings and business activities more broadly. We then repeated a similar process for North Korean restaurants globally. From unofficial customer review pages and social media profiles, we identified 125 restaurants in 14 countries, nearly two-thirds of which were located in China. While China reportedly first began large-scale labor imports from North Korea in 2012, DPRK restaurants have operated legally in China for decades and as a result often extend from key legacy networks involved in broader commercial operations on behalf of the Kim regime. To our knowledge, this report represents the first systematic look at North Korea's overseas restaurants within the proliferation finance context.

Finally, we conducted targeted investigations on networks of interest. In all relevant jurisdictions, we used corporate registries, court filings, trade data, national gazettes, local reporting, and other data sources to map network activity and identify connections to global systems of finance, trade, and logistics. Wherever possible, we prioritized investigation into unsanctioned companies that are associated with sanctioned entities, which could represent key nodes in the adaptation and continued operation of North Korea's proliferation or illicit finance networks.

The report's methodology has several limitations. First, the policy environment surrounding North Korean overseas labor changed dramatically over the research period, and as a result, we could not always know with complete certainty whether or not a reported instance of DPRK labor was ongoing.ⁱⁱ Second, transaction-level data seldom exists to confirm suspected illicit activity. Third, while C4ADS uses official corporate records and commercial credit reports to verify corporate holdings and commercial relationships, this information only represents a snapshot of corporate activity at a given time: records may not be updated regularly, may not be consistent or wholly accurate, and may not have the same standards of reporting across jurisdictions, among

i From 2015 to 2018, the Russian Ministry of Labor released several updated datasets of the companies to which it granted foreign worker authorizations. This report bases its analysis on the last version published each year. Documents available upon request.

ii We argue that even if a reported instance of North Korean overseas labor is no longer active, investigation into corporate and financial networks may still help law enforcement and civil regulators to understand the system's *modus operandi*.

other limitations. Public records also do not reveal all details of operations of a company or relationships between entities. C4ADS therefore limits its analytical conclusions to those supported directly by underlying documentation within the limitations of those documents.

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Introduction

North Korean overseas labor has long been legal in most jurisdictions around the world. For decades, the North Korean regime has dispatched workers across East and Southeast Asia, the Middle East, Africa, Latin America, Europe, and even—according to some reports—North America.² The US Mission to the United Nations estimates that as much as 80% of North Korea’s overseas workforce is located in China and Russia.ⁱ While figures for overall revenue are highly disputed, some estimates suggest that North Korean laborers may generate as much as \$1.2 to \$2.3 billion USD per year for the Kim regime, which—if true—would be equivalent to as much as 93% of North Korea’s total exports in 2016.^{ii 3} While North Korea’s labor export program has long constituted an important revenue stream for the regime, it has garnered extensive media attention and research interest almost exclusively because of reported human rights violations at worksites around the world.



Interviews with defectors suggest that most worksites exhibit features characteristic of forced labor. Laborers work 12- to 16-hour days under the constant surveillance of state security officers, who grant workers one or two days of rest per month.⁴ Employers send earnings directly to so-called “handlers,” who confiscate as much as 70 to 90% of wages before passing the remainder to the workers.ⁱⁱⁱ Workers typically live in decrepit housing and are severely restricted in their ability to travel—in some cases even forbidden from leaving the immediate worksite.^{iv} Men typically fill construction, logging, and other manual labor jobs while women work in restaurants, textile mills, and food processing plants.⁵ North Korean laborers are most often married with at least one child.⁶ Most also have good *songbun*—a form of social status—that indicates loyalty to the regime and therefore a lower risk of defection, which in some cases is punishable by death.⁷ High-skilled workers in the

i Analysis and reporting varies greatly in its estimates for the number and location of DPRK workers abroad. For discussion on the topic, see section entitled “Global Analysis.” The cited figure from the US Mission to the United Nations appears in FACT SHEET: UN Security Council Resolution 2397 on North Korea. (2017, December 22). UN Security Council. Retrieved from: usun.state.gov/remarks/8238

ii This estimate appears in Situation of human rights in the Democratic People’s Republic of Korea. (2015, September 8). United Nations General Assembly. Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=A/70/362. Archived at <https://perma.cc/PLQ5-WC8X>. But some analysts have argued that the figure is too high. For one such example, see Noland, M. (2015, June 1). Organized Exports of Labor: Welcome to the Echo Chamber. Peterson Institute for International Economics. Retrieved from: <https://piie.com/blogs/north-korea-witness-transformation/organized-exports-labor-welcome-echo-chamber>. Archived at <https://perma.cc/8RF6-5H4Q>.

iii It is important to note that these wages are still more than those earned by North Korean workers domestically, which raises important ethical questions for policymakers in targeting labor networks through law enforcement action. This ethical discussion is beyond the scope of this paper.

iv In many reported cases, handlers have withheld the passports and employment contracts of workers in low-skilled occupations. These conditions are typically described for low-skilled workers. Research and reporting contain little information on how conditions or working arrangements might differ for those working in higher-skilled occupations like doctors and programmers.

IT industry are reportedly assigned income quotas, which they reach by selling online products and services as benign as videogame characters and as sensitive as facial recognition software.⁸ While arrangements may vary by industry, the purpose of North Korea's labor program is the same across jurisdictions: to generate revenue for the Kim regime.^v

North Korean overseas labor is tightly regulated by provisions in several United Nations Security Council Resolutions (UNSCRs), which are mandatory on all UN member states.^{vi} Adopted on August 5, 2017, UNSCR 2371 (2017) required that member states not exceed the number of North Korean workers in their jurisdiction on the date of passage, effectively placing a cap on the number of DPRK workers permitted abroad.⁹ Weeks later, on September 11, UNSCR 2375 (2017) further forbade member states from authorizing new employment contracts for North Korean workers.¹⁰ And on December 22, UNSCR 2397 (2017) compelled member states to repatriate all DPRK workers within two years.¹¹ Therefore, as of this writing, any North Korean laborer who works abroad on a contract signed before September 11, 2017 can continue to do so until December 22, 2019 without violating UN sanctions pertaining to work authorizations.^{vii}

But in addition to restrictions aimed explicitly at North Korea's overseas labor operations, several provisions contained in other UNSCRs impose prohibitions relevant to North Korea's captive overseas workforce. UNSCR 2094 (2013) requires states to conduct "enhanced monitoring" to prevent the provision of financial services which could contribute to the DPRK's nuclear or ballistic missile programs.¹² UNSCR 2094 (2013) also prohibits bulk cash shipments to and from North Korea. UNSCR 2270 (2016) further directs member states to prohibit North Korean nationals from receiving training which might contribute to the development of the DPRK's nuclear and ballistic missile programs and prohibits DPRK entities from providing services like storing and sending money that are commensurate to those offered by banks.¹³ Additionally, UNSCR 2270 (2016) directs member states to expel all foreign nationals (including DPRK citizens) who are determined to be working on behalf of a designated entity or otherwise assisting in sanctions evasion. Finally, UNSCR 2375 (2017) "prohibits

Working Conditions for North Korean Overseas Laborers



v As described in July 23, 2018 guidance by the US Departments of Treasury, State, and Homeland Security, "there are two primary groups of North Korean laborers earning income [outside of North Korea]: (1) North Korean overseas laborers whose primary work is organized, managed, and overseen by, and produces revenue for, the North Korean government; and (2) North Koreans who have fled North Korea, including refugees and asylum seekers who live and work outside of North Korea and are earning income to sustain themselves in a personal capacity." This report focuses exclusively on cases that demonstrate a number of indicators consistent with the North Korean government's forced labor program. For the remainder of the report, unless explicitly stated, any further mention of North Korean overseas labor refers to that which is coordinated and managed by the North Korean government. To read guidance on the topic from the US Departments of Treasury, State, and Homeland Security, see <https://www.state.gov/documents/organization/284481.pdf>. Archived at <https://perma.cc/E9TQ-TT2U>.

vi Paragraph 18 of UN Security Council Resolution 2375 (2017) "prohibits the opening, maintenance, and operation of all joint ventures or cooperative entities, new and existing, with DPRK entities or individuals" and provides that all such existing ventures must have closed by January 9, 2018. While observers have long understood the ban on joint ventures, many have ignored the verbiage of "cooperative entity," which has not been clearly defined in previous statutes or UN provisions. There may be a colorable legal argument that any company employing a North Korean national constitutes a cooperative entity with the DPRK and therefore violates the sanctions provision.

vii Our research finds that North Korean overseas labor operations often exhibit behaviors that violate several other UN provisions. For a reference for these provisions, see Table 1.

the opening, maintenance, and operation of all joint ventures or cooperative entities, new and existing, with DPRK entities or individuals” by January 9, 2018.

United States domestic law also creates a strong compliance and reputational risk for companies that exploit North Korean forced laborers in their operations. For example, the Countering America’s Adversaries Through Sanctions Act (CAATSA), passed August 2, 2017, creates a number of mandatory sanctions that could apply to people and companies involved in North Korean forced labor. First, CAATSA requires that the President sanction any entity determined by the Secretary of State to knowingly employ North Korean laborers.^{viii} Second, CAATSA establishes mandatory sanctions for people or companies that commit, facilitate, or support “serious human rights abuses” in the territory of the Russian Federation, which hosts a significant portion of North Korea’s overseas forced labor workforce.^{ix}

CAATSA also creates significant penalties for companies that import products of North Korean labor into the United States. Section 321(b) of CAATSA establishes the “rebuttable presumption” that North Korean labor is forced labor and therefore bars goods and services produced by North Korean workers from entry into the United States under the Tariff Act of 1930.¹⁴ If such goods do enter the country through US ports, they are subject to seizure, forfeiture, and detention, and related entities may be subject to civil or criminal penalties.¹⁵ Section 311(a) of CAATSA further amends section 104(a) of the North Korea Sanctions and Policy Enhancement Act of 2016 (NKSPEA) to require, with certain exceptions, that the president block any transaction by a person who “knowingly, directly or indirectly[...]imports, exports, or reexports to or from North Korea any defense article or defense service or engages in certain other North Korea-related activities.”¹⁶ Beyond CAATSA, the US government has a number of other legal instruments it can wield against networks involved in North Korean overseas labor operations, as detailed in Table 1.

Nevertheless, media reporting suggests that DPRK labor continues to remain active in Russia and China, where regional economies rely in part on access to cheap labor from North Korea to counterbalance waning local labor supplies. Some Russian officials have expressed hope that repatriation, as required by UN resolution, will no longer be mandatory by December 2019, the current deadline.¹⁷ And in July 2018, Russian President Vladimir Putin reportedly ordered the Russian Ministry of Labor to extend labor permits for 3,200 DPRK nationals through December 22, 2019, which may constitute a UN sanctions violation.¹⁸ While officials in China have seldom spoken publicly about North Korean labor, *Radio Free Asia* reported in April 2018 that DPRK workers were returning across the border into China.¹⁹ And on June 20, 2018, the Taiwanese outlet *China Times* reported that previously closed garment factories in Liaoning had resumed operation with new North Korean workers.²⁰

viii See CAATSA § 321 (22 U.S.C. § 9241b), which modified the North Korea Sanctions and Policy Enhancement Act of 2016 (22 U.S.C. 9241 et seq.). The amendments provide that, barring exceptions, “the President shall designate any person identified under section 302(b)(3)” of the NKSPEA, which requires the Secretary of State to submit a report listing foreign persons that knowingly employ North Korean laborers, “for the imposition of sanctions.”

ix See CAATSA § 228 amends Section 11 of the Support for the Sovereignty, Integrity, Democracy, and Economic Stability of Ukraine Act of 2014 (22 U.S.C. 8901 et seq.) to require that the President sanction any foreign person that the President determines, based on credible information, “is responsible for, complicit in, or responsible for ordering, controlling, or otherwise directing, the commission of serious human rights abuses in any territory forcibly occupied or otherwise controlled by the Government of the Russian Federation” or that “materially assists, sponsors, or provides financial, material, or technological support for, or goods or services” to such person on or after August 2, 2017.

Legal Provision	Year	Effect
UNSCR 2094	2013	<ul style="list-style-type: none"> Requires member states to conduct “enhanced monitoring” to prevent the provision of financial services which could contribute to the DPRK’s nuclear or ballistic missile programs Prohibits bulk cash shipments to and from the DPRK
UNSCR 2270	2016	<ul style="list-style-type: none"> Directs member states to prohibit North Korean nationals from receiving training which might contribute to the development of the DPRK’s nuclear and ballistic missile programs Direct member states to expel all foreign nationals (including DPRK citizens) who are determined to be working on behalf of a designated entity or otherwise assisting in sanctions evasion
UNSCR 2321	2016	<ul style="list-style-type: none"> Prohibits DPRK entities from providing banking services
US Executive Order 13722	2016	<ul style="list-style-type: none"> Blocks the property of any person who engaged in, facilitated, or was otherwise responsible for human rights abuses by DPRK Blocks the property of anyone involved in exporting DPRK labor abroad
US Executive Order 13810	2017	<ul style="list-style-type: none"> Blocks the property of any DPRK person or entity who is “engaged in commercial activity that generates revenue for the Kim regime or the Workers Party”
UNSCR 2371	2017	<ul style="list-style-type: none"> Places a cap on the number of DPRK workers permitted abroad
UNSCR 2375	2017	<ul style="list-style-type: none"> Forbids member states from authorizing new employment contracts for North Korean workers Prohibits the opening, maintenance, and operation of joint ventures or cooperative entities between member states and DPRK entities and individuals
UNSCR 2397	2017	<ul style="list-style-type: none"> Compels member states to repatriate all DPRK workers within two years
Countering America's Adversaries Through Sanctions Act (CAATSA)	2017	<ul style="list-style-type: none"> Requires that the President sanction any entity determined by the Secretary of State to knowingly employ North Korean laborers Establishes mandatory sanctions for people or companies that commit, facilitate, or support human rights abuses in territory controlled by Russia Creates significant penalties for US companies that import products of North Korean labor Establishes a rebuttable presumption that North Korean labor is forced labor Requires that the President block any transaction by a person who “knowingly, directly or indirectly [...] imports, exports, or reexports to or from North Korea any defense article or defense service or engages in certain other North Korea-related activities”

Table 1. Legal Provisions Relevant to DPRK Overseas Labor Operations

To date, reporting has acknowledged that DPRK overseas labor generates revenue for the Kim regime, but few studies have demonstrated the breadth of convergence across industries and jurisdictions of overseas labor networks and North Korea’s broader illicit portfolio. That North Korea’s overseas labor program constitutes both a proliferation finance and a forced labor issue should compel law enforcement, private industry, and civil regulators to look broadly at available authorities allowing them to take action. This report demonstrates that open source network analysis is an effective tool for mapping labor operations, and offers several typologies to inform future investigations and policy responses.

Global Analysis

By the Numbers

Estimates vary greatly on both the aggregate number of North Korean workers abroad and the revenue they generate.ⁱ This variance exists because few countries report the number of North Korean workers they host, and as such, researchers have been forced to speculate based on entry and exit data, tourism statistics, and news reports combined with local wage information.

In April 2018, the US Department of State estimated that there were as many as 100,000 North Korean workers abroad, a figure identical to that cited by the US Mission to the United Nations in September 2017.²¹ But previous estimates have differed significantly. In September 2015, for example, the United Nations Special Rapporteur on North Korean Human Rights cited a 2012 report to estimate that North Korea had dispatched abroad approximately 50,000 workers to earn between \$1.2 and \$2.3 billion USD per year for the Kim regime, figures that have been both reproduced and disputed in writing on the topic since.²³ In 2012, South Korean media cited an official at the Shenyang office of the Korea-Trade Investment Promotion Agency to state that China had agreed to host 120,000 North Korean workers—more than some other estimates for North Korea's entire overseas workforce.ⁱⁱ

Year	Source	Organization	Estimate of DPRK Workers Overseas
2012	The Conditions of the North Korean Overseas Labor	International Network for the Human Rights of NK Overseas Labor (INHL)	60,000–65,000
2014	Beyond the UN COI Report: On Human Rights in DPRK	Asan Institute for Policy Studies	52,300–53,100
2015	북한 해외노동자 현황과 인권실태 (Human Rights and North Korea's Overseas Laborers: Dilemmas and Policy Challenges)	북한인권정보센터 (Database Center for North Korean Human Rights)	49,000+
2016	북한밖의 북한 (North Korea Outside the North Korean State)	북한인권정보센터 (Database Center for North Korean Human Rights)	49,000+
2017	Democratic People's Republic of Korea: 2017 Human Rights Report	US Department of State	100,000
2017	북한 해외노동자 실태 연구 (Condition of North Korean Overseas Laborers)	통일연구원 (KINU: Korea Institute for National Unification)	113,700–147,600

Table 2. Sample Estimates of the Number of DPRK Overseas Workers²⁴

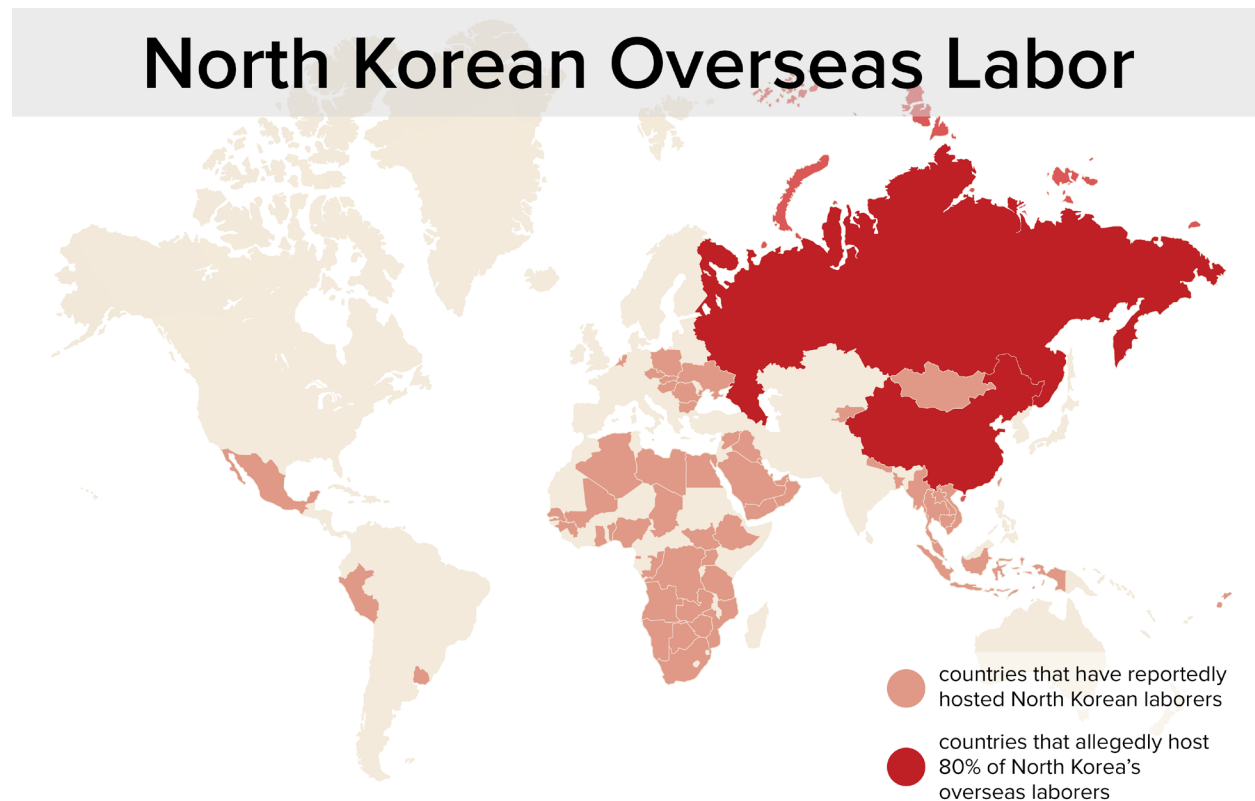
ⁱ There are many reasons why it is difficult to make an accurate estimate for the number of North Korean workers abroad. Given the political sensitivities of North Korean labor, few governments provide public information about the number of visas or work authorizations that they provide to North Korean workers. Historically, researchers have attempted to extrapolate figures based on news reports, corporate statements, and publicly reported entry and exit data, among other sources.

ⁱⁱ The article states that 120,000 North Korean workers would be sent to Dandong, Tumen, and Hunchun and earn between \$200 and \$300 USD per month. It also notes that laborers would work in industries including textiles, food processing, and information technology. See Kyung-hwa, S. (2012, September 13). China adjusts to influx of cheap North Korean labor. Hankyoreh. Retrieved from: http://english.hani.co.kr/arti/english_edition/e_northkorea/551521.html. Archived at <https://perma.cc/N5D9-GRFH>.

While there exists no conclusive assessment of either the aggregate number of North Koreans working overseas or their total earnings, experts have produced a wide range of estimates, some of which are summarized in Table 2.ⁱⁱⁱ

By Geography

North Korea reportedly first sent laborers to the Soviet Union in the 1940s.²⁵ According to the Database Center for North Korean Human Rights, it then expanded its overseas labor force into Africa in the 1970s, Europe and the Middle East in the 1990s, and finally China, Southeast Asia, and Mongolia much later.²⁶ iv Within the last decade, news media have reported North Korean laborers on nearly every continent working in most industries. For example, North Korean workers reportedly built World Cup stadiums in both Qatar²⁷ and Russia²⁸; assembled ships for Dutch companies and NATO forces in Poland²⁹; provided medical services in Mongolia³⁰ and Tanzania³¹; caught shrimp in Mozambique and sold their catch to China via South Africa³²; and fished on boats in Fiji, Uruguay, and Peru.³³



As with figures for the number of workers, estimates for the countries that have hosted North Korean laborers vary widely—from as few as 16 to as many as 60.^v Variance exists because research has relied heavily on news

iii Portions of this table first appeared in Korean in a report by the Korea Development Institute. See Choi, Y. (February 2017). 북한해외노동자현황:통계데이터중심으로 [Current Situation of Overseas North Korean Laborers: Focusing on Statistics Data]. KDI Review of the North Korean Economy. Retrieved from: https://www.kdi.re.kr/kdi_eng/research/research_view.jsp?pub_no=15116&pg=2&tema=G0&pp=10

iv Our analysis finds North Korean restaurants that were registered in China in the 1990s. However, several other reports suggest that large-scale North Korean labor imports to China for work in other industries did not begin until 2012. For more information, see section entitled “Sectoral Analysis: Restaurants in China.”

v Our open source research identified reporting of instances of DPRK labor in 60 countries in news media, government

reports, defector interviews, and publicly available government statistics, which vary in accuracy and reliability. Beyond its neighbors, North Korea has dispatched workers to distant countries with weaker political ties, which may in part be explained by economic incentives. For example, the International Labor Organization states that forced labor victims in developed economies earn approximately \$34,800 USD per worker compared to \$15,000 USD in the Middle East, \$5,000 USD in the Asia-Pacific region, and \$3,900 USD in Africa.^{vi} Theoretically, then, one shipbuilder in Poland can earn as much as nearly nine construction workers in Namibia or seven textile workers in Cambodia.

Internet activity also indicates that North Koreans maintain an active physical and virtual presence in a number of foreign countries not otherwise known to host North Korean laborers. Data on Internet usage show that, between April and July 2017, North Koreans accessed the Internet from India, Malaysia, New Zealand, Nepal, Kenya, Mozambique, and Indonesia.³⁴ While Internet activity alone cannot determine the conditions under which the users operated, North Korea's overseas IT workers reportedly face many of the same living and working conditions as their counterparts in low-skilled occupations: they allegedly work 15-hour days, are supervised by handlers and DPRK state police, receive less than 10% of generated income, attend regular ideological indoctrination seminars, and face death as punishment for defection.³⁵ North Korea's programmers each reportedly generate as much as \$100,000 USD per year from a range of web-based products and services including cryptocurrency mining, video game bots, cell phone apps, sensitive technologies, and criminal hacking operations.³⁶

Labor Hotspots: Russia and China

Russia and China are the two primary destinations for North Korean workers sent overseas in part because of structural macroeconomic conditions and geographic proximity. Publicly stated figures by both the Russian Ambassador to the DPRK and the United States Mission to the UN suggest that there are approximately 30,000 DPRK nationals working in Russia.³⁷ ^{vii} While the Chinese government does not release official figures for the number of North Korean laborers within China, several organizations have offered estimates based on news reports and other publicly reported statistics, with some placing the figure as high as 94,200 North Korean workers in China in 2015.³⁸ ³⁹

Russia has reportedly hosted DPRK workers longer than any other country, the first of whom worked primarily in timber jobs in Siberia.⁴⁰ Today, however, North Korean workers are distributed across Russia in occupations spanning a range of industries, of which timber represents only a small proportion.^{viii} There exists a strong economic incentive for the Russian government to import North Korean workers. Russia has experienced labor shortages since the 1990s, especially in the Far East, where over one-sixth of the population

reports, expert testimonies, and other publicly available sources. It is possible that many countries previously reported to host North Korean laborers no longer do. Information available upon request.

vi This argument first appears in Leiden University's Asia Centre in Breuker, R. (2016). *Slaves to the System: Researching North Korean Forced Labor in the EU*. Page 94. Retrieved from: <https://www.universiteitleiden.nl/en/research/research-projects/humanities/slaves-to-the-system-researching-north-korean-forced-labor-in-the-eu><http://slavestothsystem.eu/wp-content/uploads/2016/07/North-Korean-Forced-Labour-in-the-EU-the-Polish-Case.pdf>. Archived at <https://perma.cc/E7CK-MEA7>. For ILO statistics, see *Profits and Poverty: The Economics of Forced Labour*. ILO. Retrieved from: <http://www.ilo.org/global/topics/forced-labour/publications/profits-of-forced-labour-2014/lang-en/index.htm>. Archived at <https://perma.cc/TER3-7JPQ>.

vii On October 4, 2017, Russian President Vladimir Putin reportedly stated that approximately 40,000 North Korean citizens were working in Russia. See Stubbs, J. and Golubkova, K. (2017, October 4). "Putin says military strike against North Korea not sure to succeed." Retrieved from: <https://ca.reuters.com/article/topNews/idCAKBN1C91PS-OCATP>. Archived at <https://perma.cc/6UAZ-6XQD>.

viii We estimate this proportion based on foreign worker authorizations that the Russian Ministry of Labor granted to Russian companies, organizations, and individuals between 2015 and 2018, which include specific occupations. For more information, see section entitled "Country Analysis: Russia."

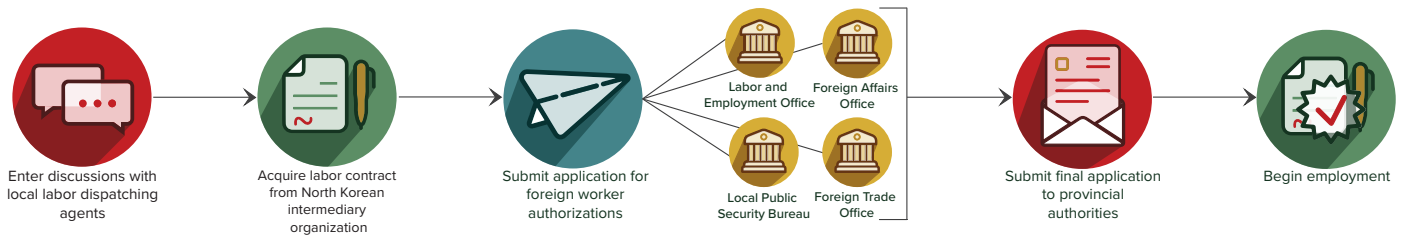
has relocated to other regions since 1989.⁴¹ Some government officials in the Far East have publicly committed to keeping DPRK laborers as long as their contracts are valid, and on July 22, 2018, Russian media reported that President Vladimir Putin ordered the Russian Ministry of Labor to extend work permits for 3,200 DPRK nationals through December 22, 2019 in an apparent violation of UN sanctions.^{42 43}

Unlike Russia, China has only recently begun to pursue bilateral agreements for importing North Korean labor at scale. While North Koreans have legally opened restaurants and hotels in China since the 1990s, the first large-scale influx of North Korean labor began in 2012, when China agreed to accept 40,000 workers in Chinese cities on industrial training visas.⁴⁴ Research and reporting suggest that North Korean workers in China are concentrated along the China-DPRK border, where DPRK labor imports help to advance both political and economic objectives. For example, at least one Chinese analyst has attributed an increase in labor exports to Chinese border cities to complementary labor market forces on either side of the border.^{ix} Chinese regional development targets require more labor than is available domestically, and North Korea's sluggish economy cannot provide enough jobs for its workers.⁴⁵ Indeed, statistics from China's National Tourism Administration show that the number of North Korean women entering China more than tripled from 2010 to 2013, which some analysts suggest correlates with media reports of expanded female-only labor imports into export industry services in Chinese border cities.⁴⁶ Others have described DPRK labor imports in terms of broader national strategic objectives. In September 2017, for example, the Dandong municipal government wrote that its strategy of using cheap North Korean labor to attract investment in textiles is a way for the city both to support the One Belt One Road initiative and to lessen the impact of international sanctions on North Korea.⁴⁷

For a time, both Russia and China appeared to be expelling North Korean workers well before UN deadlines, but more recent reporting suggests that North Korea may have again begun to dispatch labor to both countries. For example, while the Russian Ministry of Labor reported no foreign worker authorizations for North Koreans in January 2018, it announced 806 such authorizations when it released a new list of foreign worker permits on July 5.⁴⁸ Similar trends have emerged in China. While many English- and Chinese-language news reports described shuttered factories and restaurants in Chinese border towns following new UN sanctions in the fall of 2017, *Radio Free Asia* reported in April 2018 that DPRK workers were returning across the border in an apparent violation of UN sanctions.^{49 50} It appears, then, that just as in Russia, structural conditions in China create strong incentives to continue using North Korean labor, and in both jurisdictions, the evidence suggests that labor operations will continue unless international law is more forcefully applied.

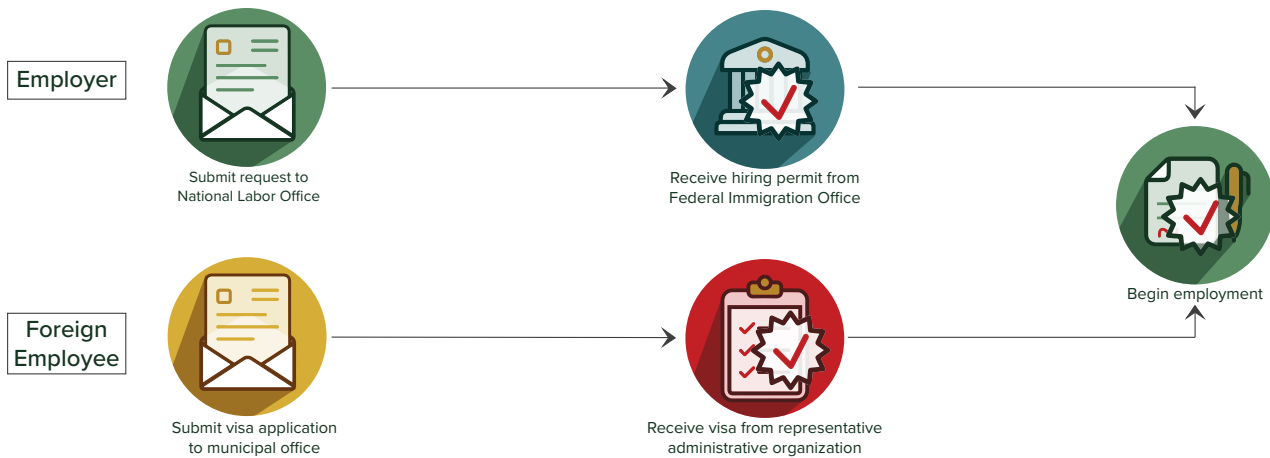
ix Internal translation: "Plans for large-scale DPRK labor imports in Yanbian and other places come from the resonance of drives for economic development impulses by officials in Jilin province's border trade cities and North Korea's limited liberalization." Original text: "延边州等地的大规模朝鲜劳工输入计划, 源自吉林省边贸城市官员的经济发展冲动和朝鲜在有限度开放搞活的共鸣。"

Hiring Process for Chinese Companies



Source: Hua, M. L. (2017, September 17). 最好的奴隶：雇个朝鲜工人 [The Best Slave: Hire a North Korean Worker]. Dunjiaodu. Retrieved from: <http://www.dunjiaodu.com/qizhouzhi/2017-09-17/1840.html>

Hiring Process for Russian Companies



Source: Conditions of Labor and Human Rights: North Korean Overseas Laborers in Russia. (2016). Database Center for North Korean Human Rights. Pages 117-127.

Country Analysis: Russia

To date, most analysis and reporting of DPRK labor in Russia has relied heavily on defector interviews. For example, in its 2016 book *Conditions of Labor and Human Rights: North Korean Overseas Laborers in Russia*, the Database Center for North Korean Human Rights conducted extensive defector interviews to describe the relationships between Russian authorities, Russian companies, dispatching agents, and local North Korean companies in Russia's timber and construction industries.⁵¹ Indeed, such research has provided a remarkably detailed understanding of the mechanisms through which DPRK laborers are dispatched to Russia. However, because defector testimony is inherently retrospective and bound to recollection of an individual experience, additional analysis is required to understand DPRK overseas labor on a systems level.

The following section applies our open source investigative methodologies and network analysis framework to the companies, organizations, and individuals authorized to hire North Korean workers in Russia. We base our analysis on a dataset of official, publicly reported foreign worker authorization approvals from the Russian Ministry of Labor.ⁱ The dataset includes not only corporate identifiers like name, tax identification number, and address but also specific details about worker authorizations like occupation, reported wages, and—since 2015—nationality. By exploring connections between all entities legally approved to hire North Korean workers from 2015 to 2018, we can—with only a few exceptions—map the entire possible system of *legal* North Korean labor in Russia, the country where North Koreans have worked overseas longest.⁵² In doing so, we conduct the first system-level analysis of the companies and corporate networks across a key destination jurisdiction for North Korea's labor export program.

The dataset has several limitations. First, while the Ministry of Labor annually publishes the number of approved foreign worker authorizations, it does not report the final number of workers that the firms actually hire. Thus, it is possible that firms in the dataset hired no North Korean workers. Second, the dataset does not show how many North Koreans were either already working in Russia or working there illegally, which prevents a conclusive calculation for the total number of workers in the country.ⁱⁱ ⁱⁱⁱ Third, some local laws create exemptions for foreigners to work without formal authorizations, and thus a portion of North Korean workers may not be captured within the dataset.⁵³

Worker Authorization Trends

Official foreign worker authorization records indicate that between 2015 and 2018, the Russian Ministry of Labor approved 691 legal entities—including 24 individuals—to hire a total of 150,293 North Korean workers. Employers licensed to hire North Koreans span 159 different sectors and hired workers for 334 unique job roles.^{iv} The Russian Ministry of Labor approved a full 27,394 authorizations (18%) for North Koreans to work as bricklayers, the most of any one occupation in the dataset.⁵⁴ North Koreans were also authorized for high-

i From 2015 to 2018, the Russian Ministry of Labor released several updated datasets of the companies to which it granted foreign worker authorizations. This report bases its analysis on the last version published each year.

ii This is a particularly noteworthy limitation, as our analysis found several instances in which North Koreans were employed illegally at firms which had received authorization to hire North Koreans legally.

iii News articles have reported instances of DPRK laborers working on both three- and five-year fixed term contracts. For some examples, see Pleitgen, F., Mortensen, A., & Ilyushina, M. (2017, September 12). N. Korean workers in Russia fear sanctions will send them home. CNN. Retrieved from: <https://www.cnn.com/2017/09/12/asia/north-korea-sanctions-russia-vladivostok/index.html>. Archived at <https://perma.cc/R62R-3WFFV>; Kim, J., Kim, M. S., & Ponnudurai, P. (2014, April 25). North Korea Steps Up Export of Workers to Russia to Boost Foreign Exchange. Radio Free Asia. Retrieved from: <https://www.rfa.org/english/news/korea/russia-04252014134953.html>. Archived at <https://perma.cc/TD8Y-YSTK>.

iv The Russian Ministry of Labor provides an industry code for each company (код по ОКВЭД) and a job code (Код профессии по ОКП/ДТР) for the specific occupation associated with a given foreign worker authorization. The dataset contains 334 unique job codes but 343 unique job titles.

skilled roles in engineering and management. Reported monthly salaries for North Korean workers ranged from ₺8,500 RUB (approximately \$135 USD)^v to ₺170,000 RUB (\$2,706 USD) with an average of ₺18,928.38 RUB (\$301 USD) per worker, approximately half of the International Labor Organization's estimate for Russia's average monthly income in 2016.^{vi}

More than half of legal entities within the dataset received authorization to hire North Koreans in multiple years. Eleven companies (2%) received authorization to employ North Korean workers every year from 2015 to 2018. A full 259 legal entities (37%) received foreign worker authorizations for North Koreans each year from 2015 to 2017, and an additional 141 entities (20%) received foreign worker authorizations for North Koreans in two of those years. The dataset indicates that the Russian Ministry of Labor granted authorization to hire North Korean workers not only to companies but also directly to 24 individuals registered as entrepreneurs.⁵⁵ The total number of authorized workers and recipient legal entities by year were as follows:⁵⁶

- 53,719 North Korean workers at 469 legal entities in 2015
- 50,992 North Korean workers at 453 legal entities in 2016
- 44,722 North Korean workers at 451 legal entities in 2017
- 806 North Korean workers at 12 companies in 2018

In 2018, the Russian Ministry of Labor has released two sets of foreign worker authorizations. Only the most recent set, published July 5, includes permits for North Korean workers.^{vii viii}

Beneficial Ownership Trends

The legal entities authorized to hire North Korean workers comprise a variety of corporate networks and financial structures. We used official Russian registry documents to map ultimate beneficial owners and subsidiary holdings for all 691 initial entities that the Ministry of Labor authorized to hire North Korean workers between 2015 and 2018.^{ix} To map beneficial ownership, we pulled corporate registry filings for all 691 initial entities to identify owners, directors, and shareholders. If a company listed a second company as an owner, we again pulled corporate registry filings for the second company to identify its owners, directors, and shareholders. We repeated this process until the filings showed only natural person owners, directors, or

v Unless otherwise indicated, all ruble to dollar conversions were made at rates prevailing in July 2018.

vi The International Labor Organization estimates that in 2016, the average monthly income in Russia was ₺36,709 RUB. See Monthly Earnings. International Labour Organization. Retrieved from: http://www.ilo.org/ilostat/faces/oracle/webcenter/portallapp/pagehierarchy/Page3.jspx?MBI_ID=435&_afrLoop=1304201592826175&_afrWindowMode=0&_afrWindowId=eienm94l0_42#!%40%40%3F_afrWindowId%3Deienm94l0_42%26_afrLoop%3D1304201592826175%26MBI_ID%3D435%26_afrWindowMode%3D0%26_adf.ctrl-state%3Deienm94l0_86

vii On July 22, 2018, Russian media reported that President Vladimir Putin ordered the Ministry of Labor to extend permits for North Korean workers through December 22, 2019. The companies that host workers with extended permits are currently unknown. See РФ выделила квоты на работу для 3,2 тыс. рабочих из КНДР [The Russian Federation allocated quotas for work for 3200 workers from the DPRK]. (2018, July 20). Interfax. Retrieved from: <http://www.interfax.ru/world/621841>. Archived at <https://perma.cc/GG4S-8VAG>.

viii The 12 companies that the Russian Ministry of Labor approved to hire North Korean workers on July 5, 2018 are Agrokombinat Yuzhny JSC (АО АГРОКОМБИНАТ ЮЖНЫЙ); Vostokstroi LLC (ООО ВОСТОКСТРОЙ); Dom-Master LLC (ООО ДОМ-МАСТЕР); Zen Stroi LLC (ООО ЗЕН-СТРОЙ); Zenko LLC (ООО ЗЕНКО); Invest Stroi LLC (ООО ИНВЕСТ СТРОЙ); Korgensstroi LLC (ООО КОРГЕНСТРОЙ); KTC Yusen LLC (ООО КТС ЮСЕН); Osandok-1 LLC (ООО ОСАНДОК-1); Razvitiye-NN LLC (ООО РАЗВИТИЕ-НН); Stroipodryadchik LLC (ООО СТРОЙПОДРЯДЧИК); and Tuda-Stroi LLC (ООО ТУРА-СТРОЙ).

ix The Financial Action Task Force defines ultimate beneficial owner as “the natural person/s who ultimately owns or controls a customer and/or the person on whose behalf a transaction is being conducted. It also incorporates those persons who exercise ultimate effective control over a legal person or arrangement.” See Transparency and Beneficial Ownership. (October 2014). Financial Action Task Force. Retrieved from: <http://www.fatfgafi.org/media/fatf/documents/reports/Guidance-transparency-beneficial-ownership.pdf>

shareholders, which constitute the ultimate financial beneficiaries of companies authorized to employ North Korean workers. We then repeated a similar process to identify subsidiary holdings of the initial 691 people and companies. As a last step, we combed the resulting dataset to exclude relationships which did not indicate beneficial ownership as defined by the Financial Action Task Force, such as liquidators or receiverships. The process expanded our initial dataset of 691 entities to include an additional 1,667 people, companies, and organizations within Russia.

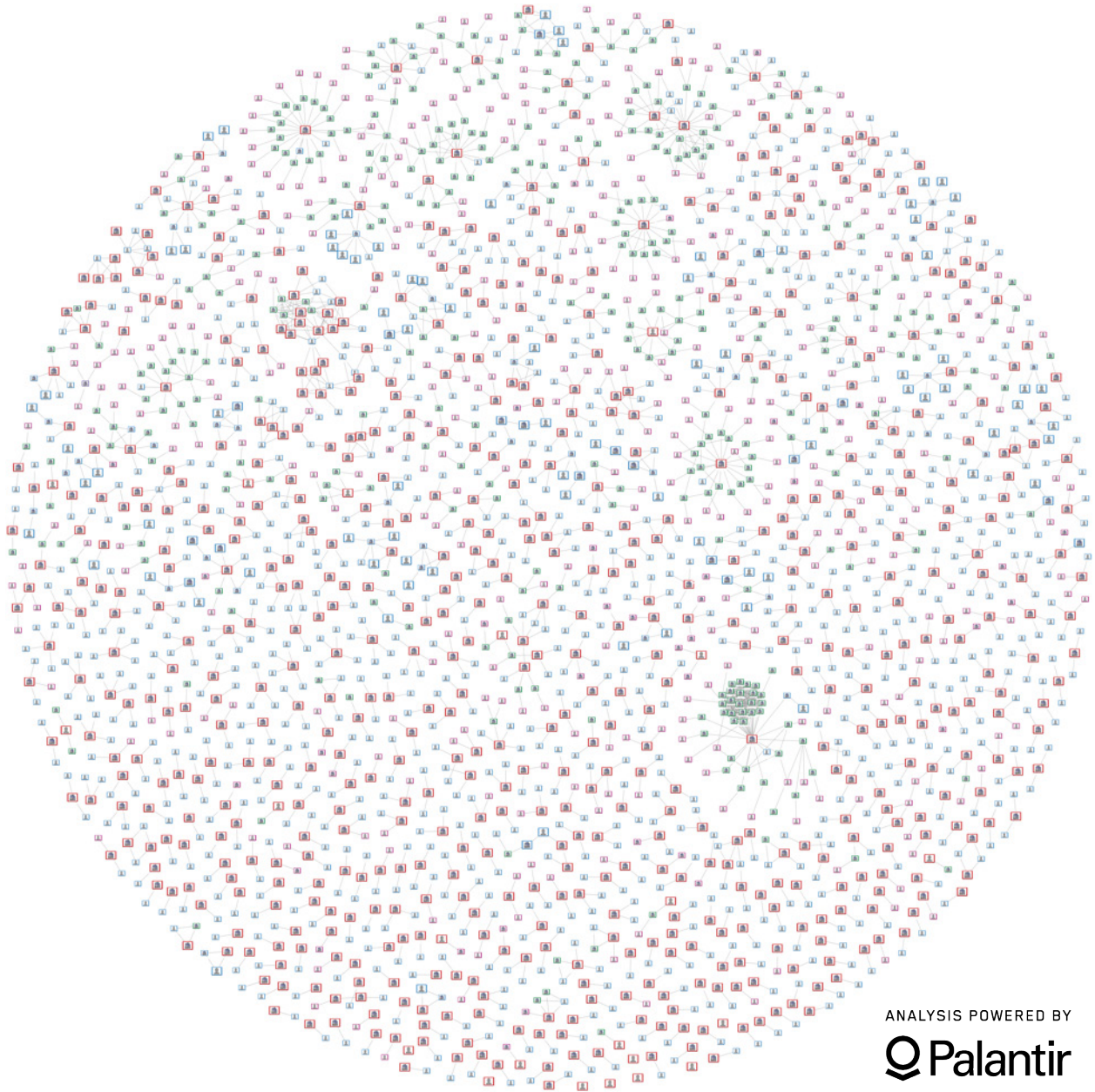


Figure 1. Ultimate Beneficial Ownership & Subsidiaries of Russian Entities Authorized to Hire North Korean Workers (2015-2018)

The expanded dataset has several limitations. First, company officers who are foreign nationals do not always list information like tax identifiers that can help to match names conclusively across corporate registry documents. For company officers whose names were identical, we conducted open source research to find corroborating evidence, like shared contact information or historical business activity, that would indicate

both names correspond to the same person. When we could not locate such evidence, we treated each name as a unique individual. Similarly, many organizations on the initial entities list were owned by foreign-registered companies, which would not appear in the Russian corporate registry, and our investigation did not always locate official corporate filings in the relevant jurisdictions. Finally, while the dataset captures functional relationships between people and companies that appear on corporate registry filings, it does not include more subtle forms of network connections like shared addresses or contact information that may be found in a broader, longer-term open source investigation. For these reasons, calculated metrics may underestimate the size of corporate networks that facilitate DPRK labor in Russia. For the remainder of the subsection, we therefore define network or cluster as the collection of people, companies, and organizations that were listed as the owner, director, shareholder, legal representative, or manager of an entity authorized to hire North Korean workers, its corporate owners, or its subsidiaries.

No. of Initial Entities X	No. of People Connected to X Initial Entities	No. of Organizations Connected to X Initial Entities	Total People & Organizations Connected to X Initial Entities
1	878	364	1,242
2	73	10	83
3	14	2	16
4	6	1	7
5	2	0	2
6	3	0	3
7	0	0	0
8	0	0	0
9	0	0	0
10	1	0	1
Totals:	977	377	1,354

Table 3. Network Complexity within One Degree of Initial Entities

No. of First Degree Connections X	No. of Initial Entities with X First Degree Connections
0	8
1	216
2	310
3	85
4	37
5	10
6	4
7	5
8	6
9	2
10	1
11	1
14	1
15	1
16	1
19	1
20	1
33	1
Totals:	691

Table 4. One-Degree Connections of Initial Entities

The data indicate that entities authorized to hire North Korean workers in Russia are part of larger corporate networks of varied size. Within the dataset, our analysis finds there are 531 distinct networks with the average cluster containing five companies or individuals.^x We observed that networks within the data contain as few as one and many as 17 initial entities per cluster but with an average of only 1.3 initial entities per group. This suggests that, based on functional relationships represented in official business registry filings alone, the corporate networks for companies authorized to hire North Korean workers in Russia are relatively decentralized.

An analysis of entities within one degree of separation from people and companies authorized to hire North Korean workers further indicates that companies typically form simple corporate structures. Within the expanded dataset of 1,667 identified people and companies, 1,354 (81%) are within one degree of an initial entity authorized to hire North Korean workers. The data further show that approximately 92% of those people and companies are directly linked to only one initial authorized entity. In one instance, however, one person is directly connected to 10 companies that received authorization to hire North Korean workers. Data on connections to initial entities are summarized in Table 3.

The data further indicate that people and companies within one degree of initial entities do not typically maintain diverse corporate holdings. Eight individual entrepreneurs authorized to hire North Korean workers

^x To derive descriptive network statistics, we applied the Walktrap and Louvain methods for community detection. Both yielded the same average network size. For a sample discussion on the relative strengths and weaknesses of each methodology, see Orman, G., Labaut, V., Cherifi, H. Qualitative Comparison of Community Detection Algorithms. Galatasaray University and the University of Burgundy. Retrieved from: <https://arxiv.org/pdf/1207.3603.pdf>

appear to have no additional corporate holdings, and more than half of 691 initial entities appear linked to only two other people, companies, or organizations as either company officers or subsidiaries. This was not always the case: in one instance, one company authorized to hire North Korean workers is connected within one degree to 33 people and companies. Data for the numbers of corporate links across initial entities are summarized in Table 4.^{xi}

The above analysis suggests that, based on functional corporate relationships alone, Russian companies authorized to hire North Korean workers appear to maintain decentralized management and ownership structures.

Registration Trends

Subsequent investigation finds that networks which appear discrete on paper often use the same contact information and registered addresses to conduct business operations. On Russian Ministry of Labor documents, approximately one third of Russian entities authorized to hire North Korean workers reported an address either identical or at the same building as another entity in the dataset.^{xii} From 2015 to 2018, 691 entities reported 608 unique addresses.⁵⁷ A full 230 companies (33%) reported only 82 addresses (11%) but received 64,698 authorizations (43%) for North Korean workers, indicating that companies operating from just over one tenth of registered locations received nearly half of foreign worker authorizations for North Korean workers between 2015 and 2018.^{xiii} This trend was consistent across all four years:

- In 2015, 159 companies (34%) registered addresses that were either identical or in the same building as another entity in the dataset. In the most frequent instance, 11 companies registered to one address in St. Petersburg.
- In 2016, 153 companies (34%) registered addresses that were either identical or in the same building as another entity in the dataset. In the most frequent instance, 11 companies registered to one address in St. Petersburg.
- In 2017, 140 companies (31%) registered addresses that were either identical or in the same building as another entity in the dataset. In the most frequent instance, seven companies registered to one address in Moscow.
- In 2018, six companies (50%) registered addresses that were either identical or in the same building as another entity in the dataset. In three instances, two companies registered to one address in Tyumen.

Many companies that received authorizations to hire North Korean workers have used similar or identical names, including names that appear to be Russian transliterations of the names of well-known North Korean companies.^{xiv} For example, within the dataset, Rynrado (“РЫНРАДО”) appears as the name for at least nine companies, which together received 9,019 authorizations for North Korean workers between 2015 and 2017.⁵⁸ Three are listed as active Russia-DPRK joint ventures on their business registry filings, which violates

xi These figures exclude direct connections between initial entities.

xii We use the language “identical or at the same building” because some companies in the dataset list an address that does not include details more specific than a given building, e.g., room number. It is therefore possible that companies occupy separate offices.

xiii Russian Ministry of Labor documents indicate that in several instances, companies listed multiple addresses within the same year. As a result, between 2015 and 2018, the 691 entities authorized to hire North Korean workers reported a total of 756 addresses, many of which matched an address reported by another company or person within the dataset.

xiv Eight companies use the word Pyongyang (ПХЕНЬЯН) in their name. Russian Ministry of Labor. Document held by author.

paragraph 18 of UNSCR 2375.^{xv 59} A fourth, “Rynrado General Trading Corporation” (ООО КФ ГВО “РЫНРАДО”), received one authorization for a North Korean to work as “CEO” in both 2015 and 2016.^{xvi} The company received a total of 1,805 authorizations for North Korean workers each year from 2015 to 2017, the third most authorizations granted to any one company in the dataset. The name is a nearly identical translation of the English name for Korea Rungrado General Trading Corporation, a North Korean entity sanctioned by the US Department of Treasury’s Office for Foreign Assets Control (OFAC) in December 2016 for exporting workers to Asia and Africa to generate revenue for North Korea’s WMD program.⁶⁰ The “Rynrado General Trading Corporation” incorporated in Russia is reportedly owned by a Chinese citizen, but it was previously owned by the DPRK-based “Rynrado General Trading Corporation.”⁶¹

Similarly, the name Cholson (“ЧХОЛСАН”) appears as the name for at least seven companies, which cumulatively received 6,301 authorizations between 2015 and 2017.⁶² Three are listed as active Russia-DPRK joint ventures on their registry filings in violation of UNSCR 2375. A fourth received one authorization for a North Korean to work as a “commercial director” in 2015, which may therefore constitute a cooperative entity prohibited by paragraph 18 of UNSCR 2375.^{xvii 63} Together, six of the top 10 recipients of foreign worker authorizations for North Korean workers in Russia use either “Rynrado” (“РЫНРАДО”) or “Cholson” (“ЧХОЛСАН”) in their names.⁶⁴ Table 5 summarizes data for the top 10 recipients of worker authorizations for North Koreans from 2015 to 2018:

Russian Name	English Transliteration	Tax ID Number	Total Authorizations Received for North Korean Workers (2015–2018)	Nationality of Owners
ООО “ЧХОЛСАН”	Cholson LLC	5405284511	1,941	DPRK (100%)
ООО ТСК “ЧХОЛСАН”	Cholson CCC	2721104810	1,839	DPRK (100%)
ООО КФ ГВО “РЫНРАДО”	Rynrado GTC	2460052058	1,805	China
ООО “РЫНРАДО”	Rynrado LLC	2722040599	1,701	DPRK (100%)
ООО “РЫНРАДО”	Rynrado LLC	2536133334	1,600	Unknown, previously Vietnam
ООО “ЕНИСЕЙ”	Enisei LLC	2466210127	1,592	Korea
ООО “ЗЕНКО-39”	Zenko-39 LLC	2308160794	1,550	China
ООО “РЫНРАДО”	Rynrado LLC	5401212192	1,322	DPRK (50%)
ООО “СпецРемСтрой”	SpetcRemStroi LLC	1659102616	1,250	DPRK (100%)
ООО “СТРОИТЕЛИ-7”	Stroiteli-7 LLC	0276089944	1,248	Unknown, previously DPRK

Table 5. Top 10 Recipients of Foreign Worker Authorizations for North Korean Workers (2015-2018)^{xviii 65}

xv Registry filings indicate that one company that used the name “Rynrado” discontinued operations in 2015. Russian corporate registry. Document held by author.

xvi Russian Ministry of Labor records indicate that Rynrado GTC was authorized to hire one North Korean for the role “Главный Директор фирмы” in 2015 and 2016.

xvii The company, (ООО “СК”ЧХОЛСАН”) received approval to hire a North Korean worker for the role “Директор коммерческий.” Russian Ministry of Labor. Document held by author.

xviii Filings in the Uniform State Register for Enterprises and Organizations (Единый Государственный Реестр Предприятий и Организаций) sometimes include a nationality for the owners of Russian companies. Companies that do not explicitly list North Korean companies on their business registry filings may also be owned or operated by North Korean nationals

Case Study: Co-Location

On December 16, 2017, Russian news media reported that local authorities had discovered an “underground bank” run by North Korean citizens in the basement of a St. Petersburg dormitory.⁶⁶ Authorities reportedly discovered the bank while investigating a robbery, during which they found a device for cashing out funds and sending encrypted electronic payments to North Korea.^{67 68} A similar robbery had occurred the year prior. In October 2016, Russian media reported masked men had demanded the dorm’s residents hand over \$80,000 USD from a safe, which allegedly held the salaries of the dorm’s North Korean residents who worked for the construction companies Bu Khyn LLC (ООО “БУ ХЫН”) and Mokran LLC (ООО “МОКРАН”).⁶⁹ One news report included the names of four robbed North Koreans, one of which matches the name of Bu Khyn LLC’s sole shareholder.^{70 71}



Image 1. Dormitory at Registered Address of Daesung LLC⁷²

Russian Ministry of Labor documents indicate that between 2015 and 2018, four companies have used the dormitory’s address to request North Korean workers: Bu Khyn, Mokran, Kanson LLC (ООО “КАНСОН”), and Daesung LLC (ООО “ТЭ СОН”).⁷³ Kanson and Mokran were recipients of the 11th and 12th most cumulative foreign worker authorizations for North Koreans between 2015 and 2018, during which all four companies collectively received a total of 2,948 authorizations for North Korean workers.^{xix} As recently as July 2018, Bu Khyn, Makron, and Daesung have appeared on job solicitations for Korean translators at their worksites, and in previous posts, Bu Khyn, Kanson, and Makron have appeared with the email address kanson2@mail.ru.^{74 75} Corporate registry filings indicate that in March 2018, all three companies relocated to adjacent offices in St. Petersburg.⁷⁶

Corporate registry filings further indicate that the fourth company, Daesung LLC, is still registered to the dormitory at which local authorities reportedly found an underground bank.⁷⁷ Daesung LLC appears to match the name of US-sanctioned Korea Daesong Bank, which OFAC first sanctioned in 2010 for being a key component of “Office 39’s financial network supporting North Korea’s illicit and dangerous activities.”⁷⁸ News reports further indicate that Daesung LLC was subcontracted to build the St. Petersburg World Cup stadium, at which one of its North Korean employees died in a shipping container in November 2016.⁷⁹

or local subsidiaries of North Korean companies.

xix The Russian Ministry of Labor data also include other companies with names identical to Mokran LLC and Kanson LLC (but with unique tax registration numbers) that were also approved to hire North Korean workers for construction jobs in other parts of the country. Russian corporate filings show that their directors also have Korean names. Kanson received 1,246 cumulative authorizations for North Korean workers between 2015 and 2018 and Mokran received 1,221.

On the Russian Ministry Labor's 2017 foreign worker authorization forms, Daesung LLC uses the name Daesung-Mirae LLC (ООО "ТЭ СОН-МИРЭ") and appears with the email mire415@mail.ru on job solicitations.^{xx 80} According to filings in the Uniform State Register for Enterprises and Organizations (ЕГРПО), Daesung LLC is owned by a North Korean citizen.⁸¹

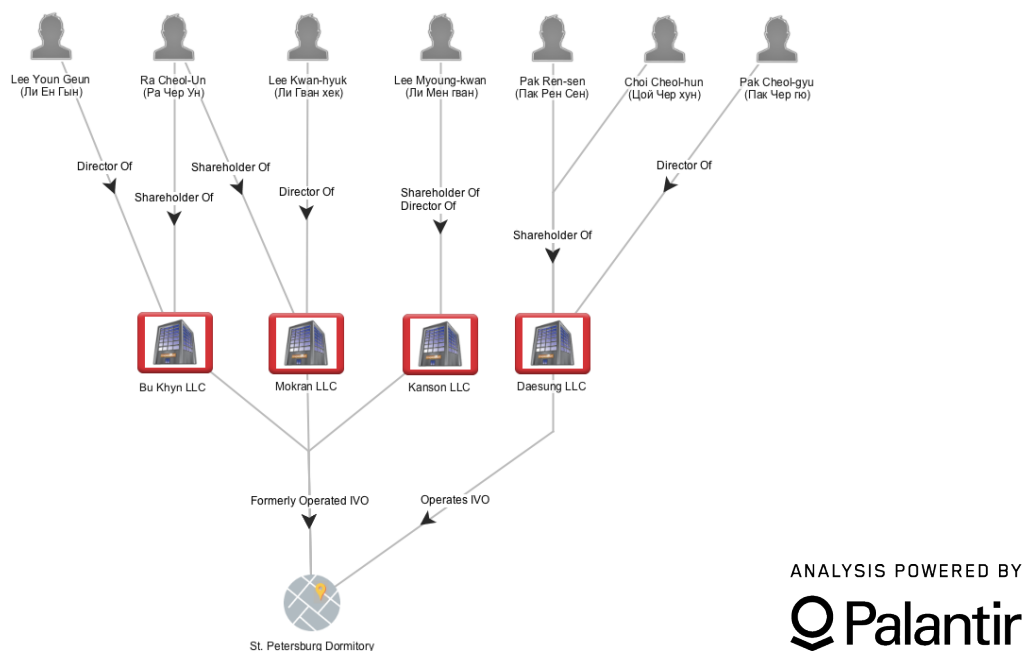


Figure 2. Companies Located at St. Petersburg Dormitory

Case Study: Connection to Sanctioned North Korean Entities

Russian Ministry of Labor documents indicate that a company called Zenko-39 LLC (ООО "ЗЕНКО-39") received 1,550 foreign worker authorizations for North Koreans between 2015 and 2017, which, according to the data available, is the seventh most authorizations for DPRK workers granted to any one company in Russia over the four-year period.⁸² Three other companies authorized to hire North Koreans have also listed the same address on Russian Ministry of Labor and Russian corporate registry filings: Daeguk LLC (ООО "ДЭГУК"), Stroi-Komfort LLC (ООО "СТРОЙ-КОМФОРТ"), and Munmen LLC (ООО "МУНМЕН").⁸³ All four companies collectively received authorizations for 2,285 DPRK workers between 2015 and 2017, and all but Stroi-Komfort LLC appear on recent job solicitations for Korean translators with the email address genco39@mail.ru.^{84 85} Zenko-39 published job solicitations for Korean translators as recently as July 22, 2018.⁸⁶

The name Zenko is also used in the Russian name for Korea General Corporation for External Construction (GENCO;^{xxi} КОРЕЙСКОЕ ГЕНЕРАЛЬНОЕ ОБЩЕСТВО ПО СТРОИТЕЛЬСТВУ ЗА РУБЕЖОМ "ЗЕНКО"), a North Korean company sanctioned by the US Department of Treasury's Office

xx The company's tax identification number is consistent across each year of the Russian Ministry of Labor's foreign worker authorization forms. Russian Ministry of Labor. Documents held by author.

xxi On Naenara, the official online portal for the North Korean government, Korea General Corporation for External Construction is abbreviated as GENCO. See Korea General Corporation for External Construction. (2011, November 16). Naenara. Retrieved from: https://web.archive.org/web/20111116081011/http://www.naenara.com.kp/en/periodic/f_trade/index.php?contents+1645+2011-01+47+3. Archived at <https://perma.cc/4G99-RNEQ>.

for Foreign Assets Control (OFAC) in December 2016 for exporting DPRK workers to the Middle East to generate revenue for the Kim regime.^{xxii} ⁸⁷ Russian corporate registry filings show that a DPRK company by the name Zenko (ЗЕНКО) appears as a shareholder on the active Russian-DPRK joint venture Sako Rynma LLC (ООО "САКОРЕНМА"), which received 216 foreign worker authorizations for North Koreans between 2015 and 2016.⁸⁸

Сведения об учредителях (участниках) юридического лица		
1		
39	ГРН и дата внесения в ЕГРЮЛ сведений о данном лице	2036500609066 24.04.2003
40	Полное наименование	ГЕНЕРАЛЬНОЕ ОБЩЕСТВО ПО СТРОИТЕЛЬСТВУ ЗА РУБЕЖОМ "ЗЕНКО" КНДР
41	ГРН и дата внесения в ЕГРЮЛ записи, содержащей указанные сведения	2106501002012 13.01.2010
42	Страна происхождения	КОРЕЯ (КНДР)

Image 2. GENCO as Shareholder on Sako Rynma LLC Business Registry Filing

Zenko-39 appears to have relationships with other North Korean companies in Russia through its corporate officers. On a government document of construction companies in Krasnodar, Russia, the name Kim San Ne (КИМ СЕН НЕ) appears with the same email address as contact person for Zenko-39 and multiple other companies authorized to employ North Korean laborers.⁸⁹ Historical corporate records indicate that a person by the name Kim San Ne was formerly CEO of Zenko-39.⁹⁰ On a February 2016 document of job openings hosted on the website of a municipal government in Krasnodar, Kim San Ne appears repeatedly with three email addresses, including genco39@mail.ru, and one mobile phone number as the contact person for Zenko-39, Stroi-Komfort, Munmen, and an additional Krasnodar company called Mirae-1 LLC (ООО "МИРЭ-1").^{xxiii} Russian corporate registry filings indicate that Mirae-1 LLC's director, Kim Chan Bo (КИМ ЧХАН БО), is also director for at least two other Krasnodar companies authorized to hire North Korean workers: Mirae-2 LLC (ООО МИРЭ-2) and Gold Star LLC (ООО ЗОЛОТАЯ ЗВЕЗДА).⁹¹ Mirae-1, Mirae-2, and Gold Star all appear on unofficial registry filings with the same phone number and collectively received authorization to hire 970 North Korean workers between 2016 and 2017.⁹² ⁹³

The name Kim San Ne also appears on a Russian Chamber of Commerce announcement as the legal representative for Korea Cholson General Trading Group, a North Korean company, when it received accreditation in Russia in 2004.⁹⁴

xxii Russian-language materials generally refer to GENCO as Корейское генеральное общество по строительству за рубежом "ЗЕНКО". For example, see Представительства иностранных фирм, аккредитованные ТПП РФ [Representative Offices of Foreign Firms Accredited by the Commercial-Industrial Chamber of the Russian Federation]. (2007). Primorskiy Krai Commercial-Industrial Chamber. Retrieved from: www.ptpp.ru/add_files/0akkred%5B1%5D.pr-va%2520s%2520adresami2007.doc

xxiii The name Kim San Ne appears with the same mobile phone number on each entry but uses multiple email addresses, including genco39@mail.ru. See Сведения о вакантных рабочих местах с предоставлением жилья на период работы по состоянию на 03.02.2016 [Information on vacant workplaces with the provision of housing for the period of work as of 03.02.2016]. (2016, February 03). Prahtarsk. Retrieved from: http://webcache.googleusercontent.com/search?q=cache:p36K_iXnkikj:www.prahtarsk.ru/sovetraiona/otchet/vak_ukr_03022016.xlsx+&cd=8&hl=en&ct=clnk&gl=us. Archived at <https://perma.cc/TZ8A-W69K>.

Case Study: Global Defense Supply Chains

NEVZ-Ceramics Joint Stock Company (АО "НЭВЗ-КЕРАМИКС") is a Russian engineering firm that received authorization to hire 30 North Korean workers for technical jobs in 2015.^{xxiv 95} According to its website, the company is engaged in metallurgical engineering related to nanostructured ceramics for the power, nuclear, defense, chemical, radio electronics, and petroleum industries.⁹⁶

Russian corporate registry documents show that NEVZ-Ceramics is jointly owned by the St. Petersburg electronics company NEVZ-Soyuz Holding Co. (ХК ПАО "НЭВЗ-СОЮЗ") and the Russian state-owned technology investment firm RUSNANO JSC (АО "ПОЧАНО").⁹⁷ According to its website, RUSNANO has the mission of building “a competitive nanotechnology industry in Russia, using the capacities of the country’s own scientists and transfer of the latest technologies from abroad.”⁹⁸ Prominent Russian businessman and politician Anatoly Chubais serves as chairman of the executive board of RUSNANO’s managing company, and Viktor Vekselberg, a Russian national sanctioned by OFAC on April 6, 2018 under the Countering America’s Adversaries Through Sanctions Act, sits on RUSNANO’s board of directors.^{xxv 99}

NEVZ-Ceramics develops and sells products with a variety of military applications.¹⁰⁰ On its website, the company advertises aluminum oxide and aluminum nitride ceramics, which have strong resistance to heat and radiation and can be used to protect highspeed missiles from disintegration.^{xxvi 101} In January 2018, the *New York Times* described warhead re-entry technology as North Korea’s “final technological hurdle” in developing nuclear strike capabilities, and in 2013, China banned companies from exporting certain ceramics to North Korea over concerns that the products could help advance North Korea’s nuclear program.^{102 103} NEVZ-Ceramics also advertises that its ceramic insulators are used in “military night vision devices,” and in a promotional video, the company claims its product is used to armor a range of military vehicles including tanks, helicopters, and ships.^{104 105} On June 5, 2015, *IB Times* reported that the Russian military had already begun to adopt NEVZ-Ceramics hardware for the next-generation Armata T-14 tank, which is scheduled to begin full-scale production in 2020.^{106 107} On the same day, TASS reported that ceramic armor components would also be used on Russia’s Kurganets and Boomerang combat vehicles.¹⁰⁸

Commercially available trade records estimate that NEVZ-Ceramics has received at least 462 shipments from at least 23 countries between November 28, 2011 and November 28, 2017.^{xxvii} By number of shipments, the top five countries of origin are Germany (236 shipments, 51.1%), China (76 shipments, 17.1%), Japan (38 shipments, 8.2%), the United States (28 shipments, 6.1%), and South Korea (19 shipments, 4.1%).^{xxviii} Russian export records estimate that, between February 28, 2012 and March 6, 2018, NEVZ-Ceramics sent at least

xxiv NEVZ-Ceramics’ parent company Rusnano wrote on its website that the company would create 350 jobs, which would indicate that North Koreans could have filled more than 18% of the company’s jobs. See: NEVZ-Ceramics Profile. Rusnano. Retrieved from: <http://en.rusnano.com/portfolio/companies/nevz-ceramics>. Archived at <https://perma.cc/8U35-B3QR>.

xxv OFAC sanctioned Viktor Vekselberg for “operating in the energy sector of the Russian Federation economy.” For more information, see Treasury Designates Russian Oligarchs, Officials, and Entities in Response to Worldwide Malign Activity. (2018, April 6). U.S. Department of the Treasury. Retrieved from: <https://home.treasury.gov/news/press-releases/sm0338>. Archived at <https://perma.cc/96W5-BYU3>.

xxvi In an article about nuclear reactors, the University of Wisconsin-Madison writes that aluminum oxide nanoceramics will help “next-generation nuclear systems” withstand “higher temperatures and radiation fields than ever before.” See Brodt, L. (2016, December 8). New materials for more safe and economical nuclear reactors. University of Wisconsin-Madison. Retrieved from: <https://www.engr.wisc.edu/new-materials-safe-economical-nuclear-reactors/>. Archived at <https://perma.cc/U4JV-GRJQ>.

xxvii NEVZ-Ceramics is listed as the consignee for 459 shipments. On 3 shipments, VED Agent JSC (АО "ВЭД АГЕНТ") is listed as the consignee while NEVZ-Ceramics is listed as the Russian payee. Commercially available trade data. Documents held by author.

xxviii Three shipments are listed as Taiwan. Within the dataset, Taiwan is inconsistently labeled as a both an independent country and a part of China. For this analysis, Taiwan is treated separately from mainland China. Commercially available trade data. Documents held by author.

40 shipments to defense companies in the United States, the United Kingdom, France, Germany, Belgium, Israel, the United Arab Emirates, and Vietnam.¹⁰⁹



Image 3. Screenshots from NEVZ-Ceramics Promotional Video¹¹⁰

NEVZ-Ceramics and its two parent companies allegedly maintain close working relationships with leading Western scientific institutions. On its website, RUSNANO writes that its subsidiary, RUSNANO USA, Inc., was established in 2010 to “represent the interests [and portfolio companies] of the RUSNANO Group in the US and Canada” and to facilitate “interaction with US venture capital and direct investment funds, high-tech companies, universities and technology transfer centers.”¹¹¹ California corporate registry filings show that the company is headquartered in Menlo Park, California, and on the Russian-language version of its website, RUSNANO promotes the subsidiary’s proximity to Stanford University.^{112 113} In 2014, NEVZ-Ceramics and NEVZ-Soyuz both claim that NEVZ-Ceramics allegedly works with “worldwide renowned research centers,” and in a promotional video, it lists partner companies and research institutions in Germany, Poland, Italy, and Spain.^{114 115 116}

Sectoral Analysis: Restaurants in China

The first large-scale expansion of the DPRK workforce in China began in 2012, when Beijing and Pyongyang concluded a bilateral agreement to bring as many as 40,000 North Korean workers to Chinese cities on industrial training visas.¹¹⁷ But North Koreans have legally opened restaurants in China since the 1990s, earlier than in any other country.^{118 119} Open source investigation shows that North Korea's overseas restaurants are often physically located at the same addresses as its key commercial operations and thus within a few degrees of its broader illicit portfolio.



Image 4. North Korean Defector Myeong Song-hee Performs at a North Korean Restaurant in China¹²⁰

Just as in other industries, restaurant workers are subject to working conditions that may constitute forced labor. For example, Myeong Song-hee, a North Korean defector who worked at a DPRK restaurant in Changchun, told *The Wall Street Journal* that she and her coworkers slept in a locked room at the restaurant, were closely monitored by the restaurant's manager, were subject to group criticism sessions and pre-departure ideological training, and were paid only a small fraction of generated revenue.¹²¹ By some estimates, North Korean restaurants in China generate as much as \$10 million USD annually, which is reportedly transported back to Pyongyang in bulk cash shipments over the border.^{122 123} Some journalists and researchers have alleged that DPRK restaurants are managed by Office 39, a government bureau with responsibilities that include generating hard currency for the Kim family and ruling elite through legal and illegal business operations abroad.ⁱ Others have argued that DPRK restaurants, which have high customer turnover and can deposit large sums of cash that banks would otherwise treat as suspect, may serve to launder money for North Korea's other illicit activities.¹²⁴

Open source investigation identified 125 possible North Korean restaurants in 14 countries, nearly two-thirds of which (83) are located in China.ⁱⁱ While the dataset was created primarily from social media profiles and

i Investigative journalist Bertil Lintner told Slate in 2010 that Office 39 involved in running DPRK restaurants overseas. See Strangio, S. (2010, March 27). Kingdom Kim's Culinary Outposts. Slate. Retrieved from: http://www.slate.com/articles/news_and_politics/foreigners/2010/03/kingdom_kims_culinary_outposts.html. Archived at <https://perma.cc/52AU-3UXD>; In their book *Conditions* (2016), the Database Center for North Korean Human Rights cited defector interviews to state the Office 39 manages DPRK overseas labor operations in the timber industry in Russia. See *Conditions of Labor and Human Rights: North Korean Overseas Laborers in Russia* (2016).

ii User review profiles do not necessarily represent official profiles for businesses and should not be construed as such. Because these profiles may be user generated, it is possible that the dataset contains duplicate restaurants, incorrect information, or outdated corporate identifiers. Subsequent investigation is required to determine the accuracy of any related information including

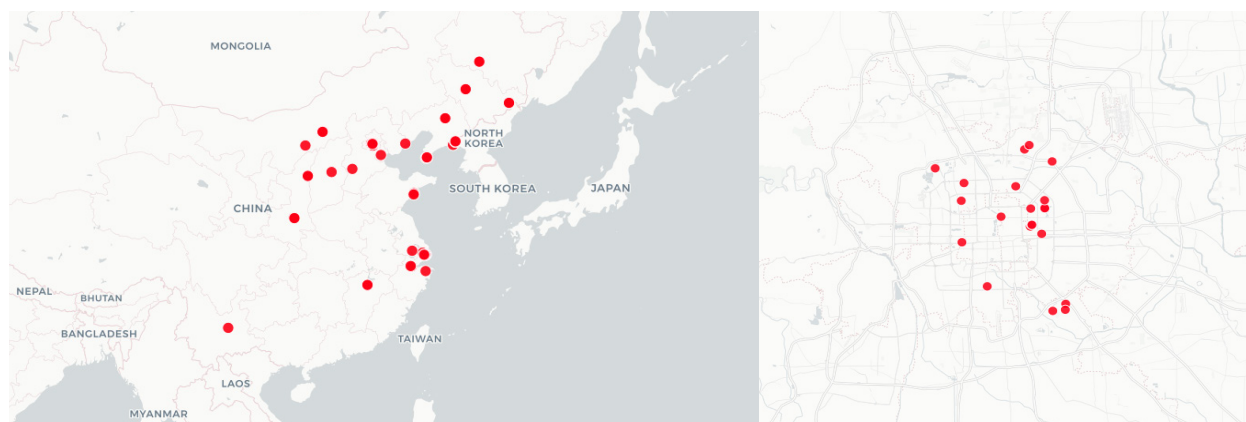
dining review websites, many storefronts list addresses, phone numbers, email addresses, and other corporate identifiers that appear together on corporate registry filings for companies of different names.

North Korean restaurants in China use a variety of legal structures including domestically owned companies, foreign-owned companies, and Chinese-DPRK joint ventures, the last of which violates UN Security Council Resolution 2375.ⁱⁱⁱ Many of the North Korean restaurants in China are also hotels, and in many cases, restaurant-hotel ownership networks converge with other North Korean operations, including coal and technology ventures. While some North Korean restaurants have reportedly closed their doors, others have transferred to full Chinese ownership and continued operations with the same North Korean staff.¹²⁵

News reports and official corporate registry filings often present conflicting information about whether or not a given restaurant is still in business. As the UN introduced new sanctions on DPRK labor from August to December 2017, some news reports observed that restaurants in border cities were closing their doors and repatriating workers. But more recent reports suggest that those restaurants have begun to reopen.^{iv} Regardless, because restaurants are among the oldest manifestations of North Korean labor in China, analysis of their corporate networks can provide valuable insights into how North Korea's overseas labor operations fit within the legacy networks that North Korea maintains within its most important political and economic partner.

Descriptive Statistics

Open source investigation identified 83 North Korean restaurants across 22 cities in China. Our research relied on Chinese social media and customer review apps like Dianping (大众点评) to identify North



Images 5 & 6. Left: DPRK Restaurants in China. Right: DPRK Restaurants in Beijing

but not limited to company name, phone number, address, company officers, official registration, and operational status.

ⁱⁱⁱ Paragraph 18 of UNSCR 2375 requires that member states “prohibit, by their nationals or in their territories, the opening, maintenance, and operation of all joint ventures or cooperative entities, new and existing, with DPRK entities or individuals, whether or not acting for or on behalf of the government of the DPRK” and “close any such existing joint venture or cooperative entity” by January 9, 2018. See SC Res 2375. Doc S/RES/2375. (2017, September 11). Retrieved from: <http://unscr.com/en/resolutions/doc/2375>

^{iv} For example, see Page, J., Jeong, A., & Talley, I. (2018, March 2). China, Finally, Clamps Down on North Korea Trade—And the Impact Is Stinging. *The Wall Street Journal*. Retrieved from: <https://www.wsj.com/articles/north-korea-finally-feels-the-sting-of-international-sanctions-1519923280>; Lin, W. 中共放松制裁? 中国部分朝鲜饭店重新开张 [The CCP relaxes sanctions? Some North Korean hotels in China reopened]. *The Epoch Times*. Retrieved from: <http://www.epochtimes.com/gb/18/3/30/n10264131.htm>. Archived at <https://perma.cc/8HUV-HACM>; Mbcnews. (2018, April 24). 한반도 긴장완화 흐름에 북중접경 지역에도 ‘훈풍’ 북한 식당은 다시 문 열고, 평양행 중국인 관광객 늘어 [On the Korean peninsula, North Korea's restaurant will open again, and Chinese tourists will go to Pyongyang] [Twitter post]. Retrieved from: <https://twitter.com/mbcnews/status/988752318916050945>. Archived at <https://perma.cc/4JTK-QBBU>.

Korean restaurants associated with recent customer reviews, unique names, and unique addresses, which are visualized in Images 5 & 6.

Of cities represented, Beijing and Shanghai contain the most restaurants with 21 (26%) and 12 (15%) storefronts respectively. Jilin and Liaoning provinces, which border North Korea, together contain 24 restaurants (29%), more than half of which are located in the cities of Shenyang (eight) and Dandong (seven). Thirty restaurants have at least one customer review on Dianping dated later than January 9, 2018, the UN deadline for closing DPRK joint ventures and cooperative entities. Fifty restaurants have customer-reported price estimates, the average of which is ¥135.1 RMB (approximately \$21 USD) per person.

The data indicate that DPRK restaurants in China use only a limited number of names on storefronts. Pyongyang Restaurant (平壤馆) is most common, represented by 14 (17%) restaurants located in Beijing, Changchun, Dalian, Harbin, Hohhot, Nanchang, Qingdao, Shanghai, and Shenyang. The names Pyongyang Koryo (平壤高丽), Pyongyang Moranbong (平壤牡丹 or 平壤牡丹峰), and Eun Ban (银畔) have eight (10%) storefronts each. Pyongyang Hae Dong Hwa (平壤海棠花) has five (6%) restaurants, all of which are located in Beijing. While storefront names are readily apparent, North Korean restaurants do not always register as companies with names that match their storefront, which can obscure corporate ownership structure and complicate international sanctions enforcement.

Case Study: Relationship to Sanctioned Entities

Dandong-based Liuqing Hotel (柳京酒店) has a 3.5 star rating on Dianping, a Chinese restaurant rating website.¹²⁶ After 130 customer reviews, Dianping estimates that a meal at the Liuqing Hotel restaurant costs ¥157 RMB (approximately \$25 USD) per person. On March 30, 2018, Liuqing Hotel staff allegedly told a Chinese reporter that the hotel-restaurant was operating as normal.¹²⁷

The Liuqing Hotel is registered in the Chinese business registry as Liaoning Hongbao Industrial Development Liuqing Hotel (辽宁鸿宝实业发展有限公司柳京酒店) at the same Dandong plaza and with the same phone number listed on the company's Dianping profile.^v The company is affiliated with Liaoning Hongbao Industrial Development Co., Ltd. (辽宁鸿宝实业发展有限公司), with which it shares an address.¹²⁸ According to the Chinese business registry, Liaoning Hongbao Industrial Development engages in wholesale trade of textiles, stationery, electrical equipment, and other goods.¹²⁹ The company lists two corporate shareholders: Dandong Border Economic Cooperation Zone International Hotel (丹东边境经济合作区世嘉宾馆) and US-sanctioned Dandong Hongxiang Industrial Development Co., Ltd. (DHID) (丹东鸿祥实业发展有限公

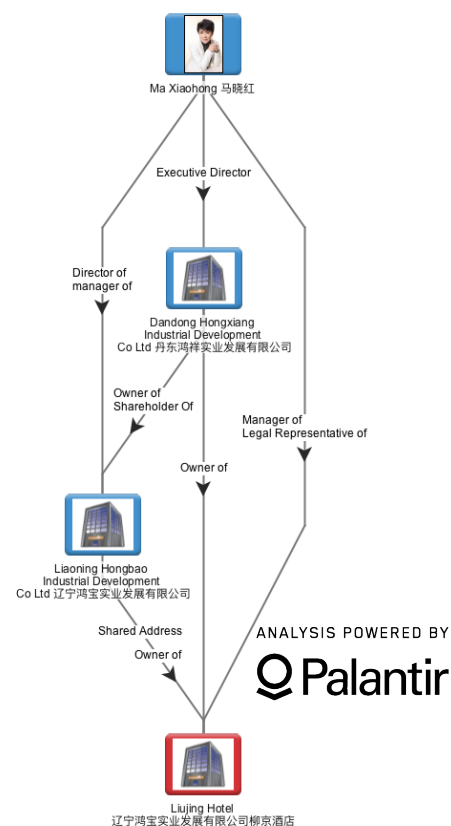


Figure 3. Liuqing Hotel Beneficial Ownership

^v The Liuqing Hotel's Dianping listing specifies a building in Dandong's Jiadi Plaza while the Liaoning Hongbao Industrial Development Liuqing Hotel's Chinese registry filing specifies a number in Dandong's Jiadi Plaza. A phone number that appears on Liuqing Hotel's Dianping listing appears on the 2015, 2016, and 2017 annual return filings for Liaoning Hongbao Industrial Development Liuqing Hotel. Chinese corporate registry and annual return documents held by author. For the Dianping listing, see Profile of Liuqing Hotel [柳京酒店]. Dianping. Retrieved from: <https://www.dianping.com/shop/5374077>

司).¹³⁰ As of this writing, US-sanctioned Ma Xiaohong (马晓红) is listed as the legal representative for the Liujiang Hotel and Liaoning Hongbao Industrial Development Co.¹³¹ Until November 16, 2017, Liaoning Hongbao Industrial Development was listed as a joint venture between DHID and Korea National Insurance Corporation (KNIC) (朝鲜民族保险总会社), a North Korean insurance company sanctioned by both the United States and the European Union.^{vi 132}

Both companies have been directly involved in North Korea's overseas procurement operations. OFAC sanctioned DHID in September 2016 "for acting for or on behalf of [the US- and UN-designated] Korea Kwangson Banking Corporation" to provide "financial services in support of WMD proliferators."¹³³ Its director, Ma Xiaohong, who is also the sole director and owner of Dandong's Liujiang Hotel, was both criminally charged by the US Department of Justice and sanctioned by OFAC for assisting the DPRK in its weapons procurement operations.^{134 135} Similarly, OFAC sanctioned KNIC in December 2016 for operating in North Korea's financial services industry, and it linked the group to Office 39.¹³⁶ The European Commission sanctioned KNIC's German branch and six of its company officers in July 2015, stating that the company generated "substantial foreign revenue" for the Kim regime.¹³⁷ And in April 2017, the British government froze KNIC's assets in the United Kingdom.¹³⁸

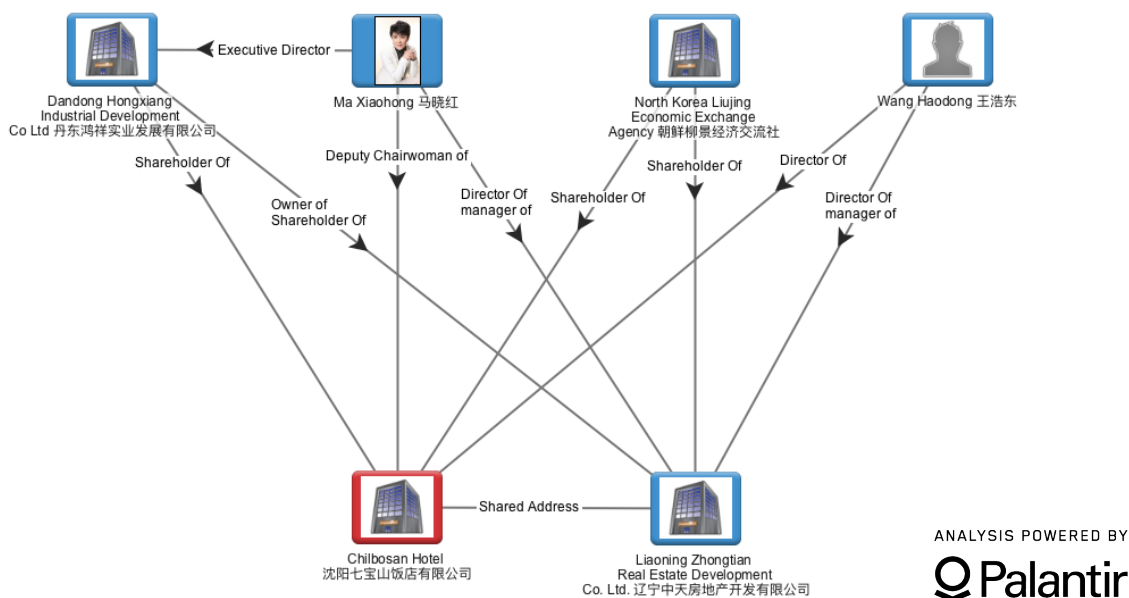


Figure 4. Chilbosan Hotel Beneficial Ownership

The Liujiang Hotel shares an email address, phone number, directors, and shareholders with a number of other companies both within and beyond Dandong. One such company is a second North Korean restaurant/hotel in Shenyang called Chilbosan Hotel (沈阳七宝山酒店), an entity that listed Ma Xiaohong and a second Liaoning Hongbao Industrial Development director Wang Haodong (王浩东) as company officers.^{vii} The

vi Paragraph 18 of UNSCR 2375 (2017) requires member states to "prohibit, by their nationals or in their territories, the opening, maintenance, and operation of all joint ventures or cooperative entities, new and existing, with DPRK entities or individuals, whether or not acting for or on behalf of the government of the DPRK." It further requires member states to "close any such existing joint venture or cooperative entity" by January 9, 2018. See SC Res 2375. Doc S/RES/2375. (2017, September 11). Retrieved from: <http://unscr.com/en/resolutions/doc/2375>

vii The Chilbosan Hotel was registered under the name Shenyang Chilbosan Hotel Co., Ltd. (沈阳七宝山饭店有限公司). Chinese corporate registry. Document held by author.

Chilbosan has long been reported as an overseas training site for Bureau 121, an elite North Korean military hacking unit.¹³⁹ Years before North Korea had domestic Internet infrastructure, the Chilbosan provided North Korean programmers with Internet access both to generate hard currency through “normal” commercial jobs in information technology and to launch offensive cyber operations.¹⁴⁰ North Korean defector Kim Heung-Kwang stated that the Chilbosan unit was one of many hacking cells spread across China that have relied on cooperative hosts like the Chilbosan in order to train North Korean programmers and launch some of the most sophisticated cyber operations in the world.^{viii ix}

Like the Liujiang Hotel’s parent company, the Chilbosan Hotel has historically operated as a joint venture between Chinese and North Korean companies.^{x 141} While the Chilbosan has been removed from the Chinese business registry, corporate filings previously indicated that the hotel was a joint venture between the North Korea Pyongyang Economic Exchange Society (朝鮮柳景経済交流社) and the aforementioned Dandong Hongxiang Industrial Development Co. (DHID).¹⁴² The Chilbosan shared an address with Liaoning Zhongtian Real Estate Development Co., Ltd. (辽宁中天房地产开发有限公司), which was listed as a suspended joint venture between the North Korea Pyongyang Economic Exchange Society and DHID.¹⁴³ Ma Xiaohong and Wang Haodong were listed as directors of both companies.¹⁴⁴

Historically, the DHID network has played a key role in North Korea’s development of cyber capacities. As we first described in our report “Risky Business,” Liaoning Zhongtian Real Estate Development Co., Ltd. is listed as the domain registrant for the website of Sili Bank, reportedly North Korea’s first ISP provider.^{145 146} Sili Bank has hosted email services for several entities sanctioned in connection with North Korean proliferation activity including Korea Ryonha Machinery Joint Venture Co. and its subsidiary Millim Technology, entities that have used email addresses ryonha@silibank.com and millim@silibank.com.¹⁴⁷ Ri Hak Chol, the president of the sanctioned Pyongyang-based weapons proliferator Green Pine Association, also used a Sili Bank email address to correspond with the Eritrean government to provide “military and technical support.”¹⁴⁸

Directors of the Liujiang and Chilbosan Hotels have also reportedly served as officers for several other companies that sell sensitive information technologies. For example, according to the Chinese business registry, Ma Xiaohong is listed as a shareholder of the Dandong-based Liaoning Darong Information Technology Co., Ltd. (辽宁达荣科技股份有限公司), which sells IT products and services that include aerial and satellite imagery, remote sensing, engineering measurement, and systems integration.¹⁴⁹ Despite being removed as a company officer in November 2016, Ma Xiaohong, was listed on the company’s 2016 annual return as having the second largest holdings with 17% of the company’s ¥50 million RMB in share capital.¹⁵⁰ OFAC-sanctioned Zhou Jianshu (周建舒), a supervisor for the Liujiang Hotel’s parent company Liaoning Hongbao Industrial

viii Research on DPRK Internet activity shows that even today only a small amount of North Korean Internet activity originates from the North Korean mainland. Rather, the majority of activity comes from locations outside of the Korean peninsula. For more information, see North Korea Cyber Activity. Recorded Future Insikt Group. Retrieved from: <https://go.recordedfuture.com/hubfs/reports/north-korea-activity.pdf>. To read an interview with defector Kim Heung-Kwang, see Ripley, W. (2015, January 7). North Korean defector: 'Bureau 121' hackers operating in China. CNN. Retrieved from: <http://edition.cnn.com/2015/01/06/asia/north-korea-hackers-shenyang/>. Archived at <https://perma.cc/H7SM-EJ9S>.

ix Like their counterparts in low-skilled occupations, North Korean IT workers are charged with the mission of generating hard currency for the regime, but they do so by selling an array of online products and services. For more information, see Kim, S. (2018, February 7). Inside North Korea’s Hacker Army. Bloomberg Businessweek. Retrieved from: <https://www.bloomberg.com/news/features/2018-02-07/inside-kim-jong-un-s-hacker-army>. Archived at <https://perma.cc/UVF6-32H4>.

x New reports indicate that the Chilbosan shut down on January 9, 2018 to comply with UN prohibitions on DPRK joint ventures. Japanese media reports that the hotel reopened on May 1, 2018 under the management of Shenyang Zhongfu International Hotel Co., Ltd. (沈阳中富国际酒店有限公司). To see Japanese reporting on the Chilbosan’s closure and reopening, see Haka, N. (2018, May 2). 1月に大量閉店したはずの中国北レスが早くも復活の気配。中国が制裁を緩め始めたか? [It should have closed in January, but this restaurant shows signs of starting back up soon in Northern China. Has China started loosening sanctions?] Harbor Business Online. Retrieved from: <https://hbol.jp/164895>. Archived at <https://perma.cc/HY98-S2MH>.

Development, is listed in the Chinese business registry as a shareholder and was previously chairman of its board of directors.¹⁵¹ Liaoning Darong Information Technology owns Beijing Tuxiu Tianya Information Technology Co. Ltd. (北京图秀天涯信息技术有限责任公司), of which DHID previously controlled 49% of shares.¹⁵²

Case Study: Relationship to Coal & Technology Trade Networks

The Moranbong North Korean Performance Hotel (牡丹峰朝鲜演艺酒店) has a 4.5 star rating on Dianping after 312 customer reviews.¹⁵³ Dianping estimates that a meal at the restaurant costs ¥228 RMB (approximately \$36 USD) per person.¹⁵⁴ On March 19, 2018, a customer wrote that service workers speak Mandarin with a discernible North Korean accent, and she regretted that staff did not allow her to take videos of performers.¹⁵⁵

序号	变更事项	变更前内容	变更后内容	变更日期
1	市场主体类型变更	有限责任公司(中外合资)	有限责任公司(自然人独资)	2018年1月11日
2	投资人变更 (包括出资额、出资方式、出资日期、投资人名称等)	1平壤新希望合作社;2大连鑫拓贸易有限公司;	1汪大伦;	2018年1月11日

Image 7. Dalian Moranbong Food & Beverage Management Co., Ltd. Change in Registration from Joint Venture to Limited Liability Company on January 11, 2018

The Dalian-based Moranbong North Korean Performance Hotel appears to be registered in the Chinese business registry as Dalian Moranbong Food & Beverage Management Co., Ltd. (大连牡丹峰餐饮管理有限公司), which lists the same address that appears on its Dianping listing.¹⁵⁶ ¹⁵⁷ The company was listed as a Chinese-DPRK joint venture until January 11, 2018—two days after the UNSCR 2375 deadline for closing DPRK joint ventures—after which it was listed as a Chinese company.¹⁵⁸ Until January 11, the restaurant/hotel had been owned by Pyongyang New Hope Cooperation Society (平壤新希望合作社) and Dalian Xintuo Trade Co., Ltd. (大连鑫拓贸易有限公司).¹⁵⁹ Since then, the chairman of the board of directors and legal representative Wang Dalun (汪大伦) has served as the sole shareholder and executive director.¹⁶⁰

Wang Dalun also serves as a shareholder or director for several other companies that trade coal and information technology internationally. He is also a shareholder and supervisor of Dalian Intop Import & Export Trade Co., Ltd. (大连银拓进出口贸易有限公司), which operates in coal sales, technology imports and exports, and import-export representative services.¹⁶¹ Chinese import records show that the company consigned at least 28 shipments valued at approximately \$3 million USD between October 2013 and December 2017, of which \$1.6 million USD (57%) was imported from North Korea.¹⁶² All imports from North Korea were categorized under HS codes 7201.10 and 2601.11, which correspond to non-alloy pig iron and iron ore.^{xi} Chinese export records further indicate that the company sent 17 shipments valued at \$2 million USD between March 2013 and August 2017, of which \$1.4 million USD was sent to Japan.^{xii} Commercially available Chinese export records show that Dalian Intop has made at least five shipments to North Korea including one August 2017 shipment of machine parts and articles for nontechnical use and one October 2017 shipment that was declared as sacks and bags.¹⁶³

Wang Dalun also reportedly acts as an officer for a number of technology companies. Chinese corporate registry filings indicate that he is a shareholder and supervisor of Zhongji Rare Earth Transtech Services (Dalian) Co., Ltd. (中稷稀土高科(大连)有限公司), which lists ¥300 million RMB (approximately \$47 million USD) in registered capital.¹⁶⁴ The company shares a phone number with Dalian Intop Import &

xi The remaining shipments were sourced from South Africa, Canada, Japan, the United States and Taiwan.

xii The remaining shipments were sent to Malaysia, North Korea, South Korea, New Zealand, and Indonesia.

Export Trade Co. and lists an address in a room adjacent to Dalian Xintuo Trade Co., the Moranbong Hotel's previous owner.¹⁶⁵ The Chinese business registry states that Zhongji Rare Earth Transtech Services develops high tech applications, provides technology consulting services, and trades technology products internationally. Commercially available Chinese trade records show only two shipments by Zhongji Rare Earth Transtech Services, both of which are coal imports from North Korea in May and August of 2016 valued at nearly \$1.6 million USD. Zhongji Rare Earth Transtech Services is registered in the same building and in a room adjacent to the Moranbong North Korean Performance Hotel's previous owner, Dalian Xintuo Trade Co., Ltd.¹⁶⁶

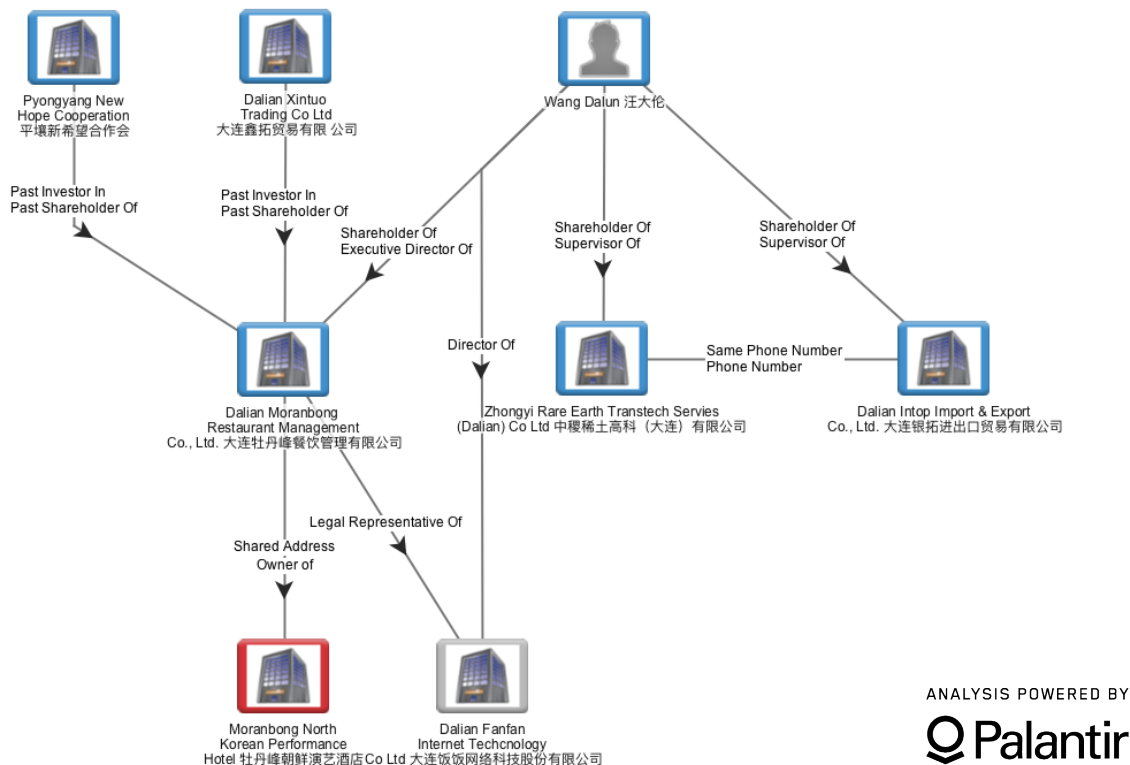


Figure 5. Moranbong North Korean Performance Hotel Corporate Network

Dalian Moranbong Food & Beverage Management Co., the company registered with the same address and phone number as the Moranbong North Korean Performance Hotel, is itself an investor in a technology company called Dalian Food Internet Technology Co., Ltd. (大连饭饭网络科技有限公司).¹⁶⁷ Wang Dalun is a director.¹⁶⁸ According to the Chinese business registry, the company provides a variety of services in information technology; software development; domestic land, air, and sea shipping services; storage; and human resource consulting services, among others.¹⁶⁹

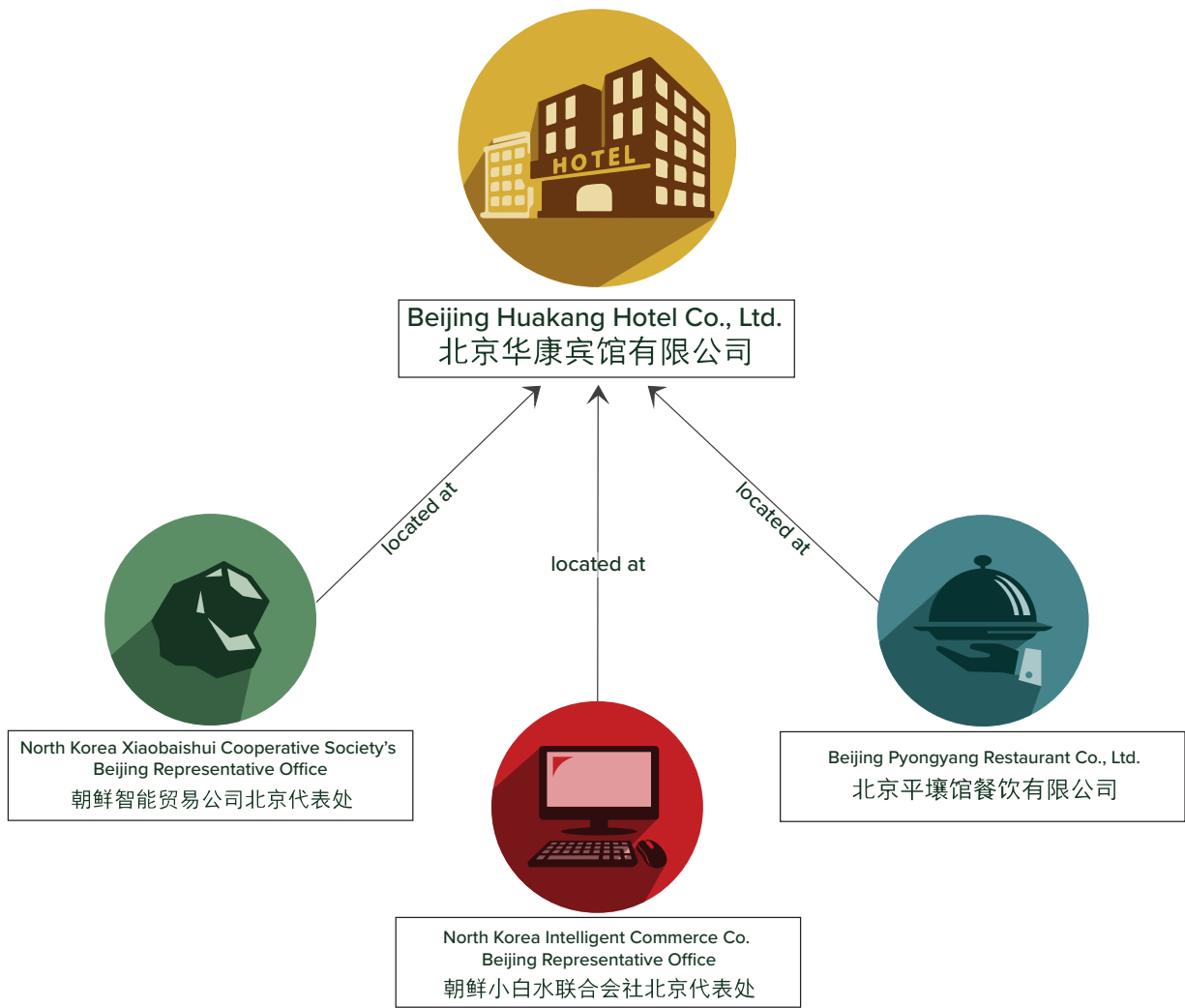
Case Study: Co-location with DPRK Trade Representatives

On its Dianping listing, Beijing Pyongyang Restaurant shows an image of its operating license that indicates the company is registered as Beijing Pyongyang Restaurant Co., Ltd. (北京平壤馆餐饮有限公司).¹⁷⁰ The Beijing restaurant, now closed, was founded in 2003 with \$200,000 USD in registered capital and existed as a joint venture between Beijing Saidisi Technology Commerce & Trade Co., Ltd. (北京赛蒂斯科技经贸有限公司) and North Korea Tariff Free Commerce Co. (朝鲜无关税公司).¹⁷¹

The Beijing Pyongyang Restaurant is registered to a room at the Huakang Hotel (华康宾馆).¹⁷² At least two websites state that the North Korea Xiaobaishui Cooperative Society's Beijing Representative Office (朝鲜小白水联合会社北京代表处) previously operated at the same room in the Huakang Hotel.¹⁷³ As a trade office, the group does not have a listing in the official Chinese business registry with public shareholder and director information. However, a Chinese registry aggregator states that the now-closed trade office acted as a liaison for importing and exporting carbon products and raw materials.¹⁷⁴

The Chinese registry aggregator also states that, until August 2, 2017, the Huakang Hotel was also the registered address of the North Korea Intelligent Commerce Co. Beijing Representative Office (朝鲜智能贸易公司北京代表处), which is reportedly still in operation.¹⁷⁵ The aggregator further indicates that North Korea Intelligent Commerce Co. imports and exports machinery, software, and electronic products on behalf of North Korea.¹⁷⁶

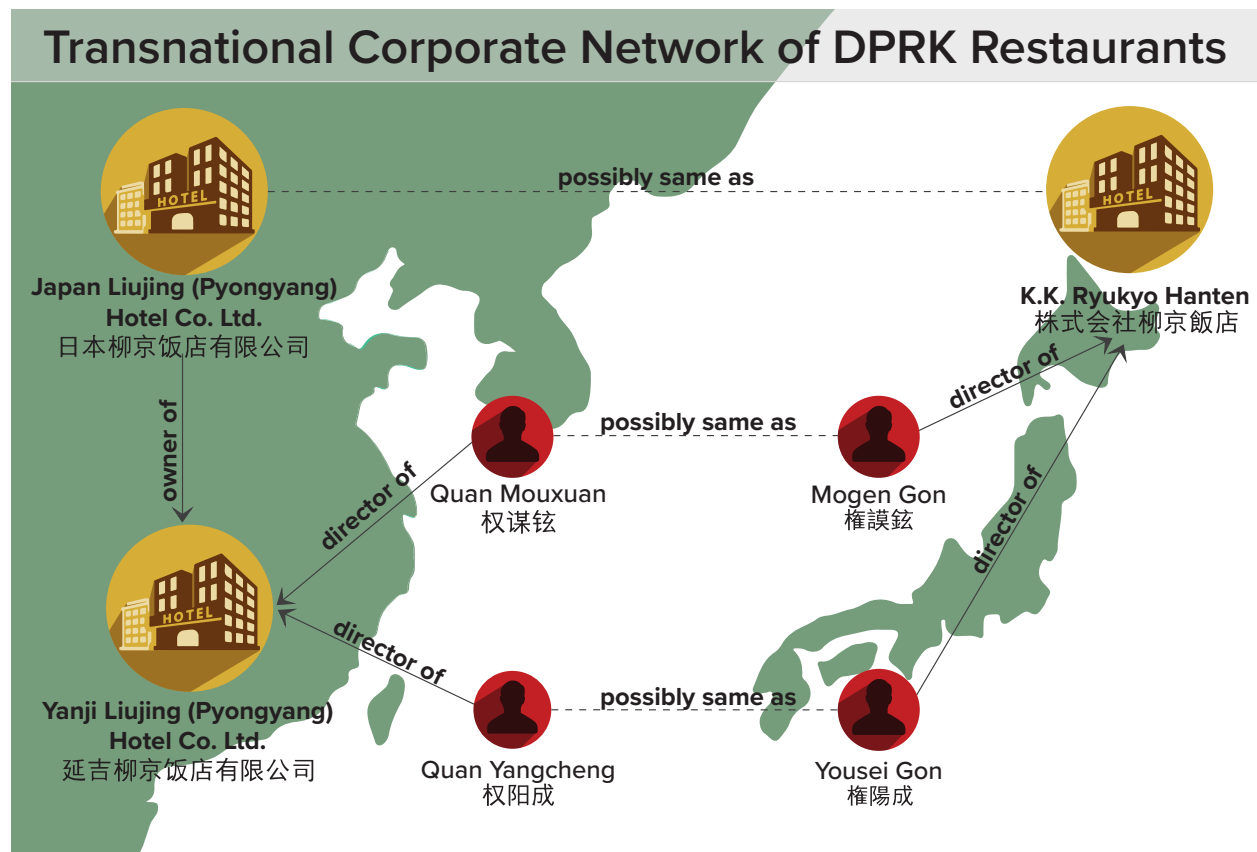
Co-location at a Chinese Hotel



Case Study: Foreign Ownership

On Dianping, a second Liujing Hotel (柳京饭店) in Yanji has a 3.5 star rating after only 12 customer reviews.¹⁷⁷ On March 28, 2018, a customer wrote that the food was mediocre but that the performances were good, later lamenting that the waitresses were not allowed to leave the premises.¹⁷⁸

The Dianping page lists an address that matches the Chinese registry filing for Yanji Liujing [Pyongyang] Hotel Co., Ltd. (延吉柳京饭店有限公司), which has \$2.15 million USD in registered capital.¹⁷⁹ ¹⁸⁰ According to official Chinese corporate registry filings, Yanji Liujing Hotel is a fully foreign-owned entity with only one shareholder: “Japan Liujing [Pyongyang] Hotel Co., Ltd.” (日本柳京饭店有限公司).¹⁸¹ Japanese travel websites advertise that the Yanji Liujing Hotel has Japanese staff.¹⁸²



Because the Japanese language incorporates Chinese characters into its writing system, open source investigation yielded likely Japanese matches of the Chinese names for Japan Liujing [Pyongyang] Hotel Co. and its directors. The Japanese corporate registry contains a listing for a company called K.K. Ryukyo Hanten (株式会社柳京飯店), whose Japanese name is a nearly direct translation of the Chinese name for “Japan Liujing Hotel Co.” The corporate registry filings for K.K. Ryukyo Hanten also list directors whose Japanese names are one-for-one character transliterations of the Chinese names for the directors of Yanji Liujing [Pyongyang] Hotel Co.^{xiii} K.K. Ryukyo Hanten lists two directors, Mogen Gon (権謨鉉) and Yousei Gon (権

xiii The Japanese name is a near match of the Chinese name. The Japanese characters “株式会社” and Chinese character “有限公司” both mean “limited liability company.” Because Japanese written language incorporates traditional Chinese characters, the Japanese and Chinese names of the company—other than “limited liability company”—are both “柳京飯店” (although the Chinese name uses simplified characters rather than traditional characters). The Chinese registry also appends the word “Japan” (日本) on the front of the company name, which could plausibly serve to indicate its country of registry.

陽成), the latter of whom also serves as president.¹⁸³ Both names are character-by-character transliterations of the names of Yanji Liujiang Hotel's directors Quan Mouxuan (权谋铉) and Quan Yangcheng (权阳成), the latter of whom also serves the legal representative.¹⁸⁴

According to the Chinese business registry, Yanji Liujiang Hotel's deputy chairman of the board of directors is listed as Quan Zhouxuan (权周铉). Quan Zhouxuan matches in name to the sole shareholder, executive director, and legal representative of Suzhou Zhouxuan Precision Machinery Co., Ltd. (苏州周铉精密机械有限公司), which is listed in the Chinese registry as solely owned by a foreign person.¹⁸⁵

Key Trends: Global Supply Chains

North Korea's overseas labor program generates revenue for the Kim regime by selling a range of products in the licit global economy. Products of North Korean labor—from seafood to advanced facial recognition technology—diffuse through global supply chains to major retailers and even to Western law enforcement agencies. Our analysis shows that open source investigation and network analysis are effective in identifying not only the companies from which products of North Korean forced labor are sold but also the mechanisms through which those goods come to market.

Case Study: Seafood Products

Part I: Employment

Hunchun is a city in Jilin Province, China that is contiguous with both North Korea and Russia. The Jilin provincial government's website boasts that Hunchun is near several ice-free ports in Russia and North Korea that make it an attractive place for export industries that require sea access.¹⁸⁶ Over the last decade, Hunchun officials have designed policies to attract investment from within China and abroad, and some experts describe Hunchun as a “laboratory” for Chinese-North Korean economic cooperation.^{i 187}

In July 2017—just before the UN began to implement sanctions against DPRK labor—as many as 30,000 female North Korean laborers, ages 20 to 35, were rumored to be working in Hunchun.¹⁸⁸ North Korean workers in Hunchun allegedly earned ¥1,000 to ¥1,500 RMB per month—less than half of wages earned by their Chinese counterparts—of which 80% was allegedly confiscated by the North Korean government.¹⁸⁹ Workers reportedly operated on three-year contracts, during which they worked under heavy supervision of handlers and were forbidden from leaving the industrial zone within Hunchun city.¹⁹⁰ Sources stated that the Chinese companies which managed the sales were located either in Qingdao or Dalian to obfuscate shipment origins before exporting.¹⁹¹ Several news outlets have reported instances of local companies employing North Korean workers in the Hunchun Border Economic Cooperation Zone, an area of the city with special economic policies designed to attract investment.ⁱⁱ



Image 8. Redacted Foreign Worker Authorization Form for North Korean Worker at Hunchun Pagoda Industry Co., Ltd., Confidential Source.

i For background information on regional economic development, see Jilin Province's Development Zones. Jilin Province Investment Promotion Net. Retrieved from: <http://en.investjilin.com/tzzn/jfq/>. Archived at <https://perma.cc/4VUL-EWY8>.

ii For example, see Sullivan, T. (2017, October 5). North Korean workers prep seafood going to US stores, restaurants. AP News. Retrieved from: <https://www.apnews.com/8b493b7df6e147e98d19f3abb5ca090a/NKorean-workers-prep-seafood-going-to-US-stores-restaurants>. Archived at <https://perma.cc/DX77-ZXQP>.

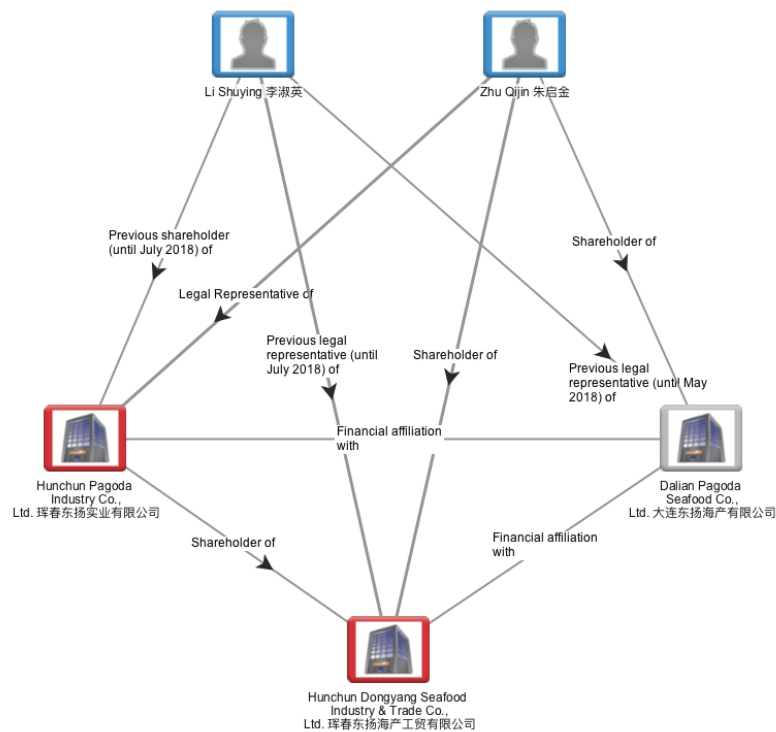
Employment registration documents show that, between October 2015 and October 2017, a 28-year-old North Korean woman worked at Hunchun Pagoda Industry Co., Ltd. (珲春东扬实业有限公司), a seafood processing plant located in the Hunchun Border Economic Cooperation Zone.¹⁹² Her employment authorization form contains the seals for two companies: Hunchun Pagoda, her employer, which submitted an application for foreign worker authorization, and Yanbian Fengwu Business Intercommunication Co., Ltd. (延边枫梧商务交流有限责任公司), which is listed as an “authorizing agent.”¹⁹³ While Hunchun Pagoda and Yanbian Fengwu are Chinese companies, both stamps include each company’s Chinese and Korean names.¹⁹⁴



Image 9. Hunchun Pagoda Industry Co., Ltd. Company Seal, Confidential Source.

According to the Chinese business registry, Yanbian Fengwu is a state-owned company located in the Tumen Economic Development Zone that acts as a labor affairs agent.¹⁹⁵ Corporate filings also indicate that the Tumen Economic Development Zone Management Committee (图们经济开发区管理委员会) and Tumen Municipal Finance Bureau (图们财政局) function as company officers.¹⁹⁶ The specific relationship between Yanbian Fengwu and Hunchun Pagoda is not immediately clear from the employment registration form alone.

Part II: Network Analysis



ANALYSIS POWERED BY
Palantir

Figure 6. Overlapping Directors of Companies that Employ North Korean Workers in Hunchun

Corporate registry filings further show that Hunchun Pagoda had overlapping shareholders and directors with at least one other company that was reported to employ North Korean workers. Hunchun Pagoda's owners, Li Shuying (李淑英) and Zhu Qijin (朱启金), were also listed as owners and managers of Hunchun Dongyang Seafood Industry & Trade Co., Ltd. (珲春东扬海产工贸有限公司), a second seafood processor that lists Hunchun Pagoda as a shareholder and that the Associated Press reported was employing North Korean workers.^{197 198} Li Shuying and Zhu Qijin also owned and managed a company called Dalian Pagoda Seafood (大连东扬海产有限公司), which processed several Hunchun Pagoda shipments to the United States.^{199 200}

On a Chinese supplier's website, Dalian Pagoda lists an address in White Plains, New York and lists Catherine Kourakos as the company's contact person.²⁰¹ The New York Department of State shows that Pagoda USA, which consigned for shipments from Dalian Pagoda, is registered at the same address and that Catherine Kourakos is the CEO.²⁰²

Part III: Trade

Commercially available Chinese import records show that Hunchun Pagoda consigned for 139 shipments into China worth more than \$42 million USD between February 2013 and January 2017. Of these shipments, approximately 66% were sourced from North Korea, and 32% were from Russian suppliers. One such supplier is Yuzmorrhybflot Joint Stock Company (АО "ЮЖМОПРЫБФЛОТ"), a Russian seafood processor that was authorized to employ a total of 661 North Korean workers between 2015 and 2017.ⁱⁱⁱ

Chinese export data estimates that Hunchun Pagoda has sent 402 shipments valued at over \$75 million USD between March 2013 and December 2017.²⁰³ United States import data estimate that Hunchun Pagoda sent 77 shipments to the United States, the most recent being on November 9, 2017.²⁰⁴ The data further show that a full 52 of the 77 shipments (68%) were sent to The Fishin' Co., which supplies retailers and food service companies like Walmart worldwide.²⁰⁵ Those 54 shipments represent a small proportion of The Fishin' Co.'s imports: US import data show that the company received over 12,000 shipments from more than 350 suppliers between July 7, 2007 and May 15, 2018.²⁰⁶ In an October 2017 article by the Associated Press, The Fishin' Co. stated that it had "cut its ties with Hunchun processors and got its last shipment this summer."²⁰⁷ However, US import records indicate that The Fishin' Co. consigned for two shipments from Hunchun Pagoda on October 13, 2017, one week after the Associated Press article was published.²⁰⁸

Commercially available shipment records show that more than half of Hunchun Pagoda's shipments to the United States were either processed or packaged by companies that share directors or shareholders with either Hunchun Pagoda or its international distributor, Hong Kong-registered Ocean One Enterprise²⁰⁹; Hunchun Dongyang Seafood & Trade Co., Ltd., which also reportedly employed North Korean workers²¹⁰; Dalian Pagoda Seafood Co. Ltd.; and Dalian Chengxin Seafood Co., Ltd. (大连诚鑫海产食品有限公司).²¹¹ Furthermore, Dalian Pagoda Seafood, which has overlapping directors and shareholders with Hunchun Pagoda, also sent the majority of its US-bound products to The Fishin' Co., the primary consignees of shipments from Hunchun Pagoda.^{213 214} US import data estimate that Dalian Pagoda has sent 229 shipments to the United States between December 8, 2007 and September 17, 2017.²¹⁵ The Fishin' Co. consigned for 193 of those shipments (84%).²¹⁶

iii Foreign worker authorization data are sourced from the Russian Ministry of Labor. Documents held by author. The open source contains photos from within the Yuzmorrhybflot plant that show women processing seafood in front of Korean names written in Cyrillic: Alexhitrov. (2015, June 13). "Доброфлот" в Находке - главный поставщик консервированной сайры на прилавки России ["Dobroflot" in Nakhodka - the main supplier of canned saury on the shelves of Russia] [Blog Post]. Livejournal. Retrieved from: <http://alexhitrov.livejournal.com/374673.html>. Archived at <https://perma.cc/4699-J2W2>. Russian court documents also detail that the firm has previously hired North Korean workers "in violation of migration law." For more information, see Judicial and regulatory acts of the Russian Federation. Sudact. Retrieved from: http://webcache.googleusercontent.com/search?q=cache:CKA3HqByU_sj:sudact.ru/arbitral/doc/SnYTMccBBMQt/+&cd=16&hl=en&ct=clnk&gl=us%205/14

Case Study: Textiles



Image 10. Dandong Municipal Government Website Post (September 11, 2017)²¹⁷

On September 11, 2017—the day the United Nations prohibited member states from signing new employment contracts with North Korean workers—the Dandong municipal government wrote that a group of textile industry experts and officials had visited four Dandong companies and discussed, among other things, the obstacles to employing North Korean workers. One of the companies visited was Dandong Yuhao Garment Co. Ltd. (丹东昱豪制衣有限公司).^{iv} 218

Dandong Yuhao Garment is the subsidiary of the Dandong-based Liaoning Yuanzhou Industrial Group Co. Ltd. (辽宁远舟实业集团有限公司). As first reported in an investigation by NK Pro, Liaoning Yuanzhou Industrial Group was described on a business-to-business website as employing more than 900 North Korean workers under a previous name.²¹⁹ On its website, Liaoning Yuanzhou Industrial Group lists 18 “cooperation brands” in the United States, South Korea, China, Sweden, Hong Kong, and Switzerland.²²⁰ Liaoning Yuanzhou Industrial Group also states that it has an office in Los Angeles.²²¹

US import records show that Liaoning Yuanzhou Industrial Group sent seven shipments to the United States between January 15, 2016 and May 21, 2018.^v Commercially available US import records further indicate that

iv In another post nine days earlier, the Dandong municipal government had offered a rare, descriptive official statement about the number of North Korean workers in its Dagushan Economic Zone, where Dandong Yuhao Garment is located. The government wrote that Dandong hosts between 10,000 and 12,500 North Korean workers in the Dandong Dagushan Economic Zone in groups of approximately 150, the biggest group with 1,000 workers. The groups contain factory workers, political instructors, factory directors, technicians, translators, cooks, doctors and more, which are self-managed. Workers are not allowed to leave. Workers earn ¥1600–¥1800 RMB per month, work 12–14 hours per day, rest two to four days per month in addition to North Korean holidays and Spring Festival (which do not exceed 10 days per year). Before arriving in China, North Korean workers must undergo political examinations, and they receive training in textile processing and production. The website emphasized the discipline and abilities of North Korean workers as a selling point for investment in the Dandong Dagushan Economic Zone. The online post further stated that approximately 2,000 North Korean workers are in the Dagushan Economic Zone’s textile industrial park between three unnamed companies. See 大孤山纺织服装产业项目 [Dagushan Textile and Garment Industry Project]. Dandong government website. Retrieved from: <http://zhaoshang.dandong.gov.cn/html/80/20172/a9b7ba70783b617e9998dc4dd82eb3c5.html>. Archived at <https://perma.cc/NZ57-CGLD>.

v Liaoning Yuanzhou Industrial Group appears as two different companies in the commercially available trade dataset:

five companies have consigned for the Liaoning Group's US-bound shipments, all of which are reportedly located in California and share overlapping corporate identifiers.^{vi} Two of those consignees appear in the California business registry: Style Vibe Inc and Millan Stylee USA, Inc.²²² Both companies are listed at addresses near Los Angeles.²²³

According to corporate registry filings, Style Vibe Inc's chief financial officer, Jane Zhuyan Jin, shares the name of the chief executive officer of Millan Stylee USA, Inc.²²⁴ Registration documents further show that Style Vibe Inc was founded by Zhuguang Jin.^{vii} ²²⁵ While US filings do not contain Chinese characters, Zhuguang Jin matches the romanization of the director Jin Zhuguang (金朱光) of the Liaoning Yuanzhou Industrial Group subsidiary Dandong Yuanzhou Trading Co., Ltd. (丹东远舟贸易有限公司).²²⁶ California property deeds show that a Zhuguang Jin previously shared a house in Diamond Bar, California with Jane Zhuyan Jin as a "single, unmarried cohabitant."²²⁷

The name Jin Zhuguang also appears as a director for two companies within the network that are listed in ownership records for a North Korean-flagged vessel. Chinese corporate registry documents show that a Jin Zhuguang is a shareholder of Dandong Yuanzhou Trading Co., which—according to vessel ownership records on Equasis—is registered as the owner of the cargo ship *Hwang Gum Phyong 2*.^{viii} Equasis records also list Dandong Yuanzhou Trading Co.'s address as "care of Korea Puksong Shipping Co., Ltd.," a company located in North Korea.²²⁸ A Chinese registry aggregator further shows that a Jin Zhuguang was formerly a director of Dandong Sanjiang Trading Co., Ltd. (丹东市三江经贸有限公司), a company that reported a \$38 million USD trade volume in 2012 and previously owned the vessel.^{ix} ²²⁹ ²³⁰ The same records show that Dandong Sanjiang Trading was previously owned by the now-dissolved Chinese-North Korean joint venture Beijing Shengli Sanjiang Economic & Trade Co., Ltd. (北京胜利三江经贸有限公司), which also listed a person named Jin Zhuguang as a director.²³¹

"Liaoning Yuanzhou Industries" and "Wuxi Three Dove Clothing." "Liaoning Yuanzhou Industries" displays shipments from only US import records and is listed with a phone number that also appears on Liaoning Yuanzhou Industrial Group's website. "Wuxi Three Dove Clothing" displays shipments from only Chinese export records and is listed with a Chinese name that is identical to the Chinese business registry filing for Liaoning Yuanzhou Industrial Group. Chinese export records listed with "Wuxi Three Dove Clothing" indicate nearly \$20 million USD of shipments between March 2015 and December 2017. See Profile of Liaoning Yuanzhou Industries. Commercially available trade data. Documents held by author.

vi Obtained US import records estimate that Liaoning Yuanzhou Industrial Group exported seven shipments to the United States between January 15, 2016 and May 21, 2018. The data indicate that US Print N Pack has consigned for only one shipment to the United States from Liaoning Group, which was on May 21, 2018. US import records indicate that the following four California companies consigned for the Liaoning Group's remaining US-bound shipments between January 15, 2016 and April 3, 2017: Style Vibe Inc. (CONSIGNEE 1), Millan Stylee Usa Inc. (CONSIGNEE 2), Style Vibe Inc. (CONSIGNEE 3), and Millan Sytlee Usa Inc. (CONSIGNEE 4). Records indicate that the four consignees share overlapping identifiers. CONSIGNEES 1, 3, and 4 list identical addresses in Vernon, California. CONSIGNEES 1 and 4 list identical phone numbers. CONSIGNEES 1 and 3 list identical names and addresses. Company searches in the California business registry yield search results for two companies: "Style Vibe Inc" and "Millan Stylee USA, Inc." California registry documents held by author. Profile of Liaoning Yuanzhou Industries. Commercially available trade data. Documents held by author.

vii Chinese convention for names places last name before first name. Following English conventions, most American documents place first name before last name. Additionally, different documents will often use varied conventions for capitalization and spacing between syllables.

viii This could constitute a violation of paragraph 20 of UNSCR 2270. See S/RES/2270 (2016). Retrieved from: [http://undocs.org/S/RES/2270\(2016\)](http://undocs.org/S/RES/2270(2016))

ix As NK Pro first observed, in 2012, the Chinese Ministry of Commerce determined that Dandong Sanjiang Trading Co., Ltd. had the 308th largest trade volume in China, only 101 spots below OFAC-sanctioned Dandong Hongxiang Industrial Development Co., Ltd. See Liang, H. (2012, August 24). 2012中国对外贸易民营500强企业名单发布 [2012 China Foreign Trade Top 500 Private Enterprises List Released]. Do News. Retrieved from: <http://www.donews.com/dzh/201208/1484369.html>. Archived at <https://perma.cc/4E73-KPXX>. For NK Pro's investigation, see Byrne, J., & Byrne, L. (2018, January 15). Dandong company involved in coal, North Korean labor, and shipping clothes to U.S.: investigation. NK Pro. Retrieved from: <https://www.nknews.org/pro/dandong-company-involved-in-coal-ships-north-korea-labor-and-shipping-clothes-to-the-u-s/>. Archived at <https://perma.cc/7WQ2-Z5EY>.

Information		Since
IMO number :	8520719	
Name of ship :	HWANG GUM PHYONG 2	(since 01/03/2015)
Call sign :	HMYT9	
MMSI :	445461000	
Gross tonnage :	1417	(during 2003)
DWT :	1572	
Type of ship :	General Cargo Ship	(during 1986)
Year of build :	1986	
Flag :	Korea Democratic Republic	(since 01/06/2011)
Status of ship :	In Service/Commission	(since 10/06/1986)
Last update :	07/06/2017	

IMO	Role	Name of company	Address	Date of effect
5571305	Ship manager/ Commercial manager	KOREA PUKSONG SHIPPING CO	Chilgol 2-dong, Mangyongdae-guyok, Pyongyang, North Korea.	before 03/2016
5571305	ISM Manager	KOREA PUKSONG SHIPPING CO	Chilgol 2-dong, Mangyongdae-guyok, Pyongyang, North Korea.	since 01/03/2016
5856372	Registered owner	DANDONG YUANZHOU TRADING	Care of Korea Puksong Shipping Co., Chilgol 2-dong, Mangyongdae-guyok, Pyongyang, North Korea.	before 03/2015

Image 11. Equasis Records for Hwang Gum Phyeong 2

A maritime intelligence platform shows that the *Hwang Gum Phyeong 2* last transmitted its location on November 25, 2017 from China's Exclusive Economic Zone approximately 12 hours after calling port in Ryongampo, North Korea.²³² Historical vessel path data indicates that the ship has exclusively called port in either North Korea or China since at least June 27, 2013, the earliest port call on record.²³³

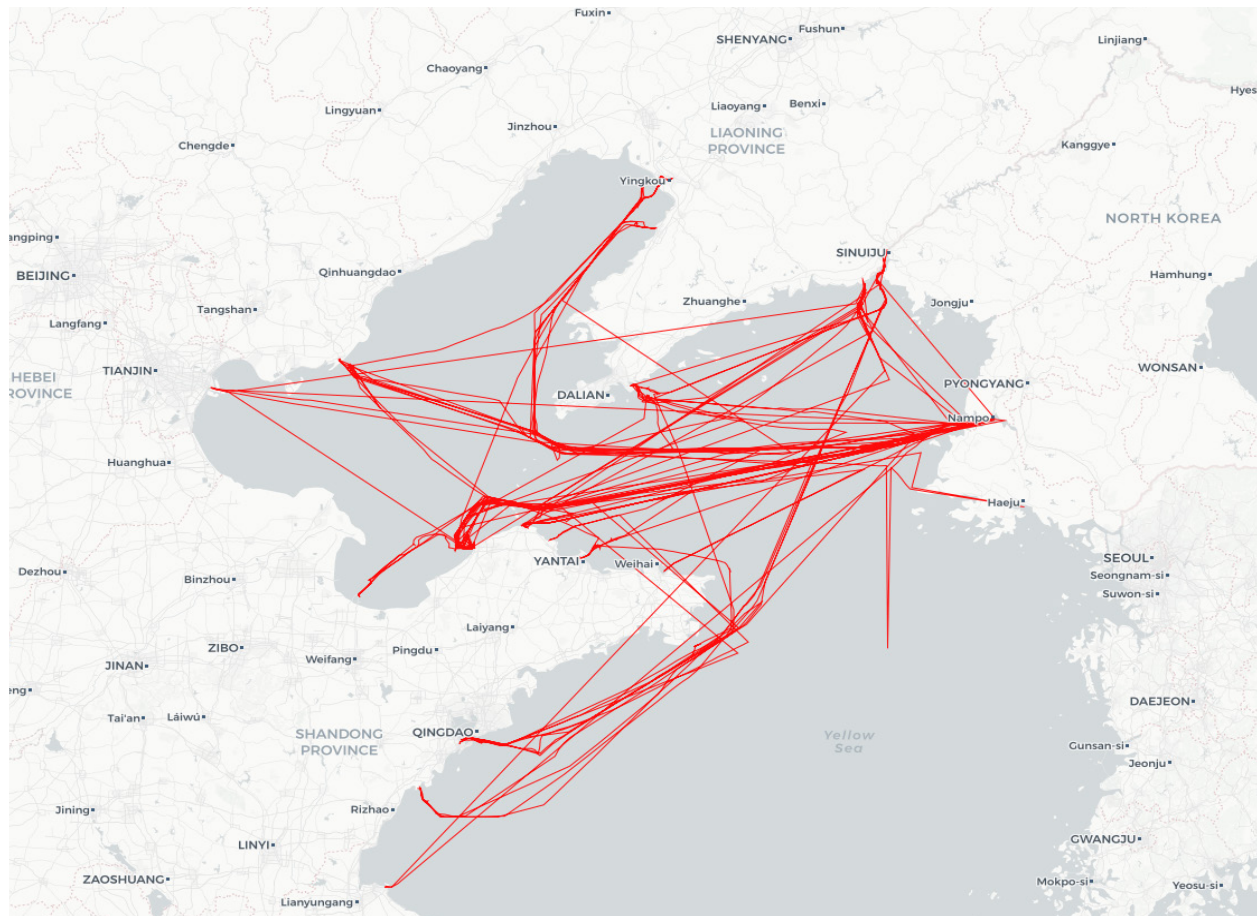


Image 12. Historical Vessel Path for Hwang Gum Phyeong 2 (March 2013 to November 2017). Source: Leading Maritime Intelligence Platform.

Case Study: Sensitive Technologies

Part I: DPRK Restaurants in Vietnam

Open source investigation identified DPRK restaurants listed at five locations in Vietnam. On April 25, 2018, a South Korean blogger uploaded pictures from her trip to once such restaurant, Koryo Restaurant (Nhà Hàng Koryo; 고려 식당) in Hanoi.²³⁴ In a post about her dining experience, she included pictures of a business card for the restaurant, her food with restaurant-branded plastic wrap, and a receipt for her meal. The pictures showed that branded materials distributed within the restaurant used the names of multiple different North Korean restaurants and listed inconsistent information about both the restaurant's address and contact information.



Image 13. Blogger Photos from Koryo Restaurant in Hanoi, Vietnam²³⁵

For example, the business card for Koryo Restaurant contained two different addresses. The first address, Số 7 Lô 13B Phố Trung Hòa, was printed on the back of the card with a small diagram of surrounding roads.^x The second address, Số 61 Phố Trung Hòa, was handwritten over a printed address on the front of the card. It is plausible that within the last two years Koryo Restaurant has relocated from the Số 7 Lô 13B to Số 61 location: a September 30, 2016 image on the restaurant's Facebook page shows the address Số 7 Lô 13B Phố Trung Hòa on its storefront, but news footage and images posted online as recently as April and May of 2018 show a storefront with the address Số 61 Phố Trung Hòa.^{xi 236}

Additionally, multiple items within Koryo Restaurant also appear to use different corporate names, including one similar to that used by a North Korean restaurant in Ho Chi Minh. For example, the address, Korean and English names, and phone numbers of the Ho Chi Minh-based Korea Ryu Gyong Restaurant (Nhà Hàng Ryu Gyong Triều Tiên; 조선 류경 식당) appear on the blogger's receipt allegedly tendered at Koryo Restaurant in Hanoi, nearly 1,000 miles away.^{xii} In another picture of the blogger's entrée, a plastic-wrapped towelette displays a Korean name and Vietnamese address that match Koryo Restaurant in Hanoi, but it appears to use

x The address also matches that which appears repeatedly on posts from 2016 on a Facebook profile for Koryo Restaurant with a logo nearly identical to that which appears on the business card. The profile also indicates that the restaurant updated its address as recently as October 14, 2017. See Nhà Hàng Koryo Facebook profile. Retrieved from: <https://www.facebook.com/nhangkoryo/>. Archived at <https://perma.cc/A2R4-77K4>.

xi It is also possible that there are two distinct restaurants. Subsequent investigation is required to determine with full certainty the relationship between businesses operating at both addresses.

xii The Vietnamese name may also reference a now closed North Korean restaurant in Hanoi. According to Google Maps, the restaurant Ryu Gyong Quán Triều Tiên was listed at A30/D11 Khu đô thị mới P, Dịch Vọng, Cầu Giấy, Hà Nội, Vietnam. (See <https://www.google.com/maps/place/Ryu+Gyong+Qu%C3%A1n+Tri%C3%A0n+Tri%C3%A0n+Tri%C3%A0n/@21.032069,105.790827,17z/data=!4m5!3m4!1s0x3135ab48974f7873:0xc8f698e4c7b0a3a2!8m2!3d21.032064!4d105.7930157>) This address appears in the open source as a previous address for Mudo Vina Co., Ltd., the company run by Kim Jong Gil that is registered to the previous address of Koryo Restaurant. See Công ty TNHH Mudo Việt Nam [Mudo Vietnam Co., Ltd]. Ho So Vietnam Website. Retrieved from: <http://www.hosovietnam.com/cong-ty-tnhh-mudo-viet-nam-495341.html>. Archived at <https://perma.cc/8TEZ-T326>.

a Vietnamese name similar to that of the DPRK restaurant in Ho Chi Minh.^{xiii} This inconsistent information suggests that there could plausibly be coordination in operations between the North Korean restaurants.



Images 14 & 15. Left: Koryo Restaurant Storefront (September 30, 2016). Source: Nhà Hàng Koryo Facebook Profile Right: Koryo Restaurant Storefront (May 2018). Source: Google Maps.

While, as in China, the Vietnamese registry does not appear to contain any companies with names that match the DPRK restaurant storefronts, it does contain companies registered to identical addresses. Hanoi-based Koryo Restaurant's first address, Số 7 Lô 13B Phố Trung Hòa, is identical to the registered address for Mudo Vina Co., Ltd. (Công Ty TNHH Mudo Việt Nam; also known as Mudo Vietnam Co., Ltd.), a restaurant and catering company that lists North Korean national Kim Jong Gil as a legal representative.²³⁷ Ho Chi Minh-based Korea Ryu Gyong Restaurant's address is identical to the registered address for Phan Minh FMC-V.N. Trading Co., Ltd. (Công Ty TNHH Thương Mại Phan Minh FMC-V.N), a company that lists Cao Ngọc Minh as its legal representative.²³⁸ Domain registration records show that Phan Minh Trading is also the registrant of the Korea Ryu Gyong Restaurant's website <http://nhahangtrieutien.com/>.²³⁹

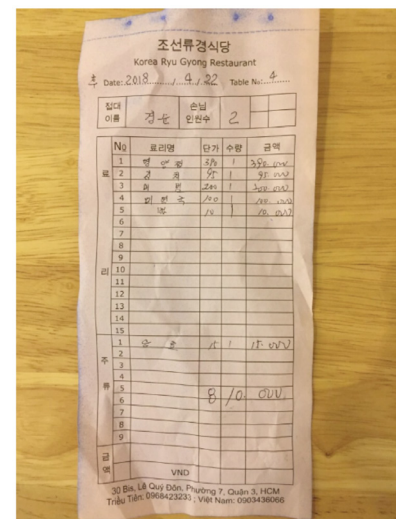


Image 16. Receipt Allegedly Tendered at Koryo Restaurant in Hanoi (April 2018)

Subsequent investigation finds that several Korea Ryu Gyong Restaurant identifiers also appear on the website of a company called Truong Phu Group Joint Stock Company (Công Ty Cổ Phần Group Trường Phú).²⁴⁰ For example, on its main page, Truong Phu Group lists the address for Korea Ryu Gyong Restaurant—and thus Phan Minh Trading—as its address in Ho Chi Minh. Additionally, Truong Phu Group lists a phone number

xiii Ibid.

identical to the one that appears on the Korea Ryu Gyong Restaurant receipt, which the blogger allegedly received at Koryo Restaurant in Hanoi. Most overtly, however, the website's restaurant page redirects to Korea Ryu Gyong Restaurant's website. Beyond restaurant management, Truong Phu Group claims to engage in several industries including international transportation, construction projects, and international trading. Commercially available trade records show that Truong Phu Group Joint Stock Company has made 18 shipments between December 9, 2013 and February 14, 2018 to only one consignee, a Texas company.²⁴¹

ĐẠI DIỆN THEO PHÁP LUẬT
CỦA DOANH NGHIỆP



Image 17. Kim Jong Gil Signature on Mudo Vina Co., Ltd. Seal Announcement

4. Name of owner

Full name: KIM JONG GIL

Gender: Male

Date of birth: 01/08/1973 Ethnic background:

Nationality: North Korean

Image 18. Kim Jong Gil Identifiers Listed on Mudo Vina Co., Ltd. Business Registry Filing

Part II: Freelance Profiles and Social Media

On Vietnamese corporate registry documents, Truong Phu Group lists Nguyen Xuan Trung as its legal representative.²⁴² Open source investigation finds that the name Nguyen Xuan Trung is used for an Upwork account with the username kjg197318, which appears to correspond to both the initials of the Hanoi restaurant's owner Kim Jong Gil and his date of birth as it appears on a Mudo Vina Co., Ltd. business filing.^{xiv 243} On his profile, the user Nguyen Xuan Trung is described as a “computer vision expert” with more than 10 years of experience.²⁴⁴ The user offers products and services such as image processing, C and C++ programming, Android and iOS app development, facial recognition technology, automatic license plate recognition programs, and optical character recognition software.²⁴⁵ As a work sample, the user posted an English-language demo video produced by the Australian company Strategic Systems Alliance.^{xv}



Image 19. Screenshots from Strategic Systems Alliance Promotional Video on Upwork Account for “Nguyen Xuan Trung” (Username kjg197318)

On Elance, a now-closed freelancing platform that rebranded as Upwork in 2015, the name Nguyen Xuan Trung appeared with a similar user picture and provided identical thumbnail pictures as work samples.²⁴⁶ On Freelancer.com, the user for the now-closed account kjg197318 displayed a computer-generated image, indicated he was located in Vietnam, and signed messages with the name “Richard Minh.”²⁴⁷ The user also

xiv While the user on the profile lists the name “Nguyen Xuan T.,” the profile’s URL is “<https://www.upwork.com/fl/nguyenxuantrung>.”

xv Profile of Nguyen Xuan T. Upwork. Retrieved from: <https://www.upwork.com/fl/nguyenxuantrung>. The video not only bears the logo and branding of Strategic Systems Alliance but also appears on a Youtube account called “Strategic Systems Alliance.” See Strategic Systems Alliance. (2015, February 14). SSA Recall 3D Facial Recognition Demo [Video File]. Retrieved from: <https://www.youtube.com/watch?v=bSMVvdXlcJA>. Archived at <https://perma.cc/6AAK-SD6N>.

posted several thumbnail work samples that are identical to those that Nguyen Xuan Trung used on Elance.



Image 20. Sample Work Thumbnails on Now-Closed kjpg197318 Freelancer Account



Image 21. Sample Work Thumbnails on Elance Profile of Nguyen Xuan Trung (Username kjpg197318)

The name Richard Minh also appears on several plausibly related social media accounts. On Skype, a user named Richard Minh registered the email address kjpg197318@hotmail.com and lists his location as Hanoi, Vietnam. On LinkedIn, a user named Richard Minh is listed as a programmer for the company Mudo Vida Co., Ltd., the company run by Kim Jong Gil and registered to an address used by Koryo Restaurant in Hanoi.^{xvi} And on Facebook, the email address kjpg197318@gmail.com is associated with a Facebook profile for a user named “Man Rich,” who has interacted with a user Richard Trung whose pictures match those used on other profiles for Nguyen Xuan Trung.^{248 249} The user Richard Trung posted several pictures from what appear to be both the Koryo Restaurant in Hanoi and the Korea Ryu Gyong Restaurant in Ho Chi Minh City.^{xvii} His profile indicates that he lives in Hanoi.



Images 22, 23 & 24. Left: Facebook Profile Picture of User Richard Trung. Center: Upwork Profile Picture of User Nguyen Xuan Trung. Right: Elance Profile Picture of User Nguyen Xuan T.

Two Guru.com accounts also use the same thumbnail work samples to offer similar products and services under possibly stolen identities. Images 20 & 21 appear as work samples for the user Travis Timothy Yates, who is listed as living in Norway.²⁵⁰ Similar images also appear as work samples for the user Richard Minh, who describes himself as a “computer experts team manager” based in Hanoi, Vietnam with a team that has completed projects in facial recognition, automatic number plate recognition, logo detection, and more.²⁵¹ Subsequent investigation suggests that both profiles may use stolen identities.^{xviii}

xvi The LinkedIn profile uses the name “Mudo Vietnam Company Limited,” which is an alternative name for the company that also appears on its Vietnamese registry filing. See Profile of Richard Minh. LinkedIn. Retrieved from: <https://www.linkedin.com/in/richard-minh-5b5a7583/>

xvii On December 23, 2016, Richard Trung posted pictures from his 42nd birthday celebration, which include a towlette wrapper and waitress nametags that appear to display the same Koryo Restaurant logo that appears on the previously mentioned business card and restaurant Facebook page. In March 2016, Richard Trung posted four photos that he tagged at the Korea Ryu Gyong Restaurant in Ho Chi Minh City. See Profile of Richard Trung. Facebook. Retrieved from: <https://www.facebook.com/richard.trung.1>

xviii For example, Richard Minh’s Guru headshot appears to be of a French venture capitalist.

Part III: Connection to Glocom

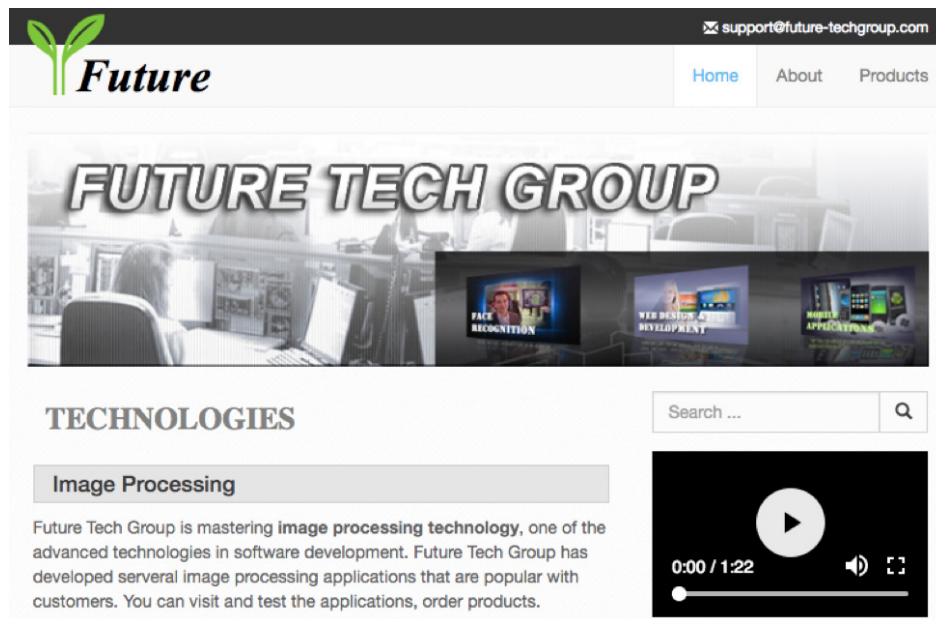


Image 25. Screenshot from Home Page of future-techgroup.com

Open source investigation finds that the same thumbnail work samples used on kjg197318-associated freelance accounts also appear on a website directly linked to Global Communications Co., a Malaysian front company colloquially known as “Glocom” that—as a 2017 Reuters investigation showed—North Korean operatives used to sell battlefield radio systems to military organizations around the world.²⁵² On future-techgroup.com., a company called Future Tech Group used the same thumbnail images to advertise a wide range of advanced technology products, including facial recognition software, machine translation tools, license plate readers, and more, some of which, it claims, are used by Australian and Turkish police forces.²⁵³



Image 26. Slider from Archived Website of future-techgroup.com

Domain registration records show that future-techgroup.com shares an IP address and name server with glocom-corp.com, Glocom’s active website.^{xix} The two websites are the only two registered to its IP address, and future-techgroup.com uses glocom-corp.com as its name server.²⁵⁴ As the James Martin Center for Nonproliferation Studies first noted, future-techgroup.com has an expired SSL certificate that is self-signed

xix Both websites use glocom-corp.com as their name servers and are registered to the American IP address 192.254.128.89. See Whois Domain Tools for Future-TechGroup.com. Retrieved from: <https://whois.domaintools.com/future-techgroup.com>

by Glocom and contains an animated promotional video that uses as audio a rendition of Bill Conti's "Gonna Fly Now"—the Rocky theme song—performed by North Korea's Moranbang Band, an all-female North Korean music group.²⁵⁵ Future Tech's website claims that the company's facial recognition software won second place in the 2015 Intel® RealSense™ App Challenge. However, Intel's website states that the award was given to the Australian company Strategic Systems Alliance, and it shows the same promotional video that appears on Nguyen's Upwork account.²⁵⁶

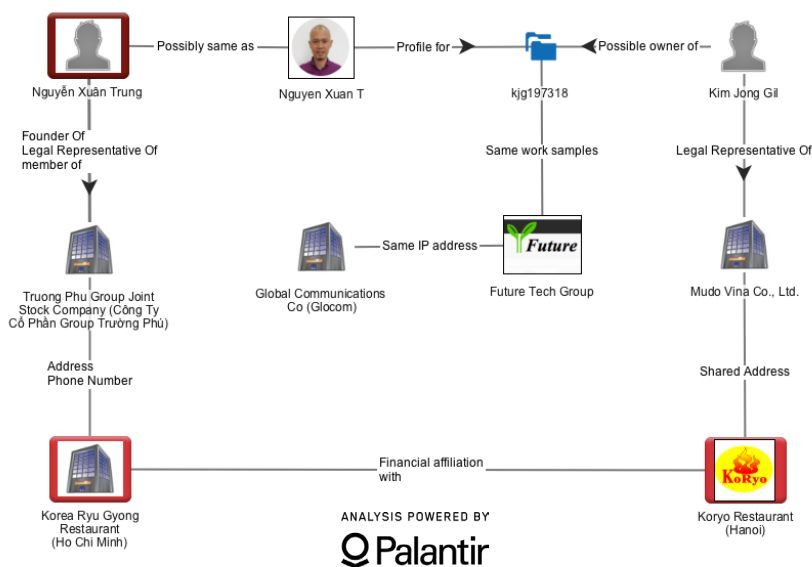


Figure 7. Relationships Between DPRK Restaurants, Vietnamese Companies, Freelance Profiles, Future Tech Group, and Glocom

Part IV: Diffusion to Western Markets

News reports show that Strategic Systems Alliance, which may have unknowingly acquired Future Tech goods, has appeared as a vendor at law enforcement technology expositions in the United States, United Kingdom, and elsewhere. For example, in 2016, Strategic Systems Alliance appeared as a vendor at the United Kingdom's 2018 Security & Policing Home Event. The event is organized by ADS, "the premier Trade Organisation for all companies operating in the UK Aerospace, Defence, Security and Space sectors," and hosted by the UK's Centre for Applied Science and Technology.^{257 258} At the event, Strategic Systems Alliance showcased "intelligent body worn video system that combines real time video streaming over LTE with Blue Force Tracking, Facial Recognition, Automated Number Plate Recognition, and Integrated GPS."²⁵⁹ By all indications, SSA, upon learning of any potential involvement with North Korean entities, severed such relationships and immediately reported them to the relevant authorities. C4ADS uncovered no evidence that SSA knowingly engaged in any illegal activity.

Kjg197318-associated programmers sold their products and services to customers around the world through online freelance marketplaces. On Freelancer.com alone, kjg197318 either completed or was offered 89 freelance projects for clients in 35 countries including the United States, United Kingdom, Australia, France, and Germany.²⁶⁰ The projects involved developing websites, mobile phone applications, license plate readers, optical character recognition software, object classification programs, and facial recognition technology.²⁶¹

Conclusion & Recommendations

Open source investigation and network analysis are effective tools for studying the system of North Korean overseas labor. Our analysis shows that the people and companies that facilitate North Korea's overseas labor program exhibit observable operational patterns within Russia and China—historically its two most important jurisdictions—that can empower law enforcement, industry, and civil society organizations to better identify suspicious behavior. This creates a powerful opportunity for the international community: interested stakeholders are equipped with both counterproliferation and forced labor law to drive action against North Korea's overseas labor networks. By highlighting convergence between North Korea's procurement operations and overseas labor program, we demonstrate that, by applying the right investigative methodologies, concerned observers can wield a wide range of legal instruments to disrupt North Korea's overseas operations. We also show that private industry faces a relatively large compliance risk and reputational hazard if—knowingly or otherwise—it facilitates or makes use of North Korean labor in its business activities.

While the Countering America's Adversaries Through Sanctions Act creates several mandatory sanctions on foreign persons that employ North Korean workers, relatively few have faced action by law enforcement for their involvement in DPRK labor. One possible explanation is that research and writing on DPRK overseas labor to date has seldom mentioned specific entities. And as we found in our research, even when reports do identify a person or company, it is difficult to determine with certainty whether or not an instance of reported North Korean labor remains active over time. We argue that by viewing North Korea's overseas labor program in the context of commercial and financial networks, law enforcement and civil regulators can better prioritize targets for focused investigation by using metrics like network size, connections to other people and companies that employ North Koreans, or proximity to North Korea's broader illicit portfolio. Understanding network features and operational patterns—including names that appear regularly on North Korean companies across languages and jurisdictions—can accelerate compliance screening processes and thereby ensure that the law is more robustly employed to disrupt a key proliferation finance stream of the Kim regime.

While United Nations Security Council Resolutions may currently allow North Korean laborers to continue working on some employment contracts, DPRK labor sites may often violate a number of other provisions in international law. For example, a significant number of companies that employ North Korean workers continue to operate as joint ventures, and in many cases, DPRK nationals are registered as the legal representatives, directors, and shareholders of local companies, which may constitute a cooperative entity with the DPRK and therefore violate paragraph 18 of UNSCR 2375. Additionally, officers of companies that employ North Korean workers also operate informal banks, own North Korean-flagged vessels, and engage in commodity and technology trade with North Korea through other locally registered companies, which may violate several other UNSCR provisions. As such, law enforcement and civil regulators in the United States and beyond are well positioned to apply the law against North Korea's forced labor operations well before the December 22, 2019 deadline for worker repatriation.

Law enforcement should take a network view of DPRK overseas labor operations because doing so can uncover yet unidentified nodes in North Korea's broader illicit portfolio. A labor program necessarily requires a visible physical presence in a fixed location, which, given the Kim regime's insistence on heavy surveillance and tight security, is often particularly conspicuous. And in order to comply with local law and participate in the local economy, operators must register businesses, trade in local currency, use local transportation, and open bank accounts through either North Korean agents abroad or trusted local intermediaries. Heavy surveillance requires significant resource investment, which creates an economic incentive to co-locate a variety of commercial operations at one single location. Our analysis demonstrates that even when companies

which employ North Korean workers maintain decentralized corporate ownership structures, they operate at a limited number of physical locations, from which they also conduct other illicit revenue-generating activity on behalf of the regime. Investigators in media, industry, and government should therefore take advantage of the labor program's inherent visibility at fixed addresses to map, track, and ultimately drive action on North Korea's overseas commercial networks.

North Korea's IT workers abroad deserve renewed attention. Policymakers must understand how high-skilled IT professionals operate in nonmilitary capacities within extant labor networks to hone their programming skills and access the global IT infrastructure. While foreign media has long reported that the DPRK exports IT workers, most English-language academic research and writing on North Korea's overseas labor program has largely excluded high-skilled workers from its analysis, even though IT workers, who reportedly face the similar working conditions but generate significantly more revenue, pose an outsized proliferation finance risk and cybersecurity threat. The consequences of such an omission cannot be overstated. Like low-skilled workers, programmers work in exploitative conditions to generate hard currency for the regime, but they do so by selling an array of online products and services as benign as characters for videogames and as sensitive as facial recognition software for Western law enforcement bodies. Other countries provide North Korea with vital access to the Internet, and by developing products for Western clients, North Korea's dispatched IT workers locate bugs in foreign software and improve capacities through iterative product development with their Western clients. As a result, the Kim regime continues to develop an ever broader and more sophisticated arsenal of sanctions evasion techniques that allow it to develop its weapons program against the will of the international community. Our analysis demonstrates that North Korea's key overseas IT operations are rooted in the same form of embedded overseas facilitator networks as the rest of the DPRK's exported labor, and thus they too can be uncovered and disrupted through open source investigation and network analysis.

That IT workers have been ignored in research to date speaks to a broader problem encountered in our research: different analysts use different definitions to determine what does and does not constitute North Korea's overseas labor, typically because the issue is examined only from a forced labor point of view. But shared definitions are vitally important to any analysis and law enforcement action. We concede that creating an accurate ontological framework for North Korea's overseas labor force is particularly difficult. Since all work overseas is completely circumscribed by the Kim regime and in service of its financial and weapons procurement programs, categorical distinctions like "worker," "student," and "soldier" are not necessarily as clear cut or meaningful as they might be in other circumstances: a programming student might also be forced to work without remuneration at a local North Korean restaurant while using his training in service of offensive state cyber operations under the heavy surveillance of his handler. To treat this case as only a forced labor issue or only a military activity would ignore key features of the network's operation and could therefore inform a misguided or incomplete policy response. To understand the full implications of exported DPRK labor—and to capture analytically North Korea's recent adaptations to local law enforcement action against traditional labor operations—analysts and policymakers must take a more expansive view of North Korean overseas labor, one that includes more than just the most visible instances of forced labor as it is traditionally understood.

We should note that, in emphasizing the security risks of North Korean overseas labor, we do not intend to elide the human rights violations that are endemic to its operations. North Korean laborers are subject to abuse that constitutes forced labor by any internationally accepted definition. The ethics become especially complicated when acknowledging that North Korean laborers abroad earn more than their domestic counterparts, even when the majority is confiscated, and that working abroad is understood by many as an honor and path to improved socioeconomic station at home. While these questions are beyond the scope of this report, policymakers should consider the complicated ethics of DPRK overseas labor when determining

a course of action. By taking a network analysis approach, law enforcement and industry compliance groups can refine their targeting capacities in order to disrupt key proliferation finance streams and enforce local and international labor law.

Endnotes

- 1 FACT SHEET: UN Security Council Resolution 2397 on North Korea. (2017, December 22). Retrieved from: usun.state.gov/remarks/8238
- 2 In “Beyond the UN COI Report: On Human Rights in DPRK” (2014), the Asan Institute reported that Mexico has historically hosted North Korean workers. See Chang-Hoon, S., & Myong-Hyun, G. (2014, November 3). Beyond the UN COI Report on Human Rights in North Korea. The Asan Institute for Policy Studies. Retrieved from: <http://en.asaninst.org/contents/asan-report-beyond-the-coi-dprk-human-rights-report/>. Archived at <https://perma.cc/7G4X-PMML>.
- 3 North Korea Country Profile. The Observatory of Economic Complexity. Retrieved from: <https://atlas.media.mit.edu/en/profile/country/prk/>. Archived at <https://perma.cc/TQD3-YUJG>
- 4 See Trafficking in Persons Report. (June 2017). United States Department of State. Retrieved from: <https://www.state.gov/documents/organization/271339.pdf>. Archived at <https://perma.cc/5FF7-QHH7>. See also Winn, P. (2017, September 15). Why North Korean peace talks may hinge on 12 singing waitresses. PRI. Retrieved from: <https://www.pri.org/stories/2017-09-15/why-north-korean-peace-talks-may-hinge-12-singing-waitresses>. Archived at <https://perma.cc/TG96-3G34>
- 5 Scarlatoiu, G. (2015, April 29). North Korea’s Forced Labor Enterprise: A State-Sponsored Marketplace in Human Trafficking. The Committee for Human Rights in North Korea. Retrieved from: <https://www.hrnk.org/uploads/pdfs/Statement%20of%20Greg%20Scarlatoiu%20-%20REVISED.pdf>. Archived at <https://perma.cc/V5JX-LTG7>.
- 6 Ibid.
- 7 Kim, S. (2018, February 7). Inside North Korea’s Hacker Army. Bloomberg Businessweek. Retrieved from: <https://www.bloomberg.com/news/features/2018-02-07/inside-kim-jong-un-s-hacker-army>. Archived at <https://perma.cc/UVF6-32H4>.
- 8 Ibid.
- 9 SC Res 2371. Doc S/RES/2371. (2017, August 5). Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/2371%282017%29
- 10 SC Res 2375. Doc S/RES/2375. (2017, September 11). Retrieved from: https://www.un.org/ga/search/view_doc.asp?symbol=S/RES/2375%282017%29
- 11 SC Res 2397. Doc S/RES/2397. (2017, December 22). Retrieved from: https://www.un.org/ga/search/view_doc.asp?symbol=S/RES/2397%282017%29
- 12 SC Res 2094. Doc S/RES/2094. (2013, March 7). Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/2094%282013%29
- 13 SC Res 2270. Doc S/RES/2270. (2016, March 2). Retrieved from: https://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/2270%282016%29
- 14 CAATSA Title III Section 321(b) FAQs. (2018, March 30). U.S. Department of Homeland Security. Retrieved from: <https://www.dhs.gov/news/2018/03/30/caatsa-title-iii-section-321b-faqs>. Archived at <https://perma.cc/WN4S-V5DS>
- 15 Ibid.
- 16 North Korea Sanctions Regulations. (2018, March 5). Federal Register. Retrieved from: <https://www.federalregister.gov/d/2018-04113/p-33>. Archived at <https://perma.cc/YT5W-MZH3>
- 17 Lukovtseva, M. (2018, April 6). Сергей Качаев: Дальний Восток должен конкурировать за работника [Sergei Kachaev: The Far East should compete for workers]. RIA. Retrieved from: <https://ria.ru/>

interview/20180406/1518061522.html. Archived at <https://perma.cc/GJ4D-UDFZ>.

18 Северным корейцам разрешили трудиться в Приморье. ["North Koreans allowed to work in Primorye"]. Konkurent. (2018, July 23). Retrieved from: <http://www.konkurent.ru/article/19348>. Archived at <https://perma.cc/9NUK-7M9U>.

19 North Korean Workers Return to China in Defiance of UN Restrictions. (2018, April 4). Radio Free Asia. Retrieved from: <https://www.rfa.org/english/news/korea/workers-04042018134944.html>. Archived at <https://perma.cc/RBX5-SHLQ>.

20 Lu, Jiarong. 陸企復工解除制裁 赴朝旅遊升溫 [Mainland enterprises resumed work to lift sanctions and travel to the DPRK]. (2018, June 20). China Times. Retrieved from: http://www.chinatimes.com/newspapers/20180620000117-260309?__s=dqfks5p4zuagqn5bxeku&utm_source=drip&utm_medium=email&utm_campaign=2018-06-28+FMM. Archived at <https://perma.cc/67FM-P667>.

21 Democratic People's Republic of Korea 2017 Human Rights Report. U.S. Department of State. Retrieved from: <https://www.state.gov/documents/organization/277333.pdf>

22 FACT SHEET: Resolution 2375 (2017) Strengthening Sanctions on North Korea. (2017, September 11). United States Mission to the United Nations. Retrieved from: <https://usun.state.gov/remarks/7969>. Archived at <https://perma.cc/99B8-VR7X>.

23 Situation of human rights in the Democratic People's Republic of Korea. (2015, September 8). United Nations General Assembly. Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=A/70/362. Leiden University's Asia Centre reproduced the figures in their July 2016 report "North Korean Forced Labor in the EU, the Polish Case." See Breuker, R. (2016). Slaves to the System: Researching North Korean Forced Labor in the EU. Retrieved from: <https://www.universiteitleiden.nl/en/research/research-projects/humanities/slaves-to-the-system-researching-north-korean-forced-labor-in-the-eu>. Archived at <https://perma.cc/E7CK-MEA7>. Some speculate that this value estimate may be too high. For example, see Noland, M. (2015, June 1). Organized Exports of Labor: Welcome to the Echo Chamber. Peterson Institute for International Economics. Retrieved from: <https://piie.com/blogs/north-korea-witness-transformation/organized-exports-labor-welcome-echo-chamber>. Archived at <https://perma.cc/R3RH-JLV7>.

24 The Conditions of the North Korean Overseas Labor. (December 2012). International Network for the Human Rights of NK Overseas Labor, pp. 12, 17; Chang-Hoon, S., & Myong-Hyun, G. (2014, November 3). Beyond the UN COI Report on Human Rights in North Korea. The Asan Institute for Policy Studies. Retrieved from: <http://en.asaninst.org/contents/asan-report-beyond-the-coi-dprk-human-rights-report/>. Archived at <https://perma.cc/2ZU9-Y9VW>; Y., & Seung-ju, L. (March 2015). Human Rights and North Korea's Overseas Laborers: Dilemmas and Policy Challenges. Database Center for North Korean Human Rights. Retrieved from: http://nkdb.org/2016/data/nkdb_book.php?search_category=&search_name=&pg=3; NKDB Publications. Database Center for North Korean Human Rights. Retrieved from: http://www.nkdb.org/en/library/Books_list.php; Democratic People's Republic of Korea 2017 Human Rights Report. Department of State. Retrieved from: <https://www.state.gov/documents/organization/277333.pdf>. Archived at <https://perma.cc/GH6V-UYX4>; Sangsin, L., Kyungseop, O., & Yejun, L. (July 2017). Condition of North Korean Overseas Laborers. Korea Institute for National Unification, page 20; Internal translation.

25 Conditions of Labor and Human Rights: North Korean Overseas Laborers in Russia (2016), NKDB. Page 62.

26 Ibid.

27 Pattisson, P. (2014, November 7). North Koreans working as 'state-sponsored slaves' in Qatar. The Guardian. Retrieved from: <https://www.theguardian.com/global-development/2014/nov/07/north-koreans-working-state-sponsored-slaves-qatar>. Archived at <https://perma.cc/ERQ8-LQAG>.

28 Luhn, A. (2017, Jun 4). 'Like prisoners of war': North Korean labour behind Russia 2018 World Cup. The Guardian. Retrieved from: <https://www.theguardian.com/football/2017/jun/04/like-prisoners-of-war-north-korean-labour-russia-world-cup-st-petersburg-stadium-zenit-arena>. Archived at <https://perma.cc/3SAE-2MZ5>.

29 Goodman, P. S., Sang-Hun, C., & Berendt, J. (2017, December 31). Even in Poland, Workers' Wages Flow to North Korea. The Guardian. Retrieved from: <https://www.nytimes.com/2017/12/31/world/europe/north-korea>

poland-workers.html

- 30 1,200 North Korean workers to leave Mongolia as UN sanctions bite. (2017, December 03). The South China Morning Post. Retrieved from: <http://www.scmp.com/news/asia/east-asia/article/2122637/1200-north-korean-workers-leave-mongolia-un-sanctions-bite>. Archived at <https://perma.cc/T6MB-H684>.
- 31 Hong, A., Yoo, J., & Boliek, B. (2016, April 19). Tanzania Shuttles Two North Korean Medical Clinics. Radio Free Asia. Retrieved from: <https://www.rfa.org/english/news/korea/tanzania-shuttles-two-04192016143509.html/>. Archived at <https://perma.cc/448L-H8QC>.
- 32 Report of the Panel of Experts established pursuant to resolution 1874 (2009). (2018, March 5). UN Panel of Experts. Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=S/2018/171
- 33 Scarlatoiu, G., & Ha, R. (2016, June 22). The Rime of the Juche Mariner: North Korean Sailors and Fishermen Dispatched Overseas through Montevideo, Uruguay. HRNK Insider. Retrieved from: <http://www.hrnkinsider.org/2016/06/the-rime-of-juche-mariner-north-korean.html> and <http://en.asaninst.org/contents/asan-report-beyond-the-coi-dprk-human-rights-report/>. Archived at <https://perma.cc/333S-NFLD>.
- 34 North Korea Cyber Activity. Recorded Future Insikt Group. Retrieved from: <https://go.recordedfuture.com/hubfs/reports/north-korea-activity.pdf>. Archived at <https://perma.cc/XGR6-5FQ7>.
- 35 Kim, S. (2018, February 7). Inside North Korea's Hacker Army. Bloomberg Businessweek. Retrieved from: <https://www.bloomberg.com/news/features/2018-02-07/inside-kim-jong-un-s-hacker-army>. Archived at <https://perma.cc/UVF6-32H4>.
- 36 Ibid.
- 37 Интервью Посла России в КНДР А.И.Мацегоры информагентству «Россия сегодня», 14 апреля 2017 года [Interview of the Ambassador of Russia to the DPRK A. Matsegora to the news agency "Russia Today", April 14, 2017]. (2017, April 14). Ministry of Foreign Affairs of the Russian Federation. Retrieved from: http://www.mid.ru/web/guest/nota-bene/-/asset_publisher/dx7DsH1WAM6w/content/id/2729503. Archived at <https://perma.cc/QQ2Y-53ME>; FACT SHEET: UN Security Council Resolution 2397 on North Korea. (2017, December 22). Retrieved from: usun.state.gov/remarks/8238. Archived at <https://perma.cc/N7QT-RM8N>.
- 38 Yu, S. (2017, August 10). "Gaps in records cloak China's North Korean 'slave labourers' in mystery." South China Morning Post. Retrieved from: <http://www.scmp.com/news/china/policies-politics/article/2105851/gaps-records-cloak-chinas-north-korean-slave-labourers>. Archived at <https://perma.cc/E8C5-EAV8>.
- 39 Choi, Y. (February 2017). 북한해외노동자현황: 통계데이터 중심으로 [The Condition of North Korean Overseas Laborers: Focusing on Statistics Data]. KDI North Korea Economic Review.
- 40 Conditions of Labor and Human Rights: North Korean Overseas Laborers in Russia. (2016). NKDB. Page 63.
- 41 Eberstadt, N. (2011, November 1). The Dying Bear: Russia's Demographic Disaster. Foreign Affairs. Retrieved from: <https://www.foreignaffairs.com/articles/russia-fsu/2011-11-01/dying-bear>. Archived at <https://perma.cc/43WY-SNTK>.
- 42 Граждан КНДР, работающих в Приморье, никто насильно на родину не высылает - власти [No citizens of the DPRK working in Primorye forcibly deported to their homeland, authorities say]. (2018, February 7). Interfax. Retrieved from: <http://www.interfax-russia.ru/FarEast/news.asp?id=907622&sec=167>
- 43 РФ выделила квоты на работу для 3,2 тыс. рабочих из КНДР [The Russian Federation allocated quotas for work for 3200 workers from the DPRK]. (2018, July 20). Interfax. Retrieved from: <http://www.interfax.ru/world/621841>. Archived at <https://perma.cc/V4R4-4Z8N>.
- 44 Demick, B. (2012, July 1). China hires tens of thousands of North Korea guest workers. Los Angeles Times. Retrieved from: <http://articles.latimes.com/2012/jul/01/world/la-fg-china-workers-20120701>. Archived at <https://perma.cc/X7JB-D265>; Chinese media reported that 20,000 North Korean workers were sent to Jilin province. The article also quoted a professor of Northeast Asian international politics at Yanbian University who stated that the

agreement was the first large-scale increase of North Korean labor into China. See 鳳周刊: 探秘2万朝鲜劳工入境内情 [Phoenix Weekly: Exploring the 20,000 North Korean Workers Entering the Country]. Chuguo. Retrieved from: <http://www.chuguo78.com/laowu/88917.html>. Archived at <https://perma.cc/3975-K3CH>.

45 鳳周刊: 探秘2万朝鲜劳工入境内情 [Phoenix Weekly: Exploring the 20,000 North Korean Workers Entering the Country]. Chuguo. Retrieved from: <http://www.chuguo78.com/laowu/88917.html>. Archived at <https://perma.cc/3975-K3CH>.

46 Wertz, D., & Clegg, G. R. (2017, June 22). The Value—and Limits—of Data on North Korea's External Relations. 38 North. Retrieved from: <https://www.38north.org/2017/06/dwertzgcllegg062217/>. Archived at <https://perma.cc/JM77-D9TJ>.

47 大孤山纺织服装产业项目[Dagushan Textile and Garment Industry Project]. (2017, February 9). City of Dandong Investment Information Platform. Retrieved from: <http://zhaoshang.dandong.gov.cn/html/80/20172/a9b7ba70783b617e9998dc4dd82eb3c5.html>. Archived at <https://perma.cc/Y5P6-VTCZ>.

48 Russian Ministry of Labor. Documents held by author.

49 Page, J., Jeong, A., & Talley, I. (2018, March 2). China, Finally, Clamps Down on North Korea Trade—And the Impact Is Stinging. The Wall Street Journal. Retrieved from: <https://www.wsj.com/articles/north-korea-finally-feels-the-sting-of-international-sanctions-1519923280>

50 North Korean Workers Return to China in Defiance of UN Restrictions. (2018, April 4). Radio Free Asia. Retrieved from: <https://www.rfa.org/english/news/korea/workers-04042018134944.html>. Archived at <https://perma.cc/7WVW-9Z3Y>.

51 Conditions of Labor and Human Rights: North Korean Overseas Laborers in Russia. (2016). NKDB. Pages 71-75 and 81-83.

52 Ibid. Page 63.

53 Ibid. Page 60.

54 Ibid.

55 Ibid..

56 Ibid.

57 Ibid.

58 Ibid.

59 SC Res 2375. Doc S/RES/2375. (2017, September 11). Retrieved from: <http://unscr.com/en/resolutions/doc/2375>

60 Treasury Sanctions Individuals and Entities Supporting the North Korean Government and its Nuclear and Weapons Proliferation Efforts. (2016, December 2). U.S. Department of the Treasury. Retrieved from: <https://www.treasury.gov/press-center/press-releases/Pages/jl0677.aspx>. Archived at <https://perma.cc/J9T5-JCE2>.

61 Rynrado GTC profile. Kartoteka. Retrieved from: <https://www.kartoteka.ru/card/674b8805ee569525b9e1acb21b83c0c9/?z=1&item=Main>

62 Russian Ministry of Labor. Document held by author.

63 SC Res 2375. Doc S/RES/2375. (2017, September 11). Retrieved from: <http://unscr.com/en/resolutions/doc/2375>

64 Russian corporate registry. Documents held by author.

65 Russian Ministry of Labor. Documents held by author.

- 66 Общежитии, на которое напали вооруженные преступники, обнаружен подпольный "банк КНДР" [In a dormitory attacked by armed criminals, an underground "bank of the DPRK" was found]. (2017, December 16). REN TV. Retrieved from: <https://ren.tv/novosti/2017-12-16/v-obshchezhitii-na-kotoroe-napali-vooruzhennye-prestupniki-obnaruzhen-podpolnyy>. Archived at <https://perma.cc/YPQ8-9Z64>.
- 67 ОПЕР Слил [OPER Fouled]. (2017, November 29). Когда китайское НЕТ победило пистоль ГОПоты [When the Chinese Did Not Retrieve the Pistol] [Blog post]. Retrieved from: <https://tgchannels.com/channel/operdrain/5925>
- 68 В поселковом общежитии обнаружили подпольный «банк КНДР». [In a village hostel found an underground "bank of the DPRK"]. Izvestia. (2017, December 16). Retrieved from: <https://iz.ru/684170/2017-12-16/v-poselkovom-obshchezhitii-obnaruzhili-podpolnyi-bank-kndr> Archived at <https://perma.cc/6QEY-N8SN>.
- 69 Стали известны подробности нападения на рабочих из Северной Кореи в Колпино [Details of the attack on workers from North Korea in Kolpino became known]. (2016, October 28). Fontanka. Retrieved from: <https://www.fontanka.ru/2016/10/28/083/>
- 70 ОПЕР Слил [OPER Fouled]. (2017, November 29). Когда китайское НЕТ победило пистоль ГОПоты [When the Chinese Did Not Retrieve the Pistol] [Blog post]. Retrieved from: <https://tgchannels.com/channel/operdrain/5925>
- 71 Russian corporate registry. Document held by author.
- 72 "Бойцы революции на стройке: как северокорейские рабочие попадают в Петербург." ["Soldiers of the Revolution at the Construction Site: How North Korean Workers Get to St. Petersburg."] Delovoy Peterburg. (2017, April 27). Retrieved from: https://www.dp.ru/a/2017/04/25/20_bojcov_strojki_kak_se. Archived at <https://perma.cc/EM3E-4REM>.
- 73 Russian corporate registry. Document held by author.
- 74 Bu Khyn LLC Job Vacancy. Trud. Archived at <https://perma.cc/6V29-2PWC>; ООО МОКРАН [MOKRAN LLC] Job Vacancy. Jobs in Moscow. Retrieved from: <https://www.jobinmoscow.ru/rab.php?id=554900>. Archived at <https://perma.cc/5XTN-28NA>; Daesung LLC Job Vacancy. Trud. Archived at <https://perma.cc/ESX8-H4A6>.
- 75 Bu Khyn LLC Job Vacancy. R21. Retrieved from: <https://www.r21.spb.ru/empl/employers/personal.htm?id=49588@eg>; Kanson LLC Job Vacancy. Trudvsem. Retrieved from: https://trudvsem.ru/vacancy/card/1087847027256/5dbe1972-b093-11e7-a59e-bf2cfe8c828d?utm_source=gorodrabot.ru&utm_medium=referral&utm_campaign=gr; Mokran LLC Job Vacancy. Trudvsem. Retrieved from: <https://trudvsem.ru/vacancy/card/1117847131643/5cfac972-b093-11e7-a59e-bf2cfe8c828d?2>.
- 76 Russian corporate registry. Documents held by author.
- 77 Ibid.
- 78 Treasury Designates Key Nodes of the Illicit Financing Network of North Korea's Office 39. (2010, November 18). U.S. Department of the Treasury. Retrieved from: <https://www.treasury.gov/press-center/press-releases/Pages/tg962.aspx>. Archived at <https://perma.cc/WG7Z-TW4D>.
- 79 Karpova, A. (2016, November 15). На стройке "Зенит-Арены" погиб рабочий из Кореи [Korean worker dies at Zenith Arena construction site]. Nation News. Retrieved from: <https://nation-news.ru/224880-na-stroike-zenit-areny-pogib-rabochii-iz-korei>. Archived at <https://perma.cc/PS77-CF48>.
- 80 Daesung LLC Job Vacancy. Trudvsem. Retrieved from: https://trudvsem.ru/vacancy/card/1127847077544/e903d592-ade8-11e7-8081-bf2cfe8c828d?utm_source=gorodrabot.ru&utm_medium=referral&utm_campaign=gr
- 81 Profile of Daesung LLC. Kartoteka Russian registry aggregator. Retrieved from: <https://www.kartoteka.ru/card/01cdf9344d59cfa24df7c307d3662892/?z=1&item=Main>
- 82 Russian Ministry of Labor. Document held by author.

- 83 Russian Ministry of Labor and Russian corporate registry. Documents held by author.
- 84 Russian Ministry of Labor. Document held by author.
- 85 Munmen LLC Job Vacancies. HHRF. Retrieved from: <http://hhrf.ru/companies/474907>. Archived at <https://perma.cc/6JHF-P76D>; Deguk LLC Job Vacancies. Kubzan. Retrieved from: <https://kubzan.ru/employer/detail/?companyId=0b7c34c5-54a9-4c2b-bdfd-d813d7da5e88>. Archived at <https://perma.cc/AK3N-VLZT>; Zenko-39 LLC Job Vacancies. Trud. Retrieved from: https://russia.trud.com/search/item/item_id/1416937490/site_id/1123/show/job/query/%D0%97%D0%95%D0%9D%D0%9A%D0%9E/region/russia.html
- 86 Zenko-39 Job Vacancy for Korean interpreter. Trudvsem. Retrieved from: https://trudvsem.ru/vacancy/card/1092308007670/beaa4302-68ec-11e8-a011-bf2cfe8c828d?from=trudcom&utm_source=trud.com&utm_medium=referral. Archived at <https://perma.cc/FK5D-DNEL>.
- 87 Treasury Sanctions Individuals and Entities Supporting the North Korean Government and its Nuclear and Weapons Proliferation Efforts. (2016, December 12). U.S. Department of the Treasury. Retrieved from: <https://www.treasury.gov/press-center/press-releases/Pages/jl0677.aspx>. Archived at <https://perma.cc/23WU-BB3M>.
- 88 Russian Ministry of Labor. Document held by author.
- 89 СТРОИТЕЛЬНЫЕ КОМПАНИИ НА ТЕРРИТОРИИ МО Г.КРАСНОДАР [CONSTRUCTION COMPANIES IN THE TERRITORY OF THE CITY OF KRASNODAR]. Open Data Krasnodar. Retrieved from: <http://opendata.krd.ru/dannye/stroitelstvo-arkhitektura/stroitelnye-kompanii/?page=4>
- 90 Profile of Zenko-39 LLC. Kartoteka. Retrieved from: <https://www.kartoteka.ru/card/196e743e99132ff0b2b3ab63e1df3aea/?z=1&item=Main>
- 91 Russian corporate registry. Documents held by author.
- 92 Mirae-1 LLC (ООО “МИРЭ-1”), Mirae-2 LLC (ООО МИРЭ-2) and Gold Star LLC (ООО ЗОЛОТАЯ ЗВЕЗДА) profiles. Kartoteka. Retrieved from: <https://www.kartoteka.ru/>
- 93 Russian Ministry of Labor. Documents held by author.
- 94 В августе текущего года в ТПП РФ прошли аккредитацию 12 иностранных фирм из 11 стран [In August this year, the Chamber of Commerce and Industry of the Russian Federation accredited 12 foreign companies from 11 countries]. (2004, August 31). Chamber of Commerce and Industry of the Russian Federation. Retrieved from: <https://tpprf.ru/ru/news/5610/>
- 95 Russian Ministry of Labor. Document held by author.
- 96 History. Nevz-Ceramics website. Retrieved from: <http://nevz-ceramics.com/en/o-kompanii/istoriya.html>. Archived at <https://perma.cc/A6KS-42KU>.
- 97 Russian corporate registry. Documents held by author.
- 98 RUSNANO Structure and Governing Bodies. Rusnano Group website. Retrieved from: <http://en.rusnano.com/about/management>
- 99 RUSNANO Structure and Governing Bodies: Board of Directors of JSC RUSNANO. Rusnao Group website. Retrieved from: <http://en.rusnano.com/about/management/board-of-directors-of-ojsc-rusnano>
- 100 Ceramic substrates and packages. Nevz-Ceramics website. Retrieved from: <http://www.nevz-ceramics.com/en/produkty-i-materialyi/podlozhki.html>. Archived at <https://perma.cc/F32U-CQ85>.
- 101 Aluminum-Nitride Infrared Window Materials for High Heat Load Applications. SBIR STTR. Retrieved from: <https://www.sbir.gov/sbirsearch/detail/91210>. Archived at <https://perma.cc/5FKK-LJLB>; Making Appropriations for the Department of Defense for the Fiscal Year Ending September 20, 2006 and for Other Purposes. (2005, December 18). U.S. House of Representatives. Retrieved from: <https://books.google.com/books?id=8TfCSbPOFxiC&pg=PA436&lpg=PA436&dq=%22aluminum+nitride%22+nuclear+weapons&source=bl&>

ots=o7noBT0ELA&sig=-DMYqmSTThT-hnYX0KBfvz8AnU&hl=en&sa=X&ved=0ahUKEwjmbLrvOzbAhUPx1kKHea4AOUQ6AEIUTAE#v=onepage&q=%22aluminum%20nitride%22%20nuclear%20weapons&f=false

102 Sanger, D. E., & Broad, W. J. (2018, January 6). How U.S. Intelligence Agencies Underestimated North Korea. The New York Times. Retrieved from: <https://www.nytimes.com/2018/01/06/world/asia/north-korea-nuclear-missile-intelligence.html>

103 Perlez, J. (2013, September 29). China Ban on Items for Nuclear Use to North Korea May Stall Arms Bid. The New York Times. Retrieved from: <https://www.nytimes.com/2013/09/30/world/asia/china-ban-on-items-for-nuclear-use-to-north-korea-may-stall-arms-bid.html>

104 Ceramic substrates and packages. Nevz-Ceramics website. Retrieved from: <http://www.nevz-ceramics.com/en/produktiy-i-materialiyi/podlozhki.html>. Archived at <https://perma.cc/F32U-CQ85>.

105 НЭВЗ КЕРАМИКС [NEVZ CERAMICS] [Video File]. (2012, October 12). NEVZ CERAMICS. Retrieved from: <https://www.youtube.com/watch?v=M2h9TrGw7lQ>. Archived at <https://perma.cc/W23Q-AP6S>.

106 Barrabi, T. (2015, June 5). Russia's Armata T-14 Tank to Feature Ceramic Armor Plates, Report Says. International Business Times. Retrieved from: <http://www.ibtimes.com/russias-armata-t14-tank-feature-ceramic-armor-plates-report-says-1954906>. Archived at <https://perma.cc/GS3S-9ECM>.

107 China, India Interested in Purchasing Russia's Armata - Putin's Aide. (2015, April 6). Sputnik News. Retrieved from: <https://sputniknews.com/military/201506041022923252/>. Archived at <https://perma.cc/46NT-4PGA>.

108 Fadeichev, S. (2015, June 5). Russia starts batch production of ceramic plates for new generation Armata tank. TASS. Retrieved from: <http://tass.com/russia/799103>.

109 Commercially available trade data. Documents held by author.

110 НЭВЗ КЕРАМИКС [NEVZ CERAMICS] [Video File]. (2012, October 12). NEVZ CERAMICS. Retrieved from: <https://www.youtube.com/watch?v=M2h9TrGw7lQ>. Archived at <https://perma.cc/W23Q-AP6S>.

111 Internal translation. RUSNANO USA, Inc. RUSNANO website. Retrieved from: <http://www.rusnano.com/about/subsidiary/rusnano-usa>

112 2017 Statement of Information, California Secretary of State. Document held by author.

113 RUSNANO USA, Inc. RUSNANO website. Retrieved from: <http://www.rusnano.com/about/subsidiary/rusnano-usa>

114 Scientific and research cooperation (with research institutes). NEVZ-Ceramics website. Retrieved from: <http://www.nevz-ceramics.com/en/sotrudnichestvo/nauchno-issledovatel'skoe-sotrudnichestvo-s-issledovatel'skimi-institutami.html>. Archived at <https://perma.cc/8MHD-XVNF>.

115 НЭВЗ КЕРАМИКС [NEVZ CERAMICS] [Video File]. (2012, October 12). NEVZ CERAMICS. Retrieved from: <https://www.youtube.com/watch?v=M2h9TrGw7lQ>. Archived at <https://perma.cc/W23Q-AP6S>.

116 Российские партнеры [Russian Partners]. NEVZ-Ceramics website. Retrieved from: http://ru.nevz.ru/partners/science_association. Archived at <https://perma.cc/F8TB-HBDG>.

117 Demick, B. (2012, July 1). China hires tens of thousands of North Korea guest workers. Los Angeles Times. Retrieved from: <http://articles.latimes.com/2012/jul/01/world/la-fg-china-workers-20120701>. Archived at <https://perma.cc/AKL4-B98W>; Chinese media reported that 20,000 North Korean workers were sent to Jilin province. The article also quoted a professor of Northeast Asian international politics at Yanbian University who stated that the agreement was the first large-scale increase of North Korean labor into China. See 鳳周刊: 探秘2万朝鲜劳工入境内情 [Phoenix Weekly: Exploring the 20,000 North Korean Workers Entering the Country]. Chuguo. Retrieved from: <http://www.chuguo78.com/laowu/88917.html>. Archived at <https://perma.cc/3975-K3CH>.

118 鳳周刊: 探秘2万朝鲜劳工入境内情 [Phoenix Weekly: Exploring the 20,000 North Korean Workers Entering the Country]. Chuguo. Retrieved from: <http://www.chuguo78.com/laowu/88917.html>. Archived at <https://perma.cc/3975-K3CH>.

perma.cc/3975-K3CH.

119 Gale, A. (2016, April 14). Defector Offers Peek into North Korea's Overseas Restaurants. *The Wall Street Journal*. Retrieved from: <https://www.wsj.com/articles/defector-offers-peek-into-north-korea-s-overseas-restaurants-1460654256>

120 Ibid.

121 Ibid.

122 In China, North Korean firms still trading despite shutdown order. (2018, January 9). *The South China Morning Post*. Retrieved from: <http://www.scmp.com/news/china/diplomacy-defence/article/2127530/china-north-korean-firms-still-trading-despite-shutdown>. Archived at <https://perma.cc/QZ5Z-L62B>.

123 Park, J., & Walsh, J. (August 2016). Stopping North Korea, Inc.: Sanctions Effectiveness and Unintended Consequences. The Belfer Center. Retrieved from: <https://www.belfercenter.org/sites/default/files/legacy/files/Stopping%20North%20Korea%20Inc%20Park%20and%20Walsh%20.pdf>. Archived at <https://perma.cc/55BT-3AE2>.

124 Strangio, S. (2010, March 27). Kingdom Kim's Culinary Outposts. *Slate*. Retrieved from: http://www.slate.com/articles/news_and_politics/foreigners/2010/03/kingdom_kims_culinary_outposts.html. Archived at <https://perma.cc/52AU-3UXD>.

125 学习中国的“下有对策” 国内朝鲜餐厅继续营业 [Study China's "local policies": North Korean restaurants continue to operate]. (2018, January 11). *Radio Free Asia*. Retrieved from: <https://www.rfa.org/mandarin/yataibaodao/junshiwaijiao/ko-01112018101520.html>. Archived at <https://perma.cc/3M2J-DPR2>.

126 Profile of LiuJing Hotel [柳京酒店]. Dianping. Retrieved from: <https://www.dianping.com/shop/5374077>

127 Lin, W. 中共放松制裁? 中国部分朝鲜饭店重新开张 [The CCP relaxes sanctions? Some North Korean hotels in China reopened]. *The Epoch Times*. Retrieved from: <http://www.epochtimes.com/gb/18/3/30/n10264131.htm>. Archived at <https://perma.cc/4VGU-JHER>.

128 Chinese corporate registry. Document held by author.

129 Ibid.

130 Ibid.

131 Ibid.

132 Ibid.

133 Treasury Imposes Sanctions on Supporters of North Korea's Weapons of Mass Destruction Proliferation. (2016, September 26). U.S. Department of the Treasury. Retrieved from: <https://www.treasury.gov/press-center/press-releases/Pages/jl5059.aspx>. Archived at <https://perma.cc/U3WF-W2SW>.

134 Ibid.

135 Four Chinese Nationals and China-Based Company Charged with Using Front Companies to Evade U.S. Sanctions Targeting North Korea's Nuclear Weapons and Ballistic Missile Programs. (2016, September 26). U.S. Department of Justice. Retrieved from: <https://www.justice.gov/opa/pr/four-chinese-nationals-and-china-based-company-charged-using-front-companies-evade-us>. Archived at <https://perma.cc/SCD3-ASAX>.

136 Treasury Sanctions Individuals and Entities Supporting the North Korean Government and its Nuclear and Weapons Proliferation Efforts. (2016, December 2). U.S. Department of the Treasury. Retrieved from: <https://www.treasury.gov/press-center/press-releases/Pages/jl0677.aspx>. Archived at <https://perma.cc/N4QU-SL7P>.

137 COMMISSION IMPLEMENTING REGULATION (EU) 2015/1062. (2015, July 2). EUR-Lex. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2015.174.01.0016.01.ENG. Archived at <https://perma.cc/N4QU-SL7P>.

138 Booth, R. (2017, April 23). UK freezes assets of North Korean company based in south London. *The Guardian*.

Retrieved from: <https://www.theguardian.com/uk-news/2017/apr/23/uk-freezes-assets-of-north-korean-company-in-south-london-insurance-nuclear-weapons>. Archived at <https://perma.cc/XP63-AAYL>.

139 Ripley, W. (2015, January 7). North Korean defector: 'Bureau 121' hackers operating in China. CNN. Retrieved from: <https://www.cnn.com/2015/01/06/asia/north-korea-hackers-shenyang/index.html>. Archived at <https://perma.cc/H7SM-EJ9S>.

140 Ibid.

141 Chinese corporate registry. Document held by author.

142 Ibid..

143 Ibid.

144 Ibid.

145 Thompson, D. (2017, June 12). Risky Business. C4ADS.

146 Lintner, B. (2007, April 24). North Korea's IT Revolution. North Korean Economy Watch. Retrieved from: <http://www.nkeconwatch.com/category/organizaitions/silibank/>. Archived at <https://perma.cc/WYX8-RUPU>.

147 CONSOLIDATED LIST OF FINANCIAL SANCTIONS TARGETS IN THE UK. (2016, April 28). Government of the United Kingdom. Retrieved from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/441921/northkorea.pdf

148 Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009). (2016, February 24). United Nations Security Council. Retrieved from: http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2016_157.pdf 173 / 38.

149 Chinese corporate registry. Document held by author.

150 Ibid.

151 Ibid.

152 Ibid.

153 Profile of Moranbong North Korean Performance Hotel [牡丹峰朝鲜演艺酒店]. Dianping. Retrieved from: <http://www.dianping.com/shop/9958456>

154 Ibid.

155 Ibid.

156 Chinese corporate registry. Document held by author.

157 Profile of Moranbong North Korean Performance Hotel [牡丹峰朝鲜演艺酒店]. Dianping. Retrieved from: <http://www.dianping.com/shop/9958456>

158 Chinese corporate registry. Document held by author.

159 Ibid.

160 Ibid.

161 Ibid.

162 Commercially available trade data. Documents held by author.

163 Documents held by author.

164 Chinese corporate registry. Document held by author.

- 165 2016 annual returns for Zhongji Rare Earth Transtech Services (Dalian) Co., Ltd. and Dalian Intop Import & Export Co., Ltd. Corporate filing for Dalian Xintuo Trade Co., Ltd. Chinese business registry. Documents held by author.
- 166 Chinese corporate registry. Document held by author.
- 167 Ibid.
- 168 Ibid.
- 169 Ibid.
- 170 Profile of Beijing Pyongyang Restaurant Co., Ltd. [北京平壤馆餐饮有限公司]. Dianping. Retrieved from: <http://www.dianping.com/shop/515085>
- 171 Chinese corporate registry. Document held by author.
- 172 Ibid.
- 173 Profile of North Korea Xiaobaishui Cooperative Society's Beijing Representative Office [朝鲜小白水联合会社北京代表处]. Youbianku. Retrieved from: <https://beijing.youbianku.com>. Archived at <https://perma.cc/MBM7-NL5K>. See also 朝鲜小白水联合会社北京代表处 [North Korea Xiaobaishui Cooperation Society Beijing Representative Office]. Google Maps. Retrieved from: <https://www.google.com/maps/place>. Archived at <https://perma.cc/G42C-59CB>.
- 174 Profile of North Korea Xiaobaishui Cooperative Society's Beijing Representative Office [朝鲜小白水联合会社北京代表处]. Qixin. Retrieved from: <https://www.qixin.com/company/90cb2904-b7c3-4a56-a664-a34ac98a8557>
- 175 Profile of North Korea Intelligent Commerce Co. Beijing Representative Office [朝鲜智能贸易公司北京代表处]. Qixin. Retrieved from: <https://www.qixin.com/company/d80aa576-85eb-44ea-a1ae-0710c0f58a3c>. Archived at <https://perma.cc/V8UK-73UH>.
- 176 Ibid.
- 177 Profile of Liujiang Restaurant [柳京饭店] Dianping. Retrieved from: <http://www.dianping.com/shop/5998527>
- 178 Ibid.
- 179 Ibid.
- 180 Chinese corporate registry. Document held by author.
- 181 Chinese business registry. Document held by author. The English name is an internal translation.
- 182 Profile of Liujiang Hotel [柳京飯店]. 4Travel.jp. Retrieved from: http://4travel.jp/os_hotel_each-10478802.html. Archived at <https://perma.cc/76E7-XXTL>; Profile of North Korea Xiaobaishui Cooperative Society's Beijing Representative Office [朝鲜小白水联合会社北京代表处]. Qixin. Retrieved from: <https://www.qixin.com/company/90cb2904-b7c3-4a56-a664-a34ac98a8557>
- 183 Japanese business registry. Documents held by author.
- 184 Chinese business registry. Document held by author.
- 185 Chinese business registry and Qixin registry aggregator. Documents held by author.
- 186 Introduction of Hunchun Border Economic Cooperation Zone. (2011, April 6). Jilin Daily. Retrieved from: http://english.jl.gov.cn/Investment/Opportunities/Majorzones/201104/t20110406_973060.html
- 187 Wei, H. 枝繁巢暖引凤来 [The nest is warm and the phoenix comes]. Yanji News. Retrieved from: <http://www.yanjinews.com/html/news/zhoubian/2017/0505/101381.html>; Introduction of Hunchun Border Economic Cooperation Zone. Jilin Government website. Retrieved from: <http://english.jl.gov.cn/Investment/Opportunities/>

Majorzones/201104/t20110406_973060.html. Archived at <https://perma.cc/AB45-WT8L>.

188 Confidential source.

189 Ibid.

190 Ibid.

191 Ibid.

192 Documents held by author.

193 Ibid.

194 Ibid.

195 Chinese corporate registry. Document held by author.

196 Ibid.

197 Ibid.

198 Sullivan, T. (2017, October 5). NKorean workers prep seafood going to US stores, restaurants. AP News. Retrieved from: <https://www.apnews.com/8b493b7df6e147e98d19f3abb5ca090a/NKorean-workers-prep-seafood-going-to-US-stores,-restaurants>. Archived at <https://perma.cc/DX77-ZXQP>.

199 Chinese corporate registry. Document held by author.

200 Commercially available trade data. Documents held by author.

201 Profile of Dalian Pagoda Seafood Co Ltd. China.cn. Retrieved from: <https://dpscl.en.china.cn/>. Archived at <https://perma.cc/U9Y3-N3H7>.

202 New York Department of State Division of Corporations filing. Document held by author.

203 Profile of Hunchun Pagoda Industries Co Ltd. Commercially available trade data. Documents held by author.

204 Ibid.

205 Sullivan, T. (2017, October 5). NKorean workers prep seafood going to US stores, restaurants. AP News. Retrieved from: <https://www.apnews.com/8b493b7df6e147e98d19f3abb5ca090a/NKorean-workers-prep-seafood-going-to-US-stores,-restaurants>. Archived at <https://perma.cc/DX77-ZXQP>.

206 Profile of The Fishin Co. Commercially available trade data. Documents held by author.

207 Sullivan, T. (2017, October 5). NKorean workers prep seafood going to US stores, restaurants. AP News. Retrieved from: <https://www.apnews.com/8b493b7df6e147e98d19f3abb5ca090a/NKorean-workers-prep-seafood-going-to-US-stores,-restaurants>. Archived at <https://perma.cc/DX77-ZXQP>.

208 Commercially available trade data. Documents held by author.

209 Sullivan, T. (2017, October 5). NKorean workers prep seafood going to US stores, restaurants. AP News. Retrieved from: <https://www.apnews.com/8b493b7df6e147e98d19f3abb5ca090a/NKorean-workers-prep-seafood-going-to-US-stores,-restaurants>. Archived at <https://perma.cc/DX77-ZXQP>.

210 Ibid.

211 Commercially available trade data. Documents held by author.

212 Chinese corporate registry. Document held by author.

213 Commercially available trade data. Documents held by author.

- 214 Chinese corporate registry. Document held by author.
- 215 Commercially available trade data. Documents held by author.
- 216 Ibid.
- 217 国家纺织建设规划院、辽宁省服装协会相关专家、东港市领导赴东港市大孤山经济区、孤山镇调研纺织服装企业 [National Textile Construction Planning Institute, Liaoning Province Garment Association related experts, and Donggang city leaders go to Donggang City Dagushan Economic Zone, Gushan Town to investigate textile and garment enterprises]. Dandong government website. Retrieved from: <http://www.dandong.gov.cn/html/64/20179/a4d0ad5090774d07.html>. Archived at <https://perma.cc/48ZY-WAGW>.
- 218 Ibid.
- 219 Byrne, J., & Byrne, L. (2018, January 15). Dandong company involved in coal, North Korean labor, and shipping clothes to U.S.: investigation. NK Pro. Retrieved from: <https://www.nknews.org/pro/dandong-company-involved-in-coal-ships-north-korea-labor-and-shipping-clothes-to-the-u-s>. Archived at <https://perma.cc/FVA6-E6SD/>
- 220 关于我们 [About Us]. Liaoning Yuanzhou Industrial website. <http://lanyuanzhou.com/index.html>. Archived at <https://perma.cc/SAE7-BJCQ>.
- 221 Ibid.
- 222 California corporate registry filing. Document held by author.
- 223 Ibid.
- 224 Ibid.
- 225 Ibid.
- 226 Chinese corporate registry. Document held by author.
- 227 PropertyShark. Document held by author.
- 228 Equasis. Document held by author.
- 229 Profile of 丹东市三江经贸有限公司 [Dandong Sanjiang Trading]. Tianyancha. Cached version retrieved from: <https://webcache.googleusercontent.com/search?q=cache:SXjwShUpYSIJ:https://www.tianyancha.com/company/5488144+&cd=2&hl=en&ct=clnk&gl=us>. Archived at <https://perma.cc/4AWV-G66U>.
- 230 Equasis. Document held by author.
- 231 Profile of 北京胜利三江经贸有限公司. [Beijing Shengli Sanjiang Economic & Trade Co., Ltd.] Tianyancha. Cached version retrieved from: <https://webcache.googleusercontent.com/search?q=cache:Heq2G93HTpIJ:https://www.tianyancha.com/company/5488046+&cd=1&hl=en&ct=clnk&gl=us>. Archived at <https://perma.cc/C6BQ-V4SJ>.
- 232 A leading maritime intelligence platform.
- 233 Ibid.
- 234 [하노이 북한 식당] 중화 고려식당 신기한 북한식당 [Hanoi North Korean Restaurant - Chinese Restaurant] [Blog Post]. Naver. Retrieved from: <https://blog.naver.com/hw96079/221260739560>. Archived at <https://perma.cc/WEN9-BWA2>.
- 235 [하노이 북한 식당] 중화 고려식당 신기한 북한식당 [Hanoi North Korean Restaurant - Chinese Restaurant] [Blog Post]. Naver. Retrieved from: <https://blog.naver.com/hw96079/221260739560>
- 236 Yonhap News TV. (2018, April 26). 베트남내 북한식당 '때 이른 남북화해 무드...' "빈자리 없다" / 연합뉴스TV (YonhapnewsTV) [North Korean restaurant in Vietnam 'early inter-Korean reconciliation mood ... "There is no vacancy" / Yonhap News TV (YonhapnewsTV)] [Video File]. Retrieved from: <https://www.youtube.com/watch?v=PtDJsVYfofo>.

Archived at <https://perma.cc/R5SE-G3QL>.

- 237 Vietnamese corporate registry. Document held by author.
- 238 Ibid.
- 239 Ibid.
- 240 Truong Phu Group Website. Retrieved from: <http://truongphugroup.com/cua-cuon-cao-cap/>. Archived at <https://perma.cc/3NF9-XT58>.
- 241 Commercially available trade data. Documents held by author.
- 242 Vietnamese corporate registry. Documents held by author.
- 243 Ibid.
- 244 Profile of Nguyen Xuan T. Upwork. Retrieved from: <https://www.upwork.com/fl/nguyenxuantrung>
- 245 Ibid.
- 246 Elance. Retrieved from: <https://www.elance.com/s/kjg197318/>. HTML archive of website held by author.
- 247 Jobs: Image Processing, Finding facial landmarks. Freelancer. Retrieved from: <https://www.freelancer.com/projects/cplusplus-programming/image-processing-finding-facial/>. Archived at <https://perma.cc/EQ5D-PDMW>.
- 248 Profile Picture of Man Rich. (2013, October 27). Facebook. Retrieved from: <https://www.facebook.com/photo.php?fbid=1376933519216527&set=a.1376933512549861.1073741825.100006996753901&type=3&theater>
- 249 Profile of Man Rich. Facebook. Retrieved from: <https://www.facebook.com/man.rich.9275?lst=100023606347372%3A100006996753901%3A1526227284>
- 250 Profile of Travis Timothy Yates. Guru. Retrieved from: <https://www.guru.com/freelancers/travis-timothy-yates>
- 251 Profile of Richard Minh. Guru. Retrieved from: <https://www.guru.com/freelancers/richard-minh>
- 252 Pearson, J., & Latiff, R. (2017, February 26). North Korea spy agency runs arms operation out of Malaysia, U.N. says. Reuters UK. Retrieved from: <https://uk.reuters.com/article/uk-northkorea-malaysia-arms-insight-idUKKBN1650YG>. Archived at <https://perma.cc/8MZX-49XT>; See also: Final report of the United Nations Panel of Experts submitted pursuant to Resolution 2345 (2017). S/2018/171. (2018, March 5). Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=S/2018/171. Paragraphs 173-177; Final report of the United Nations Panel of Experts submitted pursuant to Resolution 2276 (2016). S/2017/150. (2017, February 27). Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=S/2017/150. Paragraphs 72-87 and 232-241; and Midterm report of the United Nations Panel of Experts submitted pursuant to Resolution 2345 (2017). S/2017/742 (2017, September 5). Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=S/2017/742. Paragraph 52.
- 253 The Wayback Machine. Retrieved from: <https://web.archive.org/web/20170220014915/>; Future-TechGroup Website. Retrieved from: <http://future-techgroup.com/>. HTML archives held by author.
- 254 Whois Domain Tools for Future-TechGroup.com. Retrieved from: <https://whois.domaintools.com/future-techgroup.com>
- 255 Berger, A., Trainer, C., Cotton, S., & Dill, C. (May 2018). The Shadow Sector: North Korea's Information Technology Networks. Middlebury Institute Center for Nonproliferation Studies. Retrieved from: <https://www.nonproliferation.org/wp-content/uploads/2018/05/op36-the-shadow-sector.pdf>. Archived at <https://perma.cc/8U33-ZPDR>.
- 256 Reddy, T. Intel Realsense App Challenge Winners: Law Enforcement Computer Vision. Intel Software. Retrieved from: <https://software.intel.com/sites/campaigns/realsense-winners/details.html?id=21>. Archived at <https://perma.cc/C3LB-7Q57>.

257 ADS Group. UK Home Office, Security and Policing. Retrieved from: <https://www.securityandpolicing.co.uk/about/ads/>. Archived at <https://perma.cc/S7BD-4WFB>.

258 Strategic Systems Alliance: Exhibitor List. UK Home Office, Security and Policing website. Retrieved from: <https://www.securityandpolicing.co.uk/exhibitors/exhibitors-list2016/strategic-systems-alliance/>. Archived at <https://perma.cc/6VUL-53A6>.

259 Ibid.

260 Search of KJG197318. Freelancer. Retrieved from: <https://www.freelancer.com/job-search/kjg197318/?results=100>. Archived at <https://perma.cc/T7B2-9N25>.

261 Ibid.

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