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# Increase in Food Production and the ‘Offbeat’ of Disparity in the Kim Jong Un Era

**Joung, Eunlee**

(Research Fellow, North Korean Research Division)

This study analyzes the distribution of food resources with a focus on three new dietary phenomena concerning North Korean people’s dietary life. These new phenomena are reduction of corn imports, increase of sugar, flour, and corn oil imports, and increase in meat restaurants. After the Arduous March in the 1990s, and especially during the Kim Jong Un era, food production has exhibited a continuous increase, but the overall food supply still falls short of demand. In addition, the process of tackling absolute poverty and improving the economy through marketization are showing offbeat with a widening gap in industry, farm, and region. Furthermore, the threefold threat—sanctions against North Korea, massive flood, and COVID-19—is likely to increase North Korea’s Gini Coefficient on redistribution. Resolving these problems requires the strengthening of governance capabilities for a fairer distribution of food by the North Korean authorities and the humanitarian cooperation of the international community for the vulnerable class, deprived regions, and failed enterprises in North Korea.

Since Kim Jong Un’s coming to power, every season of spring shortage has seen a surge of reports on the food crisis, China’s grand assistance, and people

who died of starvation. The World Food Programme (WFP), Food and Agriculture Organization of the United Nations (FAO), and the United States Department of Agriculture (USDA) reported that about 40 to 60% of North Korean people face severe food shortages.<sup>1)</sup> Referencing such a report, various media outlets have been suggesting North Korea's possible return to the 'Arduous March.' Also, some have inferred that the United Nations Security Council sanctions, the massive flood, and 'COVID-19' have caused the food crisis. Meanwhile, people who traveled to Pyongyang, Sepo Plateau (*Sepodeungpan*), fertilizer plants, or the North Korea-China border regions reported the impression of an increase of meat restaurants and developments in agriculture, livestock, and farming in North Korea.<sup>2)</sup> The discrepancy between the two groups of reports arises due to the lack of precise internal statistics provided by the North Korean government. The author has comprehensively analyzed the field investigations at the North Korea-China border region, interviews with North Korean defectors and local experts, and statistical data and concluded that the discrete arguments laid out by the two groups are both considerably trustworthy. Hence, the author attempts to provide an eclectic analysis of the food situation in North Korea centered around the 'three new phenomena.'

### Controversy on the Increase in Food Production during the Kim Jong Un Era

Having reported on North Korea's food statistics since 1995, the FAO announced that food shortages have reduced for the first three years of Kim Jong

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1) According to the USDA's International Food Security Assessment 2020-30, 59.2% of North Korean population in 2020 is under a food crisis. USDA, International Food Security Assessment, 2020-30, (USDA, 2020), p. 50. Also, according to the FAO/WFP report in May 2019, about 40% of the entire North Korean population (or 10.10 million people) is facing food crises and in urgent need of food assistance. FAO/WFP, DPRK FAO/WFP Joint Rapid Food Security Assessment, (WFP, 2019), p. 4.

2) The Sepo Plateau is a grassland bordering Sepo County, Ichon County, and Pyongyang County. See an interview conducted by the author (local visitor A, Jul 16, 2020: KINU) and the following website: <<https://www.youtube.com/watch?v=TmwkQgYFsg4>>.

Un's rule that began in 2012, but since 2015 they have increased to a record high in 2018 (see Figure 1). The FAO warned that, due to COVID-19 among other factors, about 40% of the population or 10.10 million people will face food crises by 2020.<sup>3)</sup> On the other hand, in an interview with Kyodo News in October 2018, economist Ki-song Lee of the Academy of Social Sciences of North Korea said that food production has increased compared to the past due to the reduced occurrences of natural disasters, development of seeds, a rise in domestic production of fertilizers, and empowered workers to produce thanks to the Farmland Responsibility System. Though still lacking in absolute terms, he continued, the situation is not too tight (see Figure 2).<sup>4)</sup>

<Figure 1> FAO Data on Trends of Supply and Demand of Grain (Unit: 10,000 tons)



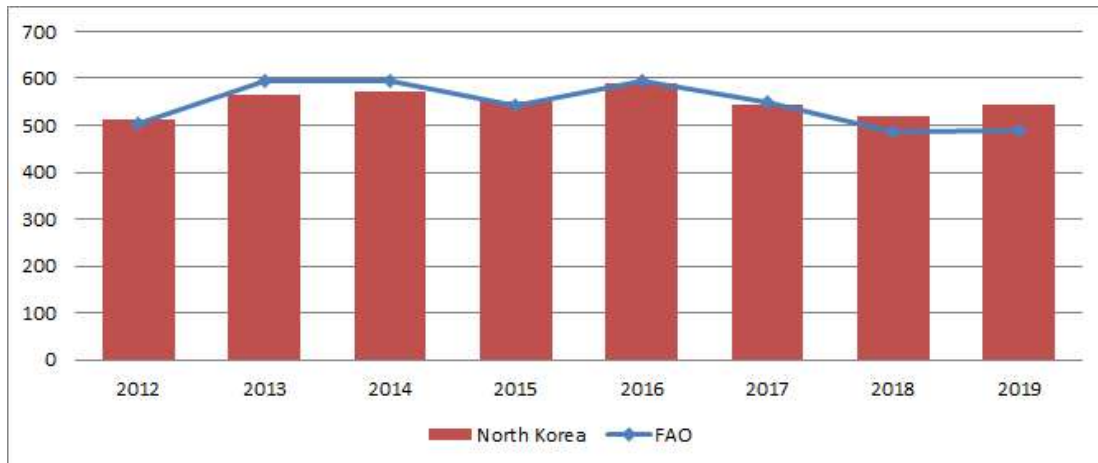
Source: FAO/WFP Annual Report

Note: Milled grain as a basis

3) WFP, COVID-19: Potential impact on the world's poorest people (WFP, 2020), p. 13.

4) Personally acquired materials and an internal interview with Kyodo News (October 12, 2018).

<Figure 2> Comparison between North Korea and FAO's Estimations of Food Supply  
(Unit: 10,000 tons)



Source: FAO/WFP Annual Report. Data on North Korea is internal information collected from an interview with Kyodo News

Note: North Korea's estimate of rough grain in 2019 is calculated based on 2017's recovery level

Hence, the FAO and North Korean authorities have demonstrated a large discrepancy in their perspectives on North Korea's food situation over the past three to four years. Three points warrant attention. First, FAO might have exaggerated their estimates on North Korea's food supply. FAO's estimates mostly come from satellite image analysis rather than field data analysis, which makes their accuracy questionable. Even if the FAO visited actual fields in North Korea, its visits would mostly have been focused on disaster-struck areas. Second, FAO's estimates lack consistency. Estimates from 2018 exhibited a 5.2-fold increase and more compared to 2016, but the evidence supporting such an increase is scant. North Korea's farming relies highly on natural conditions, and the two years are not uniquely different in terms of disasters or pests. In fact, there has been an increase in large systemic waterway constructions, bank revetments, and the number of composts, fertilizers, and high-quality seeds, making it harder to find a rational cause for production rates to plummet. In other words, estimates from satellite image analysis cannot account for the effects of seeds, pesticides, fertilizers, and the increase in labor power. Third according to the geographic information system (GIS) spatial data on North Korea's

arable land area–population ratio, the FAO’s argument on the absolute shortage of food makes partial sense. According to the GIS spatial data, only 16% of North Korea is flatland. In other words, the other 84% is composed of slopes. Also, the amount of arable land further reduces since some flatlands are used for residential purposes.

**Food Situation at a Glance: ‘Three New Phenomena’**

To overcome the statistical ambiguity and inferential limitation, one needs to focus on recently emerging three new microphenomena on the North Korean food situation. First is the reduction of corn imports. What does this mean in the North Korean context? In North Korea, corn is an important supplement for rice. Hence, when rice prices fluctuate as a result of economic crisis, corn prices respond elastically. Also, corn made up a large portion of North Korean imports, having being listed as one of the top 10 import products until 2010 (see Table 1).

<Table 1> Trends of North Korea’s Top 10 Import Products and Raw Materials for Food Production (2000–2018) (in HS 4 units)

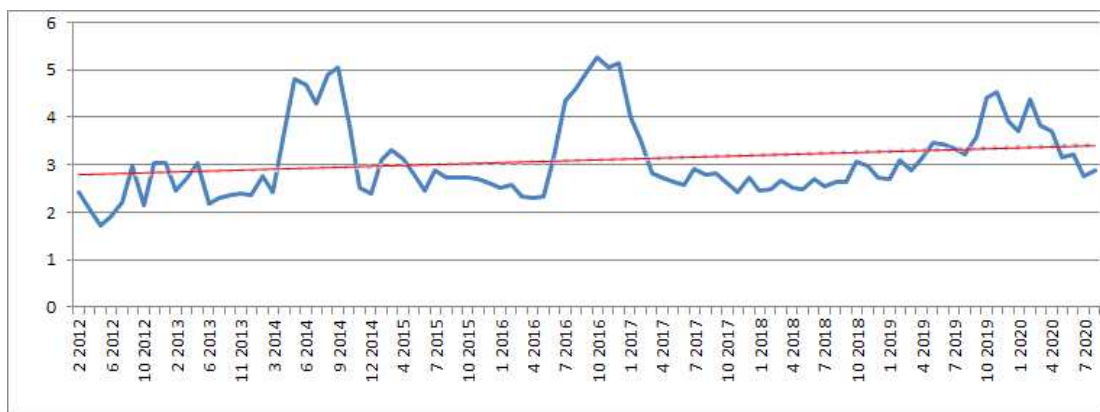
| Ranking | 2001 | 2002 | 2003 | 2004 | 2005  | 2006       | 2007  | 2008 | 2009       | 2010 | 2011  | 2012       | 2013 | 2014       | 2015       | 2016       | 2017 | 2018       | 2019       |       |
|---------|------|------|------|------|-------|------------|-------|------|------------|------|-------|------------|------|------------|------------|------------|------|------------|------------|-------|
| 1       | Rice |      |      |      |       |            |       |      |            |      |       |            |      |            |            |            |      | Soyben Oil |            |       |
| 2       |      |      |      |      |       |            |       |      |            |      |       |            |      |            |            |            |      |            | Soyben Oil |       |
| 3       |      |      |      |      |       |            |       |      |            |      |       |            |      |            |            |            |      |            | Rice       |       |
| 4       |      |      |      |      |       |            |       |      |            |      |       | Corn       |      | Soyben Oil | Soyben Oil | Soyben Oil |      |            | Flour      | Flour |
| 5       | Corn | Rice | Rice |      |       |            |       |      |            |      |       |            |      |            |            |            |      |            |            |       |
| 6       |      |      |      |      |       |            |       |      | Sugar      |      |       |            |      | Soyben Oil |            |            |      |            |            |       |
| 7       |      |      |      |      |       |            |       |      |            |      | Rice  |            |      | Flour      |            |            |      |            |            | Sugar |
| 8       |      |      |      | Rice | Rice  |            |       | Corn |            |      | Flour | Soyben Oil |      |            |            |            |      |            |            |       |
| 9       |      |      |      |      |       |            |       |      | Soyben Oil |      |       | Flour      |      |            |            |            |      |            |            |       |
| 10      |      |      |      | Corn | Sugar | Soyben Oil | Flour |      |            |      |       | Soyben Oil |      |            |            |            |      |            |            |       |

Source: <<http://stat.kita.net/stat/istat/kpts/KptsItemImpExpList.screen>> (Retrieved on Aug 29, 2020 and visualized by the author)

Interestingly, corn prices relative to rice prices have, over time, shown a continual decrease albeit in an unstable manner (see Figure 3). Also, this trend has continued relatively stable in 2020 amid the COVID–19 pandemic. If corn is a ‘normal

good,' an increase in income should cause a rise in demand. However, corn has been removed from the top 10 list of imports since 2012 (see Table 1), and the total volume of imports has been declining despite the rise in international prices.

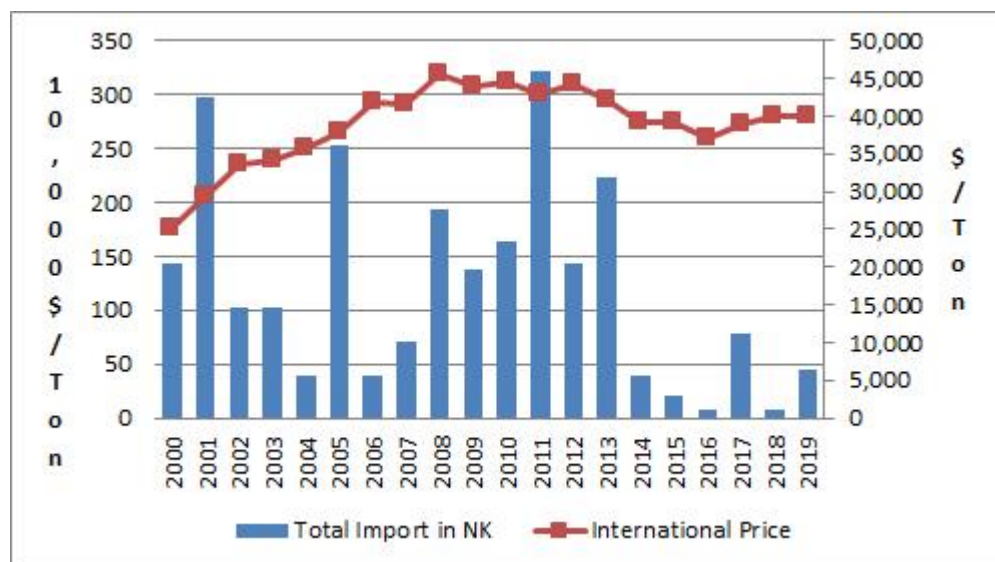
<Figure 3> Trends of the Exchange Ratio of Corn relative to Rice (2012–2020)



Source: Visualized by the author according to price data from Daily NK

Note: Mean of the prices from Pyongyang, Sinuiju, and Hyesan

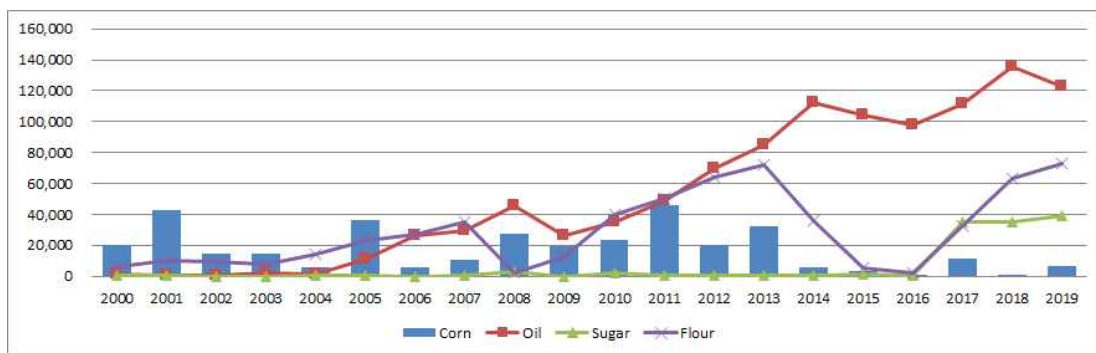
<Figure 4> Volume of Corn Imported from China and International Market Prices for Corn (2000–2019)



Source: Total import volume for corn (KITA); International market prices (World Bank)

Second is a rise in flour, sugar, and corn oil imports and the number of supermarkets. What does this mean in the North Korean context? In the recent decade, North Korea has increased its import of flour, sugar, and corn oil more than rice or corn, and such trend has been stronger since the toughening of sanctions in 2017 (see Figure 5 and Table 1). Also, the demand for corn oil and flour has risen dramatically, the two items of which has been listed on the list of top 10 imports in North Korea (see Table 1).

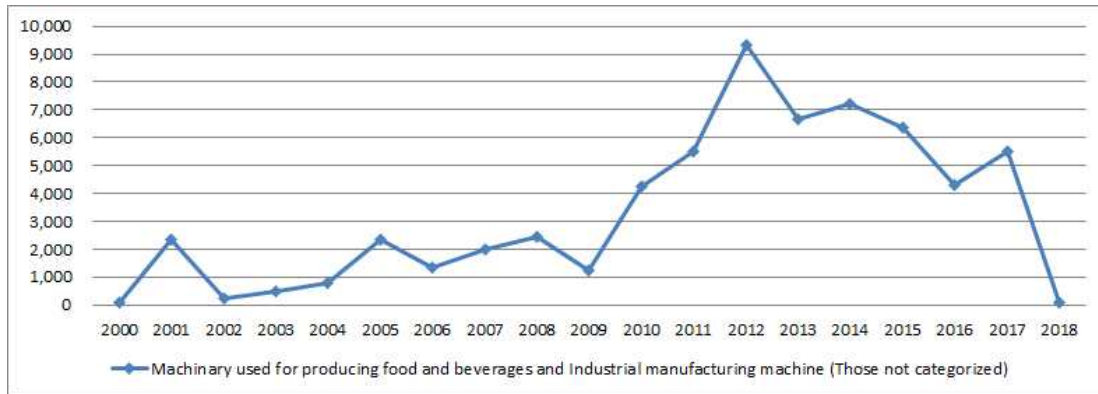
<Figure 5> Trends of Import Volume of Flour, Sugar, and Corn Oil from China



Source: KITA (visualized by the author)

Why did imports for the three items increase? These items are not mere primary foods. They are base materials for producing processed foods like crackers, bread, instant ramens, and noodles. These items are intermediary goods, through which a corporate profits more from added value via processing than from selling the products raw. In fact, along with localization efforts, the proportion of domestic food products is on the rise; Geumkeop Athletes Comprehensive Food Factory and other large scale food factories across the country competitively produce processed foods, and the number of supermarkets and stores are increasing. Prior to the intensifying of sanctions, imports on food-related machines have also been growing (see Figure 6).

&lt;Figure 6&gt; Trends of Import of Food-related Capital Goods



Source: KITA (visualization by the author)

Third is an increase in the number of meat restaurants and vinyl greenhouses. What does this mean in the North Korean context? Journalist A of Daily NK who has long been looking at prices in North Korea reported that, in the past, North Korea only traded pork, and even that was considered a luxury good and consumed only during holidays. However, over the past three to four years, beef, lamb, goat meat, duck meat, rabbit meat, and dog meat began to be included in the price index, and consumer preferences have also diversified.<sup>5)</sup> New processed dairy products like canned beef, milk candy, yogurt, and soymilk have also entered the market. Interestingly, more than one professional meat restaurant was established in almost all counties across the country. Duck meat and steak are the two most popular types of meat, and family dining is becoming more common. As for the cooking method, an increasing number of restaurants have transitioned from the traditional method of boiling to a more westernized method of grilling or frying. In addition, revenue gaps began to widen as refrigerated warehouses or trucks became symbols of economic superiority. During a 2018–19 field investigation at the North Korea–China border region, the author also noticed how ranches have been established across the border region (see Image 1). With the increase in the number

5) Interview with a journalist A of Daily NK (Seoul: May 5, 2020).



of vinyl greenhouses, the year-round supply of vegetables is also growing. This is owing to the forest restoration policy implemented by the Kim Jong Un regime. The so-called ‘agroforestry’ policy provides incentives to individual residents who invest in restoring forestry in a certain region.

<Image 1> A Rural Ranch with Cows, Sheep, Goats, Horses, and Others in Chunggang County, Chagang Province



Source: Image taken by the author on Aug 3, 2018

### **Food Tipping and the Rise of North Korean ‘Migrant Workers’**

By examining the three pan-social ‘new phenomena’ regarding the recent food situation in North Korea, we can conclude that the food situation is generally better than that of the Arduous March.

First, a reduction of corn imports can be interpreted as a result of decrease in domestic demand. Reversely, this can mean that there has been an increase in the production of supplementary grains.<sup>6)</sup> For instance, the season of spring shortage

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6) Corns consume a relatively large amount of fertilizer and deteriorate the

has been shortening since 2012 as a result of policies for increased cultivation per unit area through developing high-quality seeds, reducing the cultivation period, and double cropping. The most common example is the potato. With international support, North Korea achieved considerable success in ‘seed potato’ production. During the mid-2000s, the North reduced its corn cultivation area from 700,000 to 500,000 *jongbo* (1 *jongbo*: 9,917.4m<sup>2</sup>) while increasing the potato cultivation area from 45,000 to 200,000 ha. Also, North Korea also increased their potato production rate per *jongbo* by about 1.6 times from 8 to 13 tons.<sup>7)</sup> In the same context, the Korean Central Broadcasting Committee has established a potato mill and produced processed foods. It also launched a potato recipe competition to foster potato consumption.

Second, a reduction of corn imports and an increase of flour, corn oil, and sugar imports in a country with chronic food shortages imply that there has been an expansion of the social class that has sufficient purchasing power to consume snacks. In fact, according to the author’s research on North Korean defectors who came to South Korea after 2015, families are increasingly changing their diet from corn to rice. Also, a growing number of interviewees testified that eating a bowl of high-calorie rice is better than eating two bowls of corn, and that domestic rice has superior nutrition. This intuitively implies the people’s preferences shifting from ‘quantity’ to ‘quality.’ Such a trend requires a parallel trend of increasing supply of rice, and, while regional discrepancies exist, the latter trend has been found across various regions. Over the past three to four years, informal markets (*jangmadang*)

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fertility of the land. They are hard to double-crop especially on sloped lands. Hence, there has been a policy shift after Kim Jong-il’s rise to power on growing crops that can double-crop on sloped lands and can be nutritionally substituted for corn (i.e. potatoes).

- 7) According to an NGO official directly involved in the aid program for providing potatoes to North Korea, North Korea officially claims that the production of potatoes has increased by 20~25 tons per *jongbo* (1 *jongbo*: 9,917.4m<sup>2</sup>) while Taehongdan County witnessed a 60% increase. However, the actual increase was about 1.6 times. (NGO official K. August 7, 2020, KINU).

have observed steep decreases in both the amount of imported rice and the price gap between imported rice and domestic rice.<sup>8)</sup> Chinese rice has increasingly been used for secondary purposes like making rice cakes or food at restaurants, leading to a reduction in preference and demand for it. Concurrently, rice consumption is also falling, and this trend is more clearly exhibited among the economically prosperous.

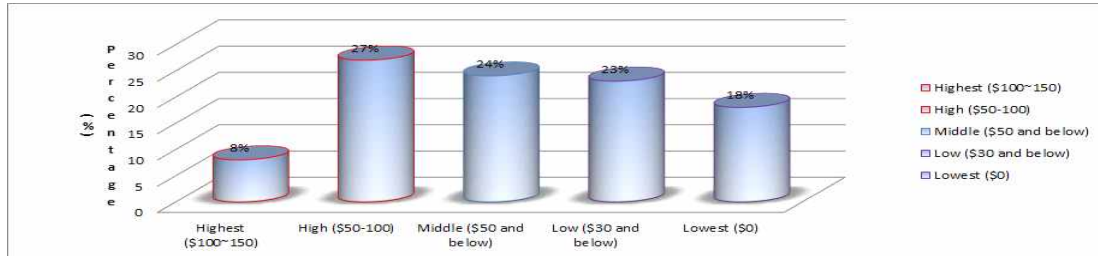
While North Korea's food situation has been improving with the marketization and institutional reforms that have taken place since the Arduous March, one must not overlook that different performance has been shown depending on industry, farm, and region with broad and in-depth institutional reform in the process of economic improvement. For instance, the author's case studies on the 303 factory enterprises in major western cities suggest that once a subordinate organization is given a certain level of autonomy, an operating system changes according to each institution's capacities and that the amount of ration given to employees also widens significantly depending on a ranking of enterprise (see Figure 7).<sup>9)</sup>

<Figure 7> Income Comparison according to Ranking among 303 Factory Enterprises in Major Western Cities

Source: Jung, EunLee *et al.*, "An Analysis on the Current Status and Determinants of Operation Rate of North Korean Enterprises in Western Major Cities of North Korea during the Kim Jong

8) According to the author's investigation, the proportion of Chinese rice in the North Korean market has dropped below 50% by 2015. In the case of the border or near-border regions like Sinuiju, Hyesan, and Chongjin, the proportion is slightly higher while in inland regions like Suncheon, Anju, and Nampo or Eastern regions like Hamheung and Danchon, the proportion is much lower. There is almost no Chinese rice sold in Pyongyang. While Chinese rice was about 1,000 won more expensive prior to 2015, the gap reduced to about 300 ~ 500 won.

9) The author investigated the average income (including rations) of 303 factory enterprises in four major Western cities (Pyongsong, Sinuiju, Nampo, Suncheon) according to class. As in <Figure 7>, income was divided into 5 classes from \$100 to \$0.



Un Era,” (Seoul: Korea Institute for National Unification, 2019), p. 72.

In the case of collective farms, the Farmland Responsibility System has been managed and operated in different forms according to the capacity of the manager in charge. With an increasing number of managers who sought to maximize profit by selling land-use rights to farmers, the inter-farm and intra-farm income gap have expanded. Under such a system, farmers with money could buy more land to maximize income while poor farmers lost their right of cultivation, clung to small farms, or were forced out and became urban squatters. In fact, the ‘migrant worker’ phenomenon that occurred in China in early 1980s is happening in North Korea today; people are moving to cities even in North Korea despite the severe limitations on the freedom of movement, looking for better income. In North Korea, these people are called peasant workers (*nongmin-ilgong*).

### **Conclusion: The Need for North Korean Authorities’ Distribution Governance Capabilities and the International Community’s Humanitarian Cooperation in the COVID-19 Pandemic Context**

This article analyzed North Korea’s food distribution based on the three ‘new phenomena’ regarding the North Korean people’s dietary life. A result suggests that North Koreans under Kim Jong Un are starving less and have a better dietary life compared to those who lived in the 1990s. However, the income gap seems to be widening as well. Farms, factories, and regions that succeeded in economic reform measures have a surplus of food while those that failed them face more severe food shortages than during the era of rationing.

In addition, the threefold threat—sanctions against North Korea, the massive

flood, and ‘COVID-19’—may exacerbate the income gap in the coming days. After all, North Korea still faces a general food shortage. Hence, it has classes of people that face absolute food shortages. Also, the Gini coefficient (inequality index) generally tend to go up for the years, during which economic recession or infectious diseases occurred. ‘COVID-19 pandemic’ is directly influencing the global economic growth rate. It is impacting income inequality and polarization in all countries, regions, and classes; North Korea is no exception.

Hence, in the face of the massive flood and ‘COVID-19,’ it seems inevitable for North Korean authorities to strengthen its redistributive governance capacities. Kim Jong Un has been visiting flooding sites, ordering restoration measures, and even sending strategic reserve grains to damaged regions. The scale of damage has also specifically been reported daily by Rodong Sinmun. Responses have been unprecedentedly quick. Also, rice prices, exchange rates, and oil prices are managed in a relatively stable manner. Nonetheless, North Korea is a poor country with a GDP per capita below \$1,300. Most poor countries generally demonstrate widening economic disparity and bad redistributive governance, resorting to humanitarian aid from the international community.

Although North Korea has recently developed a distribution chain through the establishment of a transportation network, logistics faces threats from ‘COVID-19’ and the massive flood. During the 1990 Arduous March, the lack of means of transportation intensified starvation despite the stack of food available at the Port of Nampo. Hence, to resolve the food crisis of the lower-class suffering from a growing income inequality, a lack of food, the massive flood, and ‘COVID-19,’ North Korean authorities need to strengthen its redistributive capacities and receive humanitarian cooperation from the international community. ©KINU 2020

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