



August 2007 Floods
Rapid Assessment Report

Executive Summary

Following torrential rains between 5 and 17 August 2007, the Democratic People's Republic of Korea (DPRK) experienced heavy flooding in several provinces in the southern half of the country: North and South Hwanghae, North and South Phyongan, Kangwon, South Hamgyong and Pyongyang. Large-scale damage has occurred to houses, infrastructure and farmland, and 960,000 directly affected people are estimated to be in need of emergency assistance in the areas of shelter, food, health and water-sanitation.

Following Government approval, the United Nations World Food Programme (WFP) undertook rapid assessment missions to flood-affected areas with four teams lead by international staff covering 33 counties in six provinces. The rapid assessments were conducted between 17 and 26 August.

The assessment findings confirm that floods have impacted the food security situation of flood-affected households. These households have lost food stocks, livestock and kitchen gardens, which will impact their ability to develop coping strategies to deal with food shortages during the upcoming winter months.

The floods have caused severe damage to the agricultural sector throughout the country, with the greatest impact on the "Cereal Bowl" lowlands of North and South Phyongan, North Hwanghae and South Hwanghae. These provinces account for 76 % of the country's total arable land. Estimates provided on 23 August by the Ministry of Agriculture indicate that the damage to arable land cultivated with rice, maize, soybean and other crops totals 223,381 hectares (16% of total arable land when compared to 2006 official figures).

WFP is concerned that losses resulting from the floods may have a negative impact on the functioning of the Public Distribution System (PDS). The fact that the floods occurred in the main cereal producing regions has the potential of reducing overall food availability and cereal transfers that usually occur between food-surplus and food-deficit regions. Damage to infrastructure (mainly roads and bridges) can make transportation of food throughout the country more difficult.

Since the beginning of the year, cereal prices in Pyongyang have increased, particularly during the months preceding the spring harvest (May and June). Cereal prices were already high when the floods occurred and post-flood market surveys indicate further price increases.

Short term priorities- Having lost household assets, food stocks and had their livelihoods severely disrupted, homeless people are currently totally dependent upon external assistance. The Government has identified this population group as the most vulnerable and in need of food aid, which has been confirmed by WFP. Special attention will need to be given to monitoring the nutritional levels of affected populations, especially those of the most vulnerable groups such as children and pregnant and nursing women.

Medium and long term priorities – Infrastructure reconstruction and rehabilitation needs in the most affected areas are significant, notably in the agricultural sector. Predicted lower harvests due to the floods will reduce nation-wide domestic food availability for the 2007/2008 marketing year and would render an already tight food access situation more problematic for vulnerable groups and food insecure regions. Already facing chronic food deficits, the country's reliance of external food supplies will most likely increase in 2008.

1. WFP Rapid Assessment

Following torrential rains between 5 and 17 August 2007, the Democratic People's Republic of Korea (DPRK) experienced heavy flooding in provinces in the southern half of the country: North and South Hwanghae, North and South Phyongan, Kangwon, South Hamgyong and Pyongyang. Large-scale damage has occurred to houses, infrastructure and farmland, and approximately 960,000¹ people directly affected by the floods are estimated to be in need of emergency assistance in the areas of food, shelter, health and water-sanitation.

Upon Government request, WFP joined the United Nations interagency rapid assessment mission to Sohung County in North Hwanghae Province on 14 August. Starting 16 August, WFP commenced rapid assessment missions to flood-affected areas with four teams composed of international and national staff covering 33 counties in six provinces. The rapid assessments were conducted between 17 and 26 August.

The Government proposed to WFP what counties to assess in the flood-affected areas. All the counties were included in the official request for WFP emergency food aid.

WFP conducted assessments in 13 counties accessible under the existing WFP operation, PRRO 10488.0, as well as in a further 20 counties that had not been accessible to WFP since 2005. Details and locations are as follows:

Province	County	Assessment date	Accessible to WFP before the flooding
Kangwon	Chonnae	21.08.07	no
Kangwon	Munchon City	21.08.07	no
Kangwon	Thongchon	22.08.07	no
North Hwanghae	Sohung (*)	14.08.07	yes
North Hwanghae	Singye	17.08.07	yes
North Hwanghae	Sinphyong	17.08.07	yes
North Hwanghae	Kumchon	18.08.07	yes
North Hwanghae	Phyongsan	18.08.07	yes
North Hwanghae	Hwangju	21.08.07	no
North Hwanghae	Pongsan	21.08.07	no
North Hwanghae	Rinsan	21.08.07	yes
North Hwanghae	Songrim City	22.08.07	no
North Hwanghae	Yonthan	23.08.07	no
North Pyongan	Jongju City	23.08.07	no
North Pyongan	Kujang	23.08.07	yes
North Pyongan	Phihyon	24.08.07	no
North Pyongan	Unjon	24.08.07	no
South Hamgyong	Jongphyong	17.08.07	yes
South Hamgyong	Hamhung City	18.08.07	yes
South Hamgyong	Kowon	18.08.07	yes
South Hamgyong	Kumya	18.08.07	yes
South Hamgyong	Sinhung	18.08.07	yes
South Hamgyong	Yonggwang	18.08.07	yes
South Hwanghae	Haeju City	23.08.07	no
South Hwanghae	Jaeryong	24.08.07	no
South Hwanghae	Samchon	24.08.07	no
South Hwanghae	Unryul	24.08.07	no
South Hwanghae	Jangyon	25.08.07	no
South Hwanghae	Unchon	26.08.07	no

¹ This is the latest figure received from Government on 24 August.

South Phyongan	Anju City	21.08.07	no
South Phyongan	Pukchang	21.08.07	no
South Phyongan	Pyongsong City	22.08.07	no
South Phyongan	Unsan	22.08.07	no

(*) UN Team Assessment

WFP teams interviewed county officials and visited ub (urban) and ri (rural) areas affected by the floods. Interviews with affected populations were possible in some locations. During the visits, county officials were very cooperative and open with WFP staff, sharing information and statistics on the flood damage. Authorities at provincial level also joined WFP visits with an open and collaborative attitude.

The Government has conducted a national assessments coordinated by the National Disaster Coordination Commission led by the Cabinet. An update on the damage of infrastructure, arable land, industry and housing at county level (the minimum administrative unit) dated on 16 August has been shared with WFP. This openness in sharing national data has been a positive development.

Other international agencies and organizations have also conducted field assessments. In a coordinated effort and to improve the understanding on the damage of affected sectors the international agencies have shared their respective assessment findings. WFP rapid assessment tools have been used by other organizations to collect data.²

2. External assistance requirements

Immediate needs - In all counties, local officials stressed the limited capacity to respond to the emergency needs with the resources available at local level. They also emphasized the urgent need of receiving external resources to provide emergency assistance to the affected population.

As reported by the local authorities, the priorities for emergency assistance are: food, medicines, materials for the temporarily shelters (plastic sheets, tents), construction materials and tools (shovel, pick axes, etc.) for the reconstruction of infrastructure and houses.

Homeless people and those whose houses are severely damaged have lost their assets and food stocks and are dependent on assistance. The Government has identified these population groups as the most vulnerable in need of food aid, which was also confirmed by WFP assessments. Food aid for the homeless people has been requested in all the visited counties and the authorities have identified this population group as the most severely affected by the floods and most vulnerable for the coming months.

A small amount of emergency food assistance had already been provided by the local authorities when WFP teams visited the areas, but in most cases county stocks were not sufficient to provide assistance for more than a few days. Food was requested from WFP in all the assessed counties.

Recovery/rehabilitation needs – County officials acknowledged the reliance on external assistance from the central Government and international organizations as they evaluated the effects of the floods.

A lack of capacity to reconstruct roads, bridges, child institutions, schools, houses, local factories, official public buildings, cooperative farms, health centers and water-sanitation systems was expressed by the local officials.

Though the population has been mobilized during the flooding to protect and repair the infrastructure, a lack of construction materials, hand tools and fuel for big machinery

² WFP Rapid assessment tool/questionnaire appears under Annex 2.

(available only in few counties) has been identified as a major constraint for the reconstruction process.

Support to the reconstruction of the infrastructure, health, water-sanitation, agriculture and education sectors is required.

Losses in agricultural land and livestock have been identified by local authorities as a major issue of concern with negative impact on food security in the affected areas. Long-term support is needed to alleviate the effects of the floods on the agriculture sector and the impact on the food deficit on nutrition levels, especially for the most vulnerable population groups such as children and pregnant and nursing women.

3. Household Food Security

According to WFP assessments, approximately 60,000 people are reported to have lost their house in the 33 counties assessed. The floods have directly affected the food security situation of vulnerable households that have lost their food stocks, livestock, kitchen gardens, and their ability to develop coping strategies to deal with food shortages during the upcoming cold winter months.

Household stocks of wild foods stored during spring are likely to have been affected by the flooded water and related humidity. Spring was the foraging season for herbs, roots and plants to prepare the summer *kimchi* (fermented cabbage and radishes).

The floods have also partially destroyed available household food stocks of early spring crops of wheat, barley and potatoes harvested and milled or dried in June and July. The crops were in stock to supply the households with food until the next main harvest of staple food in September, October and November.

The loss of assets, kitchen gardens and livestock leave the most vulnerable in a fragile situation to face the winter, when the kilocalorie intake must increase in order to cope with the low temperatures.

As a coping strategy in periods of food shortages, North Koreans collect wild food and "alternative food" i.e. plants that substitute for the lack of cereals. The reconstruction process will leave little time for foraging. Additionally, vulnerable population groups that are engaged in hard physical labor may suffer a worsening of their nutritional status.

With reported variations in the ability of the Public Distributions Centers (PDCs) to provide a regular daily ration of 500 grams of cereals for most of the population, many North Koreans rely on the market as the main source of food. Floods have had an impact on the cereal prices, already high because of the lean season and in comparison with average salaries. In the coming months, the effects of the flooding might increase the prices more.

WFP is concerned that losses resulting from the floods could have a nation-wide impact on the functioning of the PDCs as a result of losses in production and due to damage to infrastructure. WFP will continue to monitor the situation.

Damage to households

The Government has reported 241,251 houses affected or destroyed by the floods, leaving 169,561 people homeless. In addition to families that have lost their homes, others requiring assistance are those whose homes have been submerged or damaged (this has been confirmed in WFP assessments).

It was reported by the county officials during the field visits that homeless people are living in temporary public shelters, in official buildings or in places of work, while others are living with relatives or neighbors or staying in the flooded areas under tents made of plastic sheets. WFP

teams had the opportunity to visit some public shelters and temporary shelters built with plastic sheets.

Kitchen gardens

The kitchen gardens, which are the main source of vegetables for most households have also been affected by the accumulation of water and the damages to the houses and infrastructure. The Government is reporting 241,251 houses affected, either completely destroyed (40,463), partly destroyed (67,056), or submerged (133,732). Kitchen gardens attached to the affected houses are very likely to also be damaged.

The assessment mission observed that kitchen gardens were either destroyed or damaged by the floods. Some were washed away, buried or laying down, and many of them were submerged under water. During this season, the vegetables available in the kitchen gardens are: cucumber, tomato, pumpkin, eggplant, cabbage, radish, potato, bean, tomato and chili. They provide an important source of vitamins and minerals for the population.

Kitchen gardens are also an alternative source of cereals, mainly maize and potatoes for households. With the first days of sunshine after the heavy rains, it was observed that people in both ub and ri areas were drying maize from the kitchen gardens in the streets and on their roofs. With the advanced harvest, the affected population is trying to save the maize where possible.

As a coping strategy for the periods of food shortage, population in ub areas rely on their relatives from ri areas to support them with food. As ri areas are reported to be more affected by the floods, these remittances for vulnerable populations living in ub areas will not be possible in most cases.

Livestock

All counties reported losses of livestock. As official figures on livestock before the flooding were not available, it is difficult to assess the gravity of the losses. The information collected by WFP suggests that losses to livestock are potentially significant. The animals reported as lost during the assessment mission are: poultry, dog, pig, duck, rabbit, goat, gee, ox, cow and sheep, with a total estimate of approximately 171,000 animals lost in the assessed area.

The general household diet consists of cereals, vegetables and very small quantities of oil, which is nutritionally inadequate. Consumption of animal protein is limited to special occasions and the sources are: special distributions, livestock in households and remittances from ri areas. The losses in livestock will reduce the opportunities for animal protein intake.

For the households, livestock is also used as an investment to cope during periods of shortage. A traditional coping mechanism for North Koreans is to sell livestock during these periods.

Public Distribution Centers (PDCs) - Food stocks and distributions

Sixteen million out of a total population of 23 million are reported by the Government to rely on the PDCs from which they receive rice, maize, soybeans and potatoes.

Large food losses in government warehouses have not been reported. Some counties have lost their PDC food stocks, while in most of the counties no losses were reported as according to county officials there was no government food stored before the flooding. The explanation provided was that the distribution for the first half of the month (average of 450 to 500 grams of cereals per person per day) had been completed.

Only a few counties have received food from the Government to cover assistance for 2-3 days; other counties had not yet received any food and were expecting it when WFP assessments were conducted. The local authorities reported to be supporting the affected

population, prioritizing the homeless families with food from PDC stocks and cooperative farms. Damage in infrastructure caused isolation in ri areas inaccessible by vehicles and eventual delays in receiving support in ub areas where the main roads were impassible for trucks for a few days. These delays in receiving food aid will have had the highest impact on the most vulnerable populations that depend highly on PDCs distributions.

Some of the counties most severely affected by the floods are food-surplus areas that transfer cereals to food-deficit counties. Local authorities from counties that traditionally depend on transfers of cereals from other counties have expressed their concern to WFP. They worry about not receiving stocks for the functioning of their own PDCs since the self-sufficient counties had been affected, and thus, with a reduced harvest, the cereals transfers among counties might be altered.

WFP is concerned that losses resulting from the floods could have a nation-wide impact on the functioning of the PDCs as a result of the losses in agricultural production and the damage in infrastructure. WFP will continue to monitor the situation.

Damage to infrastructure

All the counties assessed by WFP have experienced damage to infrastructure. Approximately 580 km of roads, 490 bridges and 1,200 public buildings (factories, schools, child care institutions such as nurseries and kindergartens, health centers and administration buildings) have been reported as damaged or destroyed.

Main roads have been damaged in localized sectors, people have been mobilized and construction of alternatives passes is on-going. Many secondary roads have been damaged thereby impeding the access to ri areas by vehicle. Lack of tools, construction materials and fuel is reported as having a big impact and delaying the reconstruction work. Damage in the railway system has however been reported only for some parts of the lines.

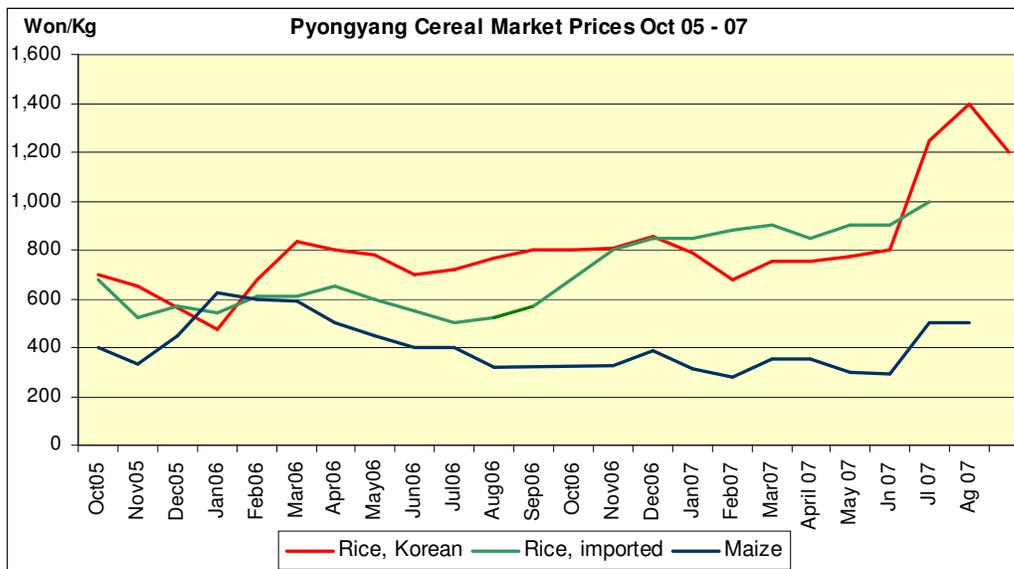
Among the bridges destroyed in all the counties, wooden bridges were expected to be re-opened within 2-3 days, while for concrete bridges the counties report that they do not have materials to repair them.

The population in the counties visited has been mobilized even during the rains for the reconstruction work. The engagement of the population in these activities is expected to continue until the counties recover their lost or damaged infrastructure.

Food prices

Since the beginning of the year, the cereal prices in Pyongyang have increased gradually, and during the months of the lean season before the main harvest (May and June), cereal prices increased even more due to lower availability. Cereal prices were already high when the floods occurred, and have now been further increased.

The graph below shows the evolution of cereal prices in Pyongyang since October 2006:



4. Effects of floods on nutritional status

The counties visited by WFP teams reported a total of 168 casualties and only 21 injured people due to the flooding. The explanation provided by the local authorities for these low figures compared to the damage in infrastructure and agriculture was that when the rains started, the population was alerted by the authorities and mobilized to areas where the risk was lower. The efficiency of the local early warning system in place has been reported as the main reason for the low number of casualties and injured people reported to date in all affected provinces.

In all counties an increase of water-borne diseases, especially diarrhea cases among adults and children has been reported as a consequence of the flooding. The diarrhea cases are accompanied by high temperature and the prevalence is higher among children. Most of the counties requested medicine (apparently in short supply) to cure the diarrhea, and reported using “traditional koryo medicine” to treat it.

As explained by the county officials, the increase of diarrhea cases is because the population has been drinking non-potable water from the flooded streams and rivers. The water and sanitation systems have been damaged in most of the counties visited, as well as the drinking water reservoirs, pumping stations and wells. Until the water and sanitation systems have been repaired, the population will continue to be exposed to non-potable water, which could potentially deteriorate their health and nutritional status. The majority of the visited counties requested water purification tablets.

In addition to diarrhea, the presence of respiratory diseases has been reported in most of the counties.

Prior to the floods, malnutrition rates in DPRK remained disturbingly high and required sustained food supplements and other assistance to build on the gains achieved since the mid-1990s, especially among infants and to combat maternal malnutrition. Since 2005, a smaller under-funded WFP programme has only been able to provide supplementary foods to a limited number of vulnerable people leaving a large proportion without much-needed rations for long periods. The latest figures on malnutrition rates are:

Underweight for children 0-6 years	23%
Stunting for children 0-6 years	37%
Wasting for children 0-6 years	7%
Children <2 years with diarrhea	18.9%
Maternal anemia	34.7%

Source: Nutritional Assessments 2004 UNICEF, WFP, and DPRK Government

Since 2005 the UN has sought DPRK Government authorization to conduct a new nutrition assessment, but so far the authorization has not been granted. With the UN Flash Appeal in response of the floods, UNICEF and WFP are requesting government authorization to conduct a “nutrition screening” that will update the information available on the nutritional status of the most vulnerable population.

5. Damage in arable land and crops losses³

The floods have caused severe damage to the agricultural sector throughout the country, with the greatest impact on the southern provinces, the “Cereal Bowl” lowlands of North and South Phyongan, North and South Hwanghae. These provinces account for 76 % of the country’s total arable land. In addition, Kangwon province is also affected.

Estimates provided on 23 August by the Ministry of Agriculture indicate that the damage to arable land cultivated with rice, maize, soybean and other crops totals 223,381 hectares, representing 16 % of the total arable land (when compared with 2006 main harvest official figures).

Province	Total arable land (Ha) (1)	Total arable land as % of the country (1)	Arable land damaged (2)	% of the country arable land damaged (2)
Pyongyang	47,409	4	8,808	1
South Phyongan	233,350	17	50,224	4
North Phyongan	246,381	18	13,330	1
Chagang	52,344	4	1,250	0
South Hwanghae	298,164	22	50,770	4
North Hwanghae	159,550	11	50,879	4
Kangwon	90,940	6	33,268	2
South Hamgyong	145,364	10	14,852	1
North Hamgyong	91,268	6	-	-
Ryanggang	49,916	3	-	-
Kaesong	13,893	1	-	-
Total	1,428,579	100	223,381	16

Source: DPRK Government

(1) Based on data reported under 2006 Main harvest

(2) Government data, not verified by WFP

The floods occurred when the main season for cereal crops, rice and maize, were at a critical development stage. The main harvest mainly takes place from October to November and accounts for some 87 % of the country’s annual production of cereals, the main staple crops in DPRK.

The floods have affected mainly the crops in the low lands, especially in river beds, plain areas and areas along the rivers. Farming on sloped lands (which is normally not included in government calculations on arable land and crops) seems to be less affected, as the water did not remain on the slopes. However the crops at the bottom of the hills, where the water accumulated and remained for days, have been affected.

³ All figures under this section are official government estimates released on 24 August

The nation-wide efforts to increase agricultural production and decrease reliance on external food supplies has led to cultivation of areas not entirely appropriate for agriculture in the long-term, such as hill slopes or dried river beds. As a result erosion is increasing in DPRK; the natural coverage that plays a crucial role in retaining rain water has decreased and flooding is a natural consequence of the erosion process. The lack of embankments along the river sides is another factor that has increased the damage of the recent floods.

It is not possible to make a proper estimation on the crop losses at this early stage as this can only be fully determined at the end of the harvest. In this regards, WFP jointly with FAO are requesting DPRK Government authorization to conduct a Crop and Food Supply Assessment Mission (CFSAM). The last CFSAM was conducted by FAO and WFP in 2004. WFP has requested the Government authorization to conduct a new one since then, but it has not yet been granted.

The main issues of concern regarding the extent of the damage in the agricultural land and crops observed during the field visits can be divided into four different categories:⁴

1) Agricultural land washed away

The total agricultural land washed away, as reported by the Government, is 8,106 ha, which represents approximately 4% of the total arable land damaged. WFP teams observed various locations where small portions of agricultural areas had been washed away by flood waters in areas adjacent to rivers and streams and at the bottom of the slopes. No yield can be expected from these fields.



2) Crops submerged under water

According to the Government 189,149 ha of standing crops are damaged due to being submerged by the flood waters. This represents 85% of the affected arable land. WFP teams observed that most of the reported crop damage was related to the depth or duration of standing water in agricultural areas that varied from 2 to 10 days. Most of these crops are still standing but the roots have been affected: 96 % of the paddy rice, 68 % of the maize, 74 % of soybeans in the affected areas has been submerged under water.

Harvest of maize is normally completed by the end of September. For the flooded fields, in order to prevent further damage, counties are harvesting the remaining maize and putting it out to dry.

The maize cobs recovered from the flooded fields have a strong odor of alcohol and the local authorities and the affected populations consider the maize "poisoned because the roots were under water for too long". The interviewed people expressed their concerns as to the state of the maize with comments such as: "is not good even for the animals", "pigs will not eat it", "it is spoiled, not even good enough for the cattle".

⁴ Cf Annex 1 for damage in arable land and standing crops by province.



In a recovery effort, it was observed that maize had been put out to dry in the streets, on roof tops, and in the fields, although rains continued for days after the flooding and there were only 2 dry days as of August 27.

As a consequence of the lack of dry weather, the early harvested maize maintained a strong alcohol smell even one week after harvesting, and it started rotting and moulding, making it unfit for human consumption. The picture below shows a maize cob collected on 17 August, from a maize field that was 2-3 days under water.



As a coping strategy, some counties are preparing the land in the fields where the maize has been harvested early for winter vegetables.

The harvest of paddy rice is normally completed by mid-October. For the paddy rice that remained under water, the rice plants are still in the paddy and have not lodged (tipped over). However locals are concerned that the depth of the water over the past several weeks will prevent the plants from germinating. The county officials are reporting that as August is the pollinating season, though most of the crops are still standing after the flooding, they might not germinate and therefore will not produce yield.



It is not clear yet what the overall impact of the flood waters will have on standing crops, but a significantly reduced yield can be expected.

3) Crops fallen - Around 6% of the standing crops have fallen down due to the heavy rains and strong winds, representing around 12% of the soybean crops and 13% of the maize. It is likely that no yield will come from the soybean crops fallen and a reduced yield is expected from the maize.



4) Crops buried - Around 6% of the crops have been buried by mud as a result of small landslides and infrastructure damage. No yields are expected from these fields.

Damage to cooperative farms

Around 40% of the cooperative farms are reported to be affected in the assessed counties. FAO's analysis on the damage to cooperative farms highlights the following losses:

- wheat and barley seeds stocks lost as a result of sprouting due to high humidity and sudden inundation;
- fertilizer lost;
- plastic sheets have been used to cover homes, temporarily shelters, warehouses and buildings damaged needs to be replaced urgently;
- tools; and,
- lime and sulfur mixture to treat rice fields that have been infected by rice leaf blight and rice plant fever with the flooding.

During the months of September and October, together with the harvesting of the main crops, the preparations for the winter crops of barley and wheat start. The damage in the cooperative farms may not only have a negative impact on the remaining harvest of main crops but also on the preparations for the winter cereal crops.

6. Vulnerability - Geographical differences

WFP teams have identified differences from one county to another in terms of the damage caused by the flooding. While some counties reported that this has been the worst flooding in 40 to 80 years and that the impact has been worse than the floods in 1995, other counties have reported that the damage is bigger than last year's floods, but less than in 1995. All the counties visited have been affected either to a low, medium or high degree by the floods.

The level of vulnerability of the assessed counties depends on the extent of the damage suffered and the capacity at the local level to cope. All the counties visited have expressed a deep concern over the situation and a lack of capacity to respond, therefore requesting assistance and acknowledging dependency on support from the Government and from international organizations. Some of the counties visited had already received some support from the central Government consisting of food and construction materials to repair the damaged infrastructure.

WFP field observations have led to a vulnerability ranking of the affected counties according to the following criteria:⁵

- damage to infrastructure
- damage to arable land and crops damaged
- number of homeless people
- county food stocks available
- vulnerability to food security before the flooding

With the above criteria, counties have been ranked as: 3 - severely affected, 2 – moderately affected, 1 – low affected. Vulnerability levels are reflected in the below table and the map in Annex 2.

Province	County	Ranking
South Hamgyong	Jongphyong	3
North Hwanghae	Phyongsan	3
North Hwanghae	Rinsan	3
North Hwanghae	Singye	3
South Hamgyong	Sinhung	3
North Hwanghae	Sinphyong	3
North Hwanghae	Sohung	3
North Hwanghae	Yonthan	3
Kangwon	Chonnae	2
South Hamgyong	Hamhung City	2
South Hamgyong	Kowon	2
North Pyongan	Kujang	2
North Hwanghae	Kumchon	2
South Hamgyong	Kumya	2
Kangwon	Munchon City	2
North Hwanghae	Pongsan	2
South Phyongan	Pukchang	2
South Phyongan	Pyongsong City	2
South Hwanghae	Unchon	2
South Phyongan	Unsan	2
South Hamgyong	Yonggwang	2
South Phyongan	Anju City	1
South Hwanghae	Haeju City	1
North Hwanghae	Hwangju	1
South Hwanghae	Jaeryong	1
South Hwanghae	Jangyon	1
North Pyongan	Jongju City	1
North Pyongan	Phihyon	1
South Hwanghae	Samchon	1
North Hwanghae	Songrim City	1
Kangwon	Thongchon	1
North Pyongan	Unjon	1
South Hwanghae	Unryul	1

⁵ First four criteria are based on Government data; pre-flood vulnerability is based on WFP's composite food insecurity index.

7. Recommendations

Immediate term:

- Homeless households having lost their assets, food stocks and seen their livelihoods highly disrupted, should be provided with adequate provision of food aid to cover their immediate three-month needs until the main harvest season is completed and until usual sources of food and income can be re-established. .
- Special attention should be given to monitor the nutritional levels of affected populations, especially those of the most nutritionally at risk/vulnerable groups such as children and pregnant and nursing women.

Medium and long term:

- Infrastructure reconstruction and rehabilitation needs being significant, notably in the agricultural sector, proper support in terms of materials, tools, technical expertise and other inputs should be provided to affected communities to ensure rapid recovery.
- Predicted lower harvests due to the floods will reduce nation-wide aggregate food availability for 2007/2008 marketing year and would render an already tight food access situation more problematic, notably for vulnerable groups and food insecure regions. Already facing chronic food deficits, the country's reliance of external food supplies will most likely increase in 2008. It remains therefore essential that assessments be conducted during the upcoming harvest season to confirm impact of the floods on crops and food supplies.

Annex 1 (a). DPRK 2007 FLOODS: DAMAGE TO ARABLE LAND BY PROVINCE. SOURCE: GOVERNMENT DATA

Damage in arable land	Pyongyang City	South Pyongan	North Pyongan	South Hwanghae	North Hwanghae	Kangwon	South Hamgyong	Chagang	Total	%
Submerged	8,480	41,606	10,863	49,469	38,510	26,951	13,063	207	189,149	84.68
Buried	95	3,575	45	660	4,191	3,565	782	33	12,946	5.80
Washed away	2	4,073	67	68	855	2,752	289	0	8,106	3.63
fell/lie down	231	970	2,355	573	7,323	0	718	1,010	13,180	5.90
Total	8,808	50,224	13,330	50,770	50,879	33,268	14,852	1,250	223,381	100.00

Crop	Pyongyang City	South Pyongan	North Pyongan	South Hwanghae	North Hwanghae	Kangwon	South Hamgyong	Chagang	Total	%
paddy	6,794	29,445	9,670	43,496	17,647	16,580	8,381	19	132,032	59.11
Maize	873	15,801	3,228	6,010	27,783	14,400	5,084	170	73,349	32.84
Soya bean	51	2,073	215	866	2,440	767	314	43	6,769	3.03
Other	1,090	2,905	217	398	3,009	1,521	1,073	1,018	11,231	5.03
Total	8,808	50,224	13,330	50,770	50,879	33,268	14,852	1,250	223,381	100.00

Annex 1 (b). DPRK 2007 FLOODS: DAMAGE TO STANDING CROPS BY PROVINCE. SOURCE: GOVERNMENT DATA

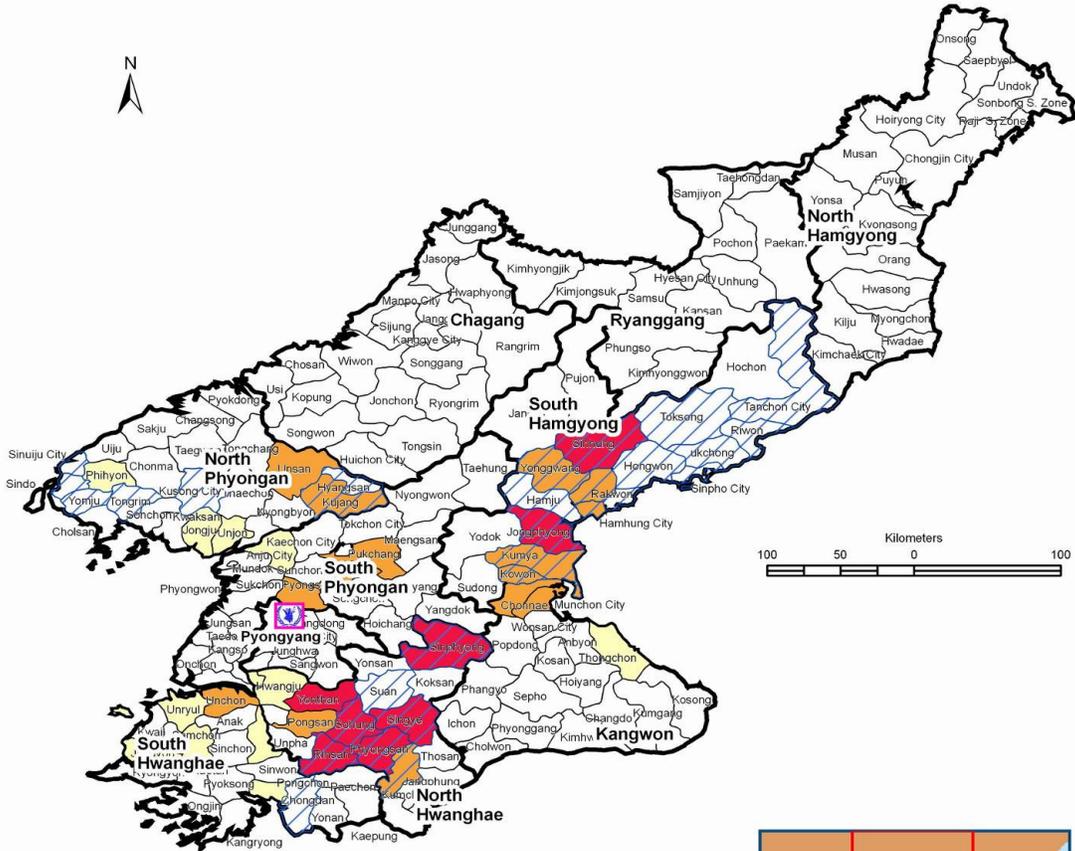
Paddy	Pyongyang City	South Pyongan	North Pyongan	South Hwanghae	North Hwanghae	Kangwon	South Hamgyong	Chagang	Total	%
Submerged	6,727	28,540	9,645	42,749	16,651	15,003	8,099	16	127,430	96.51
Buried	67	437	12	149	398	746	192	3	2,004	1.52
Washed away	0	434	13	25	141	831	90	0	1,534	1.16
fell/lie down	0	34	0	573	457	0	0	0	1,064	0.81
Total	6,794	29,445	9,670	43,496	17,647	16,580	8,381	19	132,032	100.00

Maize	Pyongyang City	South Pyongan	North Pyongan	South Hwanghae	North Hwanghae	Kangwon	South Hamgyong	Chagang	Total	%
Submerged	637	9,631	887	5,846	19,008	9,899	3,900	140	49,948	68.10
Buried	17	2,299	16	121	1,846	2,685	515	30	7,529	10.26
Washed away	0	3,404	41	43	505	1,816	194	0	6,003	8.18
fell/lie down	219	467	2,284	0	6,424	0	475	0	9,869	13.45
Total	873	15,801	3,228	6,010	27,783	14,400	5,084	170	73,349	100.00

Soya bean	Pyongyang City	South Pyongan	North Pyongan	South Hwanghae	North Hwanghae	Kangwon	South Hamgyong	Chagang	Total	%
Submerged	38	1,415	169	866	1,577	675	275	43	5,058	74.72
Buried	1	225	6	0	342	22	15	0	611	9.03
Washed away	0	87	1	0	115	70	0	0	273	4.03
fell/lie down	12	346	39	0	406	0	24	0	827	12.22
Total	51	2,073	215	866	2,440	767	314	43	6,769	100.00

2007 DPRK FLOODS

Severity of Floods based on WFP Assessment in 33 counties



	WFP Office		Low Affected
	WFP PRRO 10488.0		Moderately Affected
			Severely Affected

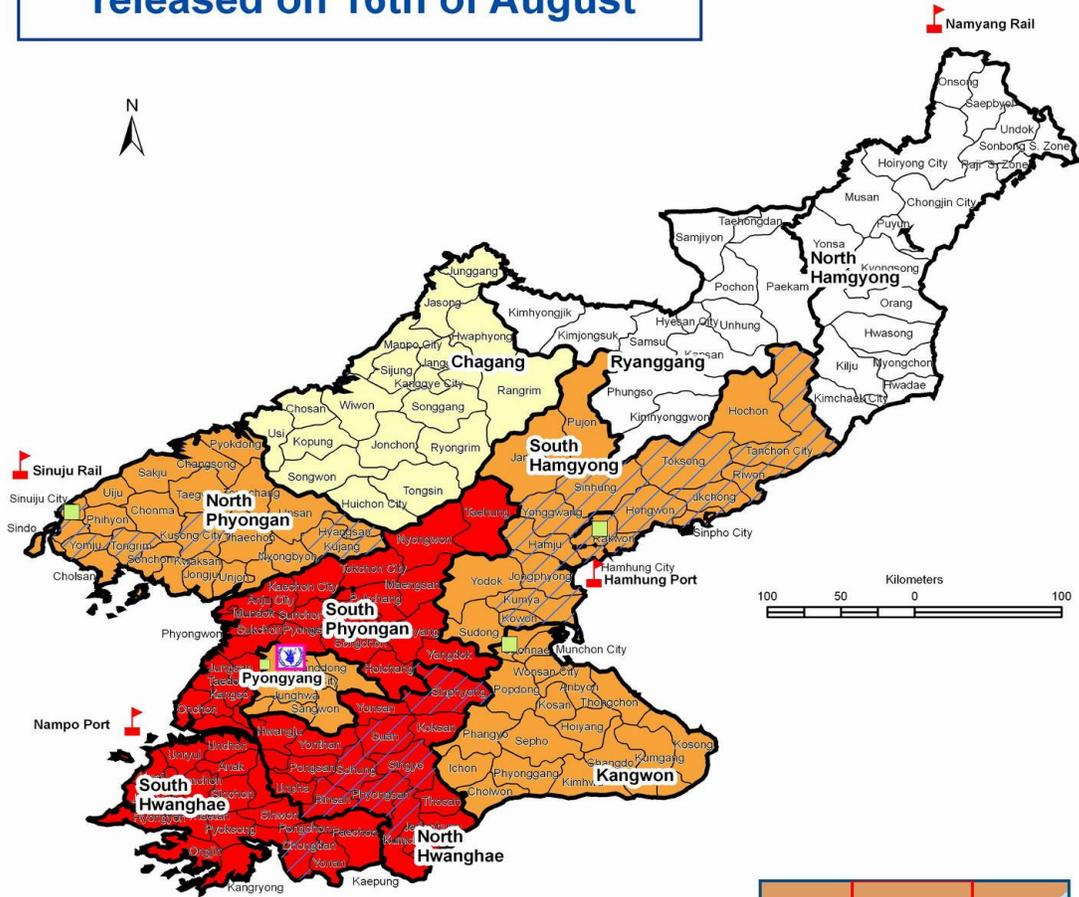


The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Spatial Reference: Geographic Coordinate System WGS 1984.

Map Produced by DPRK CO Targeting Unit August 2007

2007 DPRK FLOODS
Provinces Affected
Damage in arable land and crops
Based on Government data
released on 16th of August



	WFP Office		Low affected
	WFP PRRO 10488.0		Moderately Affected
	Entry point		Severely Affected
	WFP Local Food Production Factory in use		no data



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Spatial Reference: Geographic Coordinate System WGS 1984.

Map Produced by DPRK CO Targeting Unit August 2007