JOINT ASSESSMENT NORTH HAMGYONG FLOODS 2016

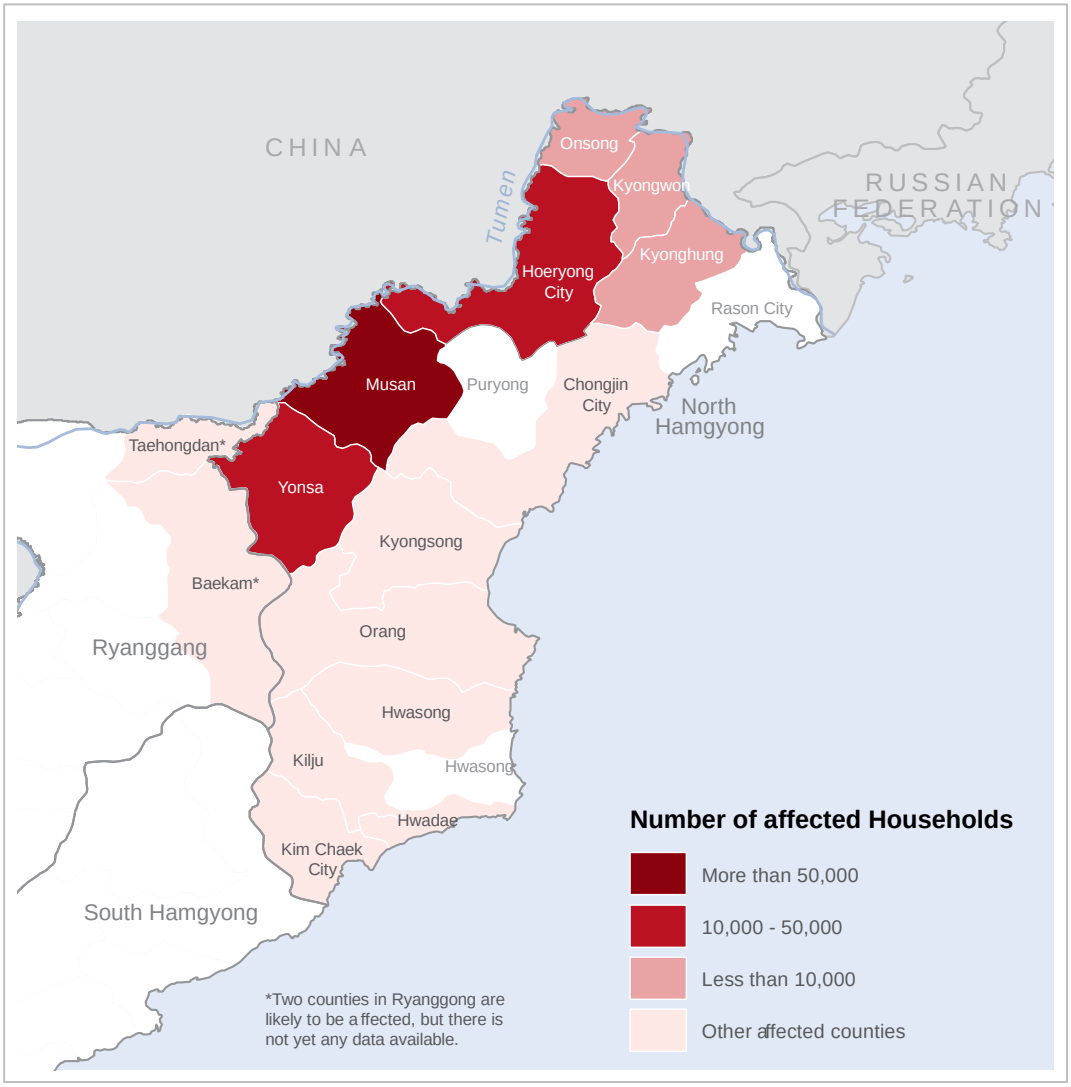
DPR KOREA

11 September 2016

North Hamgyong Floods 2016 - Joint Assessment Team Report

Background: The remnants of Typhoon Lionrock passed the Democratic People´s Republic of Korea (DPRK) on 29 August 2016, merging with a low pressure front in the Northeast causing heavy rains over North Hamgyong and Ryanggang provinces. Within a particularly intense time period of four hours in the night between 30 and 31 August 2016, the waters of the river Tumen rose between 6 and 12 metres, causing an immediate threat to the lives of people in nearby villages. Over the three days, 208 mm of rain deluged Hoeryong City. Beyond the rise of the Tumen river and its tributaries that would be expected under such conditions, at least one, if not two, pulses of water also flowed down the Tumen flood plain: one was either the failure of a local embankment or the release of water from sluice gates designed to protect it; the second may have been from the loss of the dam in Yonsa County. No information is available to explain at time of the report as to how and why these pulses took place, neither temporally nor geographically.

Realizing the significance of the event, the Government of DPR Korea (GoDPRK) immediately mobilized volunteers to assist in rescue and relief operations. International agencies resident in DPRK were also requested to urgently review and release emergency stocks to the area. Agencies were also invited to participate in a joint assessment mission together with the GoDPRK.



Logistics: The mission left Pyongyang on 6 September 2016 and visited a number of sites in North Hamgyong before returning to Pyongyang on 9 September 2016. A convoy of vehicles and supporting

advance team left Pyongyang by road on 5 September 2016 carrying urgent relief items from existing stocks of UNFPA, UNICEF and WHO, which were delivered as the team arrived. WFP also released stocks from its warehouse in Chongjin. IFRC and DPRK RCS had previously arranged for the delivery of non-food items (NFIs) from both its Chongjin and Pyongyang disaster warehouses.

The mission was led by Mr. Mun Jong Nam, Deputy Secretary General of the National Coordinating Committee, on the GoDPRK side. On the inter-agency side, the mission was led by Mr. Chris Staines, Head of Delegation, IFRC, Mr. Murat Sahin, Deputy Resident Representative, UNICEF, and Ms. Marina Throne-Holst, Coordination Officer, Office of the UN Resident Coordinator for DPRK. A total of 22 national and international staff from 13 organizations, including the DPRK Red Cross participated in the mission. This report is based on the assessment and observations of the HCT members of the team.

Early information indicates that **the following cities and counties have been particularly severely affected by the floods: Hoeryong City, Yonsa County, Onsong County, Kyongwon County, Musan County, Kyonghung County**. There is no official information on possible flood impact on neighbouring **Ryanggang Province** at time of this report.

Methodology: The team visited two villages (dongs), one clinic, one crop field and one pump station within Hoeryong City limits. The team also travelled as far as one road junction at Chayou ri in the south of Musan county, at the time the closest accessible point to both Musan and Yonsa counties and at which some 2000+ volunteers were awaiting the roads to be further opened to bring relief supplies and labour to the stricken areas. The team also observed damaged houses, public buildings, road and railway infrastructure (roads, bridges, railway track wash outs, etc.) and crop losses during the long road journeys.

The programme was organized by provincial authority officials (Provincial People's Committee (PPC) of North Hamgyong and People's Committee of Hoeryong City) who also accompanied the team during the visits. Throughout the mission, the team was supported by national and local authorities who facilitated communication and access to affected communities; both People's Committees strove diligently to provide information updates. The PPC shoed the team a video of the deluge and its impact in Hoeryong City.

Nevertheless the team was concerned that it was not possible to carry out a complete assessment as large areas remained inaccessible and information limited. At the time of the visit, although more than a week after the initial event, no real information was available about the situation in Yonsa and Musan counties, while figures from more accessible areas remained estimates.

The assessment team tried to consider the needs of particularly vulnerable groups (including women and girls, children, people with disabilities, pregnant and lactating women (PLW) and the elderly), but factual information was not available. To date, most of the information made available appears to focus on damaged buildings and property, from which numbers of people and households have been extrapolated for the purpose of this assessment, those being immediately affected and having lost their house and belongings being considered "displaced" population, although strictly speaking they do not appear to be displaced but staying on damaged property site. Team members were able to speak directly to the affected population. Given the overall format and time allowed for the visits, the team was not able to carry out in-depth interviews or focus groups.

Moreover, as the mission progressed it became clear that an assessment should consider two related but distinct caseloads (1) **those displaced and in immediate need of urgent humanitarian assistance (estimated at 44,000-100,000)** and (2) **those not displaced but directly impacted by loss of assets and disruption in basic services (water, electricity, health care) and food/nutrition security (estimated at 600,000 +)**.

Key observations: The size and scope of the emergency is greater than originally thought and is much more complex given how geographically widespread and emote/isolated the affected communities are. Even as the assessment was ongoing, new figures were coming in indicating higher losses of life and property. Kang An Dong, the second village visited, had been flattened to the ground, with not a single building intact, bringing total devastation to the inhabitants. The assessment team observed several more severely damaged buildings and fields during the visit, raising concern about the areas so seriously affected that they cannot yet be accessed. From local accounts, a disaster of this scale and intensity is not remembered for the last 50 to 60 years. In past years flooding was reportedly limited to small patches of land.

According to the Government, the Early Warning and Evacuation system was activated as of 27 or 28 August. The team was told that the event had been treated as a Level 3 emergency and that the population of affected areas had been given clear instructions to evacuate ahead of the flooding. Perhaps because of the unprecedented nature of the event, the team saw little evidence that people had left in time to take with them their prized possessions and belongings, suggesting inhabitants were taken by surprise in a number of cases. As a result, most households appeared to have lost their food stocks as well as coal reserves, along with personal belongings, household assets, and livestock.

Beyond food distribution, the team saw no evidence of a system in place to register those displaced or otherwise affected, nor any signs of a clear plan for how to distribute relief items beyond Hoeryong City. The team was told that those displaced had been rehoused with neighbours, relatives or in collective centres and issued food, blankets and essential cooking supplies, but no such site visits were included in the programme.

It is clear that a disaster of this scale will challenge the capacity of any authority. The assessment team was greatly impressed by the resilience shown by the affected people, as well as the commitment by all involved to contribute to the response effort. The authorities report that **some 20,000 people have been mobilized to assist in the rescue and relief**, in addition to the DPRK army. The team witnessed **large groups of people engaged in road repair in addition to the estimated 2000+ group waiting for further access at the Musan junction and was impressed by their efforts and determination.** The team did not witness first-hand the rescue efforts of the army or note any increased army presence in the affected areas. **At the time of the mission, airlifts had not been used to deliver assistance into the affected areas or to evacuate the population.**

The team observed a change in the seasons with signs of autumn prominent. Local advice indicates that by the end of October sub-zero overnight temperatures are common and temperatures of -30 ˚ or greater are regular through the winter. This reality creates a further level of urgency in responding to the needs of the affected population.

Note: According to Government figures, 78 per cent of the population of North Hamgyong Province was dependent on the Public Distribution System (PDS) before the flood event. The province mainly produces rice and maize, and is a food importing province.

Overall recommendations

Urgently engage line Ministries and relevant bodies to **finalize the assessment of damage and displacement,** including as much detail as possible on the status and condition of those affected (gender, age, disabilities, directly and indirectly affected etc.). International agencies present in DPRK confirm their readiness to support the GoDPRK in any way possible in this regard.

A complete assessment would allow the GoDPRK to finalize the 'master plan' mentioned during briefings, providing for good coordination and an efficient response operation. It would also allow the relevant authorities to reflect on **the extent of assistance required** and whether additional support may be provided by humanitarian partners, including requesting international assistance.

A **smaller inter-agency assessment team** should be invited back to the area in one to two weeks to review the situation and carry out additional assessments to fill any gaps, as well as to follow up on the distribution to date of humanitarian relief items.

Sector Assessments

Health

Table: Data on Population and Health Facilities in some of the most affected counties before the floods (CBS)

№	City/County	Total Population	Number of RA women	Number of U5 children	Number of 60+	Number of PLW	Number of health facilities*
1	Hoeryong	163,095	43,904	10,957	23,620	4,751	62
2	Kyongwon	111,262	29,828	7,405	15,589	3,137	45
3	Kyonghung	92,645	24,939	6,085	12,953	2,709	35
4	Onsong	132,231	34,868	8,838	18,320	3,642	51
5	Musan	127,979	34,033	8,583	17,333	3,607	37
6	Yonsa	40,503	10,590	2,838	6,366	1,123	36

** Health facilities include city/county/ri hospital, ri polyclinic/clinic, preventive institution and sanatorium.*

Observations:

- Information about the needs and available resources to respond to the health emergencies expected to occur following the disaster is incomplete.
- Provincial authorities acknowledged receipt of medical supplies from UNICEF (inter-agency emergency health kits, essential medicines, ORS, water purification tablets), WHO (IEHK, hospital tents and diarrheal kits) and UNFPA (dignity kits) for the affected population. However, at the time of the mission, these items had not yet reached the most affected areas.
- At provincial level, there is no statistical data on health facilities damaged partially or completely, or data on health problems following the disaster.
- WHO and UNICEF handed over 1 and 4 Emergency Health Kits respectively, and UNFPA handed over 50 dignity kits to officials at Hoeryong city while visiting the county on the second day of the mission.
- There are 62 health facilities in the Hoeryong County of which 18 are reported to be physically damaged, either partially or fully.
- In the first community visited (Maenyang Dong), the Dong clinic building had been washed out with loss of all equipment and drugs. It was reported that a temporary clinic has been set up in the community; however, this could not be physically verified.
- The second community visited at Kang An Dong, the Dong Clinic was completely destroyed and a temporary clinic was set up in two tents for a target population of 4,524 (1,177 households).
- 16 health staff of different categories were working in the temporary clinic.

- Reportedly, the daily patient load was 30-40 before the flood which increased to 70-80 per day following the event. There are more cases of ARI, diarrhea, gastro-intestinal disorders and injuries like minor cuts, and abrasions as people search through the rubble.
- 6 pregnant women were referred to the city hospital and 11 miscarriages/threatened abortions have been reported after the flood.
- The temporary clinic lacks clean water, sanitation, basic equipment, consumables, medicines (essential medicine including ORS, antibiotics), first aid supplies, antiseptics and other logistics.
- There was no available transport for emergency referrals to the city hospitals.
- On the third day of the mission on way to Musan / Yonsa counties, which had to be curtailed due to road blockage from landslides, it was observed that there was a large convoy of relief workers heading towards the Yonsa and Musan Counties stranded at Cayou ri waiting for the re-establishment of the road communication. More than2,000+ relief workers apparently had no access to safe sanitation and clean drinking water and emergency medical coverage; this actually adds to potential risks of outbreak of diseases, especially water and food-borne.
- In the Cayou ri, there is evidence of collapsed and destroyed houses by mud slides. There is no information about the extent of damage and the medical assistance and support instituted in the village.

Conclusion:

Data on the extent of the damage caused by the devastating floods and landslides is only partially available. Without appropriate preparedness and response measures, currently prevalent data on the widespread breach of the water supply system and access to sanitation; the vast devastation of houses; and the rapidly approaching severe winter in the area, indicates there are significant risks of widespread outbreaks of communicable diseases especially of diarrhea and acute respiratory illnesses (ARI). This could lead to significant morbidities and mortalities especially among the vulnerable population (children, elderly and pregnant women). There is a risk of finding additional numbers of people with multiple injuries when full information is available from areas of landslides.

With disrupted water supply and electricity and with increased demand on already overloaded health system, not only the displaced population but all the population of the affected counties will be vulnerable to the afore mentioned at risk.

Recommendations:

1. Complete rapid health assessment, including for Yonsa and Musan counties at the earliest.
2. Accelerate distribution of emergency medical supplies to the affected populations which have been already provided to the national and provincial authorities; if needed utilize helicopters or other means.
3. Additional resources and support including emergency medical supplies need to be mobilized along with measures for ensuring shelter, food, clothing, heating, etc.
4. Health facilities need to be restored at the earliest; and it may be important to bring in additional health care providers, especially trained specialists from other parts of the country to support the local staff.

Shelter and Non Food Items (NFIs)

Key Observations:

- Damage to housing, buildings and public infrastructure is extensive, severe and reported to be geographically widespread across the North Hamgyong Province.
- The table below summarizes the impact on houses/shelter and indicates the number of displaced people based on government supplied data.

Table: Summary of the impact of the floods on houses

Affected Area	Destroyed (HH)	Damaged (HH)	Total (HH)	Total Displaced People
Hoeryong City (at 3/9)	1,726	974	2,700	8,151
Kyongwon County (at 3/9)	6	591	597	780
Kyonghung County (at 3/9)	167	65	232	751
Onsong County (at 3/9)	597	0	597	2,388
Musan County (at 9/9)*	4,547	18,028	22,575	88,042*
Yonsa County (at 3/9)	8,468	2,384	6,084	17,324
Others (Chongjin, Kimchaek, Kilju, Hwadee, Myongae, Orang, Kyogsong) (at 3/9)	229	179	408	1,145
Total	**15,740**	**22,221**	**37,961**	**118,581**

** Displaced people figure is based on an Average Household population (3.9 people) as advised by Provincial authorities.*

- The high number of destroyed and partially damaged houses is due to a number of factors including:
    - the rapid flow and great volume of flood waters, including rubble and debris generated by the waters;
    - the length of time buildings were inundated/submerged;
    - the high risk exposure of affected buildngs - e.g. one community visited (Kang An Dong) had been established behind an earthern embankment on the Tumen River – which collapsed under the pressure of the floodwaters, other houses and buildings were observed located on exposed river banks and flood plains, etc.;
    - construction techniques, e.g. lack of foundations and structural reinforcing, and materials, e.g. locally sourced, untreated timbers; loose rock, sand and gravel mixes; poor quality concrete blocks and roofing tiles; the use of reeds, straw and mud was observed; etc.

- The number of impacted houses/shelters is likely to be greater than recorded in government statistics given fears that Yonsa County has been severely impacted and noting the constraints in undertaking the assessment.
- No coordinated removal of flood debris or building rubble was observed at the communities visited or advised by the government officials.
- No control of access to the two affected communities that were visited was observed.

- Ad hoc recovery of belongings and personal effects from the debris, presumably by householders, was observed. Observations suggest that few household items were salvagable e.g. some quilts, blankets, clothes, etc. were observed being washed in streams and pools of water and then being left to dry on surrounding trees, shrubs and stream banks.
- It appears that evacuation of the houses was done in a rush with valuable personal items (e.g. clothing, personal effects, televisions, etc.) prominent in the debris.
- Building materials (e.g. roofing tiles and timbers) are being recovered, presumbaly for recycling into new houses/shelters, with no obvious system in place to prioritize, coordinate or direct the efforts; undertake quality checking of materials, etc.;
- It was observed and confirmed through ad hoc interviews during the transect walks in both communities the team visited that men and women (including PLW) children and aged people were living and sleeping in the ruins of their homes in both the locations visited. This observation is reinforced through the WFP food distribution witnessed by the team that was managed at the site of the former community shop in Kang An Dong. It is important to note that the flooding occurred on the night/morning of 30/31 August 2016 – some nine days before the site inspection by the joint assessment team.
- The change of season is obvious with winter conditions expected to be felt by the end of October 2016. Anecdotal reports are that overnight temperatures of -3˚ are common in October.
- Cayou ri is situated at the junction of the roads to Musan and Yonsa county administrative centres, at a distance of respectively 24 km and 56 km, and was the furthest point that the assessment team was able to reach on 8 September 2016. At this location a convoy of several hundred vehicles (trucks, tractors, trailers, light vehicles, heavy earth moving equipment, etc) transporting an estimated 2,000+ men, women, boys and girls together with relief food, tools, equipment, light materials and their personal supplies. The authorities advised that these people had been mobilized to clear the damaged roads and establish access to Musan and Yonsa counties. The team was advised that the convoy had been delayed at Cayou ri for five days. It was observed that these people had been living in rough conditions - with extremely limited shelter arrangements, no obvious WASH facilities or health posts, inadequate food preparation and/or cooking arrangements (but obvious food reserves, e.g. noodles, vegetables, etc.). It was indicated to the team that clearing the roads would take a further 2 –3 days (Musan road) and 3 – 5 days (Yonsa road). On 9 September 2016 the team was advised that the road to Musan County was expected to be open in the next day or so.

Emergency Shelter

- The authorities advised that displaced families in Hoeryong City are being hosted with relatives/friends or are living in a temporary evacuation centre.
- The temporary evacuation centre, mentioned on a number of occassions, was not visited or observed during the assessment. There was no mention of the specific location of the centre nor of the specific facilities/services available to the displaced people, e.g. WASH; access to health services; food and cooking facilities; electricity; blankets/quilts; etc.. Nor was there any mention whether SPHERE standards are being applied.
- During the tour of Hoeryong City only a small number of informal shelters (less than 10) of what appeared to be low grade agricultural plastic sheeting were observed.
- An initial supply of emergency items (tarpaulins, kitchen sets, shelter tool kits, etc.) provided through DPRK Red Cross Society and IFRC had been received in Hoeryong City central warehouse in the afternoon of 6 September 2016 (see Annex IV). The stocks were inspected at the Hoeryong City central warehouse at 17:00 on 7 September 2016 and distribution of the stocks reportedly commenced on 8 September 2016.

Transitional Shelter

- The authorities stated full confidence that the living conditions of the affected population would be stabilized before the end of October 2016 (i.e. the onset of winter) and accordingly are confident there is no need for transitional shelter arrangements, e.g. winterized tents.
- Existing structures that have been flooded, but could be rehabilitiated for transitional or permanent shelters, are contaminated with flood waters, providing a poor sanitary environment for habitation. These structures need to be cleaned with a chlorine solution to prevent respiratory illness in the people living there.

Permanent Shelter

- The authorities stated with full confidence that the living conditions of the affected population would be stabilized before the end of October 2016. They further advised that:
    - a master plan is being developed;
    - re-location sites for displaced communities in Hoeryong City have been identified; and
    - steps are being taken to mobilize materials and labour to ensure construction is delivered before the onset of winter.
- The scale of the construction activity required to address the needs in Hoeryong City is significant and appears to be beyond the capacity of the local and provincial authorities, particularly noting the widespread loss of houses/shelters across the province.
- The source of materials and skilled construction personnel to deliver the permanent houses is not clear. A massive and immediate injection of resources, materials and skilled labour force is required if construction is to be completed in the time frame indicated by the authorities. Support from the army was mentioned on a number of occassions but no evidence of an increased army presence or involvement was observed during the visit.
- Consultation with affected communities relating to their needs in any relocation process, e.g. livelihoods issues; access to services, schools, health and other essential facilities; social capital issues; etc. was not mentioned in the briefings.

Recommendations

1. Urgent attention be given to providing emergency shelter in safe locations for the affected people currently living in the rubble of their former homes, i.e. not at the site of the destroyed communities, and with appropriate access to essential services (WASH, health, etc.).
2. That measures be established at the affected communities to:
    a. monitor/control access to the sites;
    b. oversight safety of the people on the site;
    c. manage the removal of flood debris and rubble;
    d. establish a system for the stockpiling of salvagable/recyclable building materials for later quality checking.

Food Security & Agriculture

Hoeryong

Agriculture: The team saw fields of damaged and destroyed crops – many hectares of flattened rice and maize. Some of the rice may possibly recover and again stand erect if conditions are optimal, but in roughly half the area we witnessed the rice plants are still bent with the pannicles remaining in standing water. The county official described how efforts have been made to drain the paddies quickly, and perhaps this is the basis of our observation that if no further adverse conditions occur, then some paddy may possibly recover. However, the official also reported that rehabilitation of the paddies will be a herculean effort – they are now covered by a substantial layer of coarse sand and fine gravel. The flood plain, being alluvial, was according to this official "extremely fertile, yielding 10 tons of rice per hectare".

No attempt to salvage the harvest of maize has occurred. This is not the priority of the officials or affected households, but at this late stage of the growing season, a substantial salvage would be feasible. The team saw several large work crews rehabilitating roads – the stated priority of the Provincial authorities – as well as one at a distance working along the river. There is no evidence that efforts to salvage maize will occur soon.

Food and nutrition security: The county official reported that five days' worth of maize and rice had been distributed to the affected populace, at 450 g/person/day. This was evidenced by a pile of maize sacks that were not from WFP. As for the future, the county official stated that with the vertical structure of government backing him up, there was sure to be food coming that will be then distributed appropriately.

The team witnessed people camped in the ruins of their houses cooking on wood-fueled fires, the fuel wood deriving from the house timbers they have salvaged. It was understood that people's stock of coal briquettes was lost in the flood, but according to the county official this will be quickly replaced. In two of the cooking fires seen at the sites, people were roasting maize on the cob and cooking a potato dish.

WFP's fortified biscuits were seen on-site, with scales and beneficiary lists, and people queuing patiently. Several children and women were seen eating fortified biscuits.

A significant problem for the directly affected households will be the lack of nutrition security over the next several months. Their cereal needs may largely be provided, and WFP has already provided soybeans. However, their kitchen gardens have been destroyed, as have their stocks of drying/dried foods such as chilies. Many if not most have lost the few livestock that they owned – team members spoke with one household which had lost a pig and chickens (their total livestock), and the county official reported such losses to be widespread. Kim chi stocks were seen to have been destroyed – perhaps not a catastrophe at this late stage of the consumption of previous year's production (and early stage of this year's production) the season, but in addition, there was much evidence of broken kim chi pots so the replacement of this vital component of the Korean diet may be problematic. People have therefore lost their source of eggs, meat, and cash. In the most devastated community the team visited, all fruit trees had been uprooted.

Indirectly affected households: We are concerned about the potential plight of the cooperative farm households with lands that have been submerged. It is known that cooperative farms have set targets that they are supposed to meet. . It is clear that the farms will not meet their target this year. There is a risk that these households will become, instead of PDS-contributors, PDS-dependents and will quickly become food insecure. With no surplus to sell or barter, their access to high-nutrient foods is lost. Moreover, cooperative farm households do not have access to sloping lands, so they are without recourse to options. These effects will impact a full season.

Similarly, the county official pointed to a duck farm on the riverbank that had been flooded and destroyed, with all its stock lost. A local source of eggs and meat has therefore been eliminated, with possible broad-reaching consequences in the county. The households working on the farm will now be fully PDS-dependent.

At no time during the two days did we spot a solar greenhouse. Even plastic-covered greenhouses are rare – we saw fewer than five.

As a corollary, both the 2012 and 2013 FAO-WFP CFSAM reports note that it is quite common for urban PDS-dependent households to receive gift baskets of food from their on-farm relatives. With the loss of the crop, this avenue to enhance urban household food security will be compromised during the coming year.

Musan County

Food security: An attempt was made by the assessment team to reach Musan and/or Yonsa Counties, but the roads remained impassable. Local officials, at the point finally reached, stated the expectation that the road to Yonsa would be open in 2-3 days, and to Musan in 3-5 days. The mobilized relief workers were queued at the junction, awaiting the roads' opening. Open-bed trucks and tractor-drawn carts were parked at the side of the road, with 2,000+ persons mobilized to render assistance. Each vehicle carried a stock of food from which these people were feeding themselves. Rice, maize, eggplant, chilies, potatoes, and even live pigs were observed– assuredly there were other food items too that the team were unable to note. This represents a substantial effort by the authorities to render assistance to the affected counties. There is no information on the status of the people in the affected areas that are inaccessible, including no reports pertaining to the food situation.

If these counties have parallel conditions to Hoeryong, then they may have had only three days' PDS rations in stock. However, for in a worst-case scenario they would be able to salvage-harvest maize (rice has perhaps not sufficiently ripened to warrant salvage).

One significant, and notable, difference exists between the affected population in Musan (and by extension, probably also Yonsa) and Hoeryong: in Musan, flooding took place not only in the Tumen river floodplain but also in the Tumen's side valleys. The team noted destroyed houses, lost kitchen gardens, and minor areas of submerged crops along the way to the road junction we reached after crossing the pass that leads down to the Tumen basin.

Sloping lands: Finally, the team observed many instances where sloping lands had been affected by the heavy rainfall. Gullies have substantially widened and deepened in some places, and landslides have claimed some arable sloping lands. Moreover, the provincial official stated that in several places in the county, houses had been buried by landslides – which may well have been triggered by the presence of inappropriate agricultural practices on sloping lands.

Nutrition security

A clinician at a clinic the team visited specifically noted the risk of malnutrition in lactating infants since mothers don't have access to sufficient food. We don't have specific information in the places we visited for such mothers, infants, pregnant women and children under 5 years but we note that Musan and Yonsa Counties are most likely more severely impacted because relief has not yet arrived, and therefore the condition of this vulnerable group is of greater concern.

Recommendations

- It is strongly recommended that further information on the affected households in Musan and Yonsa Counties be made available as soon as possible, to render such assistance as is warranted and possible.

- Ensure both the immediate and longer term food and nutrition needs of displaced and directly affected people are met, especially for the most vulnerable such as children and pregnant and lactating women. This is of particular importance due to the expected harvest losses, kitchen garden and livestock losses, as well as the approaching cold winter period.
- The response should include side valleys of the Tumen river, which also showed signs of flooding.
- Ensure that the food needs of the cooperative farm households that may become dependent on the PDS system are adequately met until next year's harvest.
- There is clear evidence of the need for sloping land remediation and DRR planning, and therefore we recommend that sloping lands management is a key area for longer term response.
- Among the damaged farms in Hoeryong County was a seed farm, affecting maize, rice, and vegetable seeds. We recommend ensuring that adequate supplies of seeds be made available to cooperative farms next spring.
- In the case of all affected counties, we recommend that Food-for-DRR opportunities be explored.

Water, Sanitation and Hygiene (WASH)

	Displaced people (flooded communities)	Non-displaced people
Situation	Communities that are directly affected are dependent on a few hand pumps that have remained after the flood, which is most likely contaminated by the flood waters. We observed that the clinic was collecting water from open water sources, and clinic staff reported that they were boiling or treating the water with chlorine tablets, although items for this were not observed. The clinic also reported that they do not have enough chlorine tablets or soap. Latrines were not visible at either the destroyed communities or the clinic. Evidence of open defecation was present. Shallow pit latrines have likely contaminated the flood waters, which have in turn, contaminated the buildings which still stand, and the surrounding environment. Sanitation was observed to be extremely poor, children were playing and eating in the contaminated rubble where they now live, increasing their risk of diarrhea. In addition to no structures being available for privacy when using the latrines, there are also no private places for people to wash. These issues will particularly affect women and girls. In Musan and Yonsa, we can assume that communities which were flooded have been similarly affected.	The water supply system for Hoeryong City has been badly affected, cutting of the water supply for 52,000 people across Up and a number of Ris. This system consists of 3 pump stations and a pipe distribution system. 2 pump stations have been completely destroyed, and the third has a damaged pump, due to the flood waters. One section of pipeline (associated with the gravity fed portion of the water supply system), 8 km long, has been completely damaged. These 52,000 people are now relying on the river and hand pumps to collect water, which are sources that are likely unsafe. As far as we know, the floods did not affect the latrines of this population. In Musan and Yonsa, we assume that other urban areas (Ups), which rely on electric powered pumping systems for water supply, have been similarly affected, resulting in their populations having reduced access to a quantity and quality of water necessary.
Needs	• Hygiene promotion, including Information, Education and Communication (IEC) material • Access to safe water including water treatment and safe storage at household level • Access to latrines and safe disposal of faeces, addressing the	• Hygiene promotion, including Information, Education and Communication (IEC) material • Access to safe water including water treatment and safe storage at household level (for a minimum of 3 months, until the water system is restored)

	particular needs of women and girls, and people with disabilities. • Access to private areas for bathing • Access to nappies and pots for children who are not old enough to use latrines • Access to absorbent materials for menstrual hygiene management • Access to soap for handwashing, bathing and laundry (both for households and clincs) • Chlorination of buildings which have survived the floods • The establishment of safe and clean environments for children (for example, temporary child friendly spaces or schools) to prevent malnutrition through diarrhea, and to provide a protective environment for them while adults are working on the response and recovery.	• Access to soap for handwashing • Rehabilitation of the electric/gravity fed water system, including spare parts, pipes and DRR measures. • Nurseries, kindergartens, clinics and schools will need extra support to ensure access to WASH for children and for medical use.
Response	• A boil order notice has been issued, however communities are struggling to do this due to the lack of fuel available. • No hygiene promotion has been carried out to date, as household doctors are busy responding to medical needs. • CPC reported that they have no plans to distribute chlorine. • IFRC, Unicef and Save the Children have released hygiene kits and jerry cans, but these have not reached communities yet. These agencies plan to release all available stock of hygiene kits and jerry cans.	• A boil order notice has been issued, however communities are struggling to do this due to the lack of fuel available. • No hygiene promotion has been carried out to date.
Observations	• People from the province who are camped in Cayou ri (they have been mobilized help Musan and Yonsa counties) do not have sufficient access to WASH. This group appeared to consist of mostly working age adults, a majority of whom were men, but some children were also seen. • No special provisions appear to have been made to address the WASH need for people with disabilities, women and girls, or the elderly.	• Water supply systems appear not to have considered DRR aspects: Pump houses did not include lifting devices to raise pumps above water level during a flood, pipelines were not well protected as they cross bridges, and pipelines were laid close to the river, and were damaged as the river banks broke.

	• There is a significant gap in who is responsible for carrying out hygiene promotion in emergencies. We were told that Anti Epidemic Station (AES) communicated through household doctors, but household doctors were busy providing medical treatment. • It is unknown if communities will have access to affordable soap, as it is expected that households will prioritize food, water and shelter above soap.	

Disaster Risk Reduction (DRR)

While there may be limits to the willingness by international donors to fund mid- longer-term needs at this point of time for geostrategic and other reasons, however paradoxically **the humanitarian implications of not doing so are also best highlighted at the time of a disaster**, which may trigger support.

For a detailed assesment of the DRR context, needs and see Annex VI.

Recomendations

Immediately:

- As part of early recovery efforts, identification of entry points and capacity building in land zone planning, zoning of flood-prone lands, and enforcement of standards and codes at provincial level.
- Advocating the immediate reviving/creation of Provincial/Ri Level Task force to review the current actions towards disaster risk reduction, including starting to collect lessons learned, to be supported by multisectoral teams;
- Ensure that the response is 'Winterized' (housing, WASH and NFIs);
- Expertise to be deployed as soon as possible for the purpose of advising on climate and flood-proof post-disaster reconstruction;
- An additional assessment a few weeks after the disaster to evaluate further early recovery support
- Early recovery support with focus on livelihoods, including material for construction of greenhouses and houses (as was done in response to the Rason emergency), to be considered;
- es.

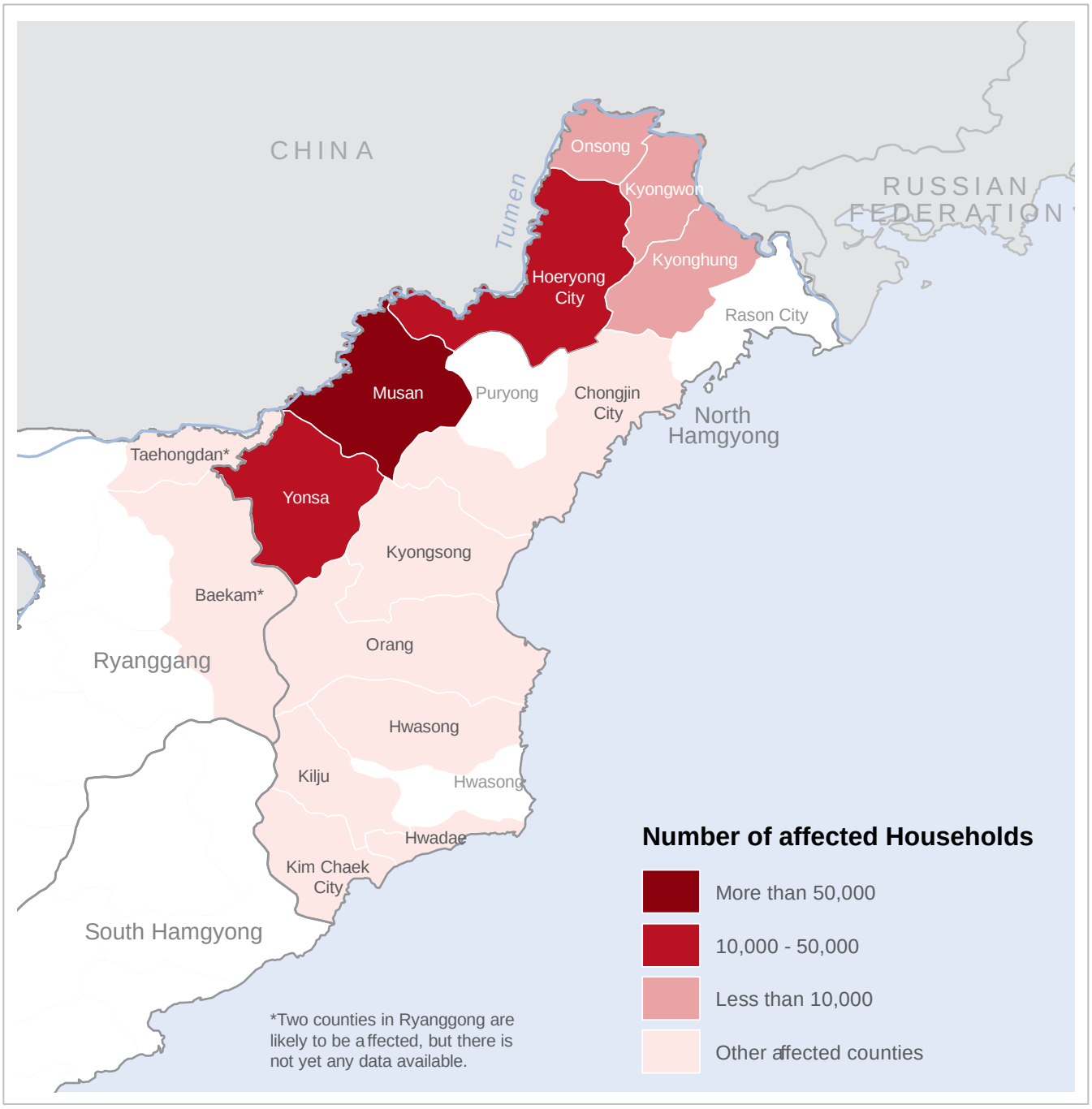
As soon as possible:

- An additional assessment of the causes and effects of the flood and to make recommendations that would improve preparedness for the next event and reduce future flood losses;
- Supporting the prepositioning of food and non-food-items for immediate relief and further distribution, including solar systems for lighting.

Other needs

Education is disrupted for children, due to the fact that they no longer have school buildings, kindergartens, or nurseries structures. Also, university students were seen to have been mobilized as part of the response.

ANNEX I - Flood map



ANNEX II - Joint Assessment Team composition:

On behalf of the DPRK Humanitarian Country Team:

- Mr. Murat Sahin, Deputy Representative, UNICEF
- Mr. Chris Staines, Head of Delegation, IFRC
- Mr. Anil Pokhrel, WASH Chief, UNICEF
- Mr. Kim Kwang Hyok, Wash Officer, UNICEF
- Ms. Siobhán McGrath, WASH Programme Manager, EUPS Unit 3/Concern
- Mr. Purushottam Tilisima, WASH Manager, EUPS Unit 2/Save the Children
- Ms. Mei Liu, Head of Programme, WFP
- Mr. Kim Kwang Hyok, the Food for Disaster Risk Reduction focal point, WFP
- Mr. Kim Hak Mu, National Consultant, FAO
- Mr, Lenard Milich, Head of Project, EUPS Unit 4/Welthungerhilfe
- Dr. Pak Un Gyong, WASH Officer, DPRK Red Cross
- Mr.Kim Yong Il, Fleet Manager, IFRC
- Dr. Zobaidul Khan, WHO (by Air) 191 250 0734
- Dr. Kim Kum Ran, National officer. WHO
- Mr. Muhammad Tariq Iqbal, Health Chief, UNICEF
- Mr. Hong Chang Bom,Liaison Officer, UNICEF
- Mr. Kim Chol Min, National Programme Officer, UNFPA
- Mr. Stephen Kinloch Pichat, Deputy Resident Representatives, a.i., UNDP
- Mr. Choe Sung Chol, Programme Analyst, UNDP
- Ms. Marina Throne-Holst, Coordination Officer, RCO/OCHA
- Mr. Re Song Uk, Liaison Officer, EUPS 4/ Welthungerhilfe

On behalf of GoDPRK:

- Mr. Mun Jong Nam, Deputy Secretary General, National Coordinating Committee (NCC), Ministry of Foreign Affairs
- Mr. Kim Mun Dok, Coordinator for UNICEF, NCC/MFA
- Mr. Kim Chong Gil, Division Director for WFP and FAO, NCC/MFA

ANNEX III - Programme

Day, Date	Destination	Site visits	Overnight place	Remarks
Tue, 6 Sep	10:00-11:00 Pyongyang-Orang (by air) Onward to Chongjin (by road)		Chongjin	Situation briefing by Chief of External Affairs, People's Committee of North Hamgyong Province
Wed, 7 Sep	Visit to Hoeryong for flood assessment	Hoeryong City Nam Yang Dong Ingeri (crop field only) Kang An Dong Hoeryong City Pump Station	Chongjin	Video and briefing by Vice Chairman, People's Committee of Hoeryong City
Thu, 8 Sep	Visit to Musan, Yonsa County for flood assessment	Cayou ri	Chongjin	
Fri, 9 Sep	13:30-14:30 Orang-Pyongyang	Assessment Team	Arrival in Pyongyang	

Persons met:

- Mr. Kim Kyong Chol, Chief of External Affairs, People's Committee of North Hamgyong Province
- Mr. Pak Yong Ho, Section Chief, People's Committee of North Hamgyong Province
- Mr. Ri Ryong Il, Vice Chairman, People's Committee of Hoeryong City
- Kim Ju Yong, Chief Administration Officer, Mayang-dong, Hoeryong City, N. Hamgyong Province
- Mr. Rim Chol Ryong, Chief of Disaster Prevention Department, People's Committee of Hoeryong City

ANNEX IV

Section	Description of Supplies	Agency	Released During Joint Assessment Mission (5 Sept)	Beneficiary Numbers	Warehouse
Shelter/ NFIs	Family tents	DPRK RC	100	390	Pyongyang
	Tarpaulins	DPRK RC	10.000	39.000	Hamhung, Pyongyang, Pyongsong
	Kitchen Sets	DPRK RC	5.000	19.500	Hamhung, Pyongyang, Chongjin
	Blue quilt	DPRK RC	10.436	10.436	Hamhung, Chongjin
	Cotton quilt	DPRK RC	9.564	9.564	Hamhung, Pyongyang
	Quilt cover	DPRK RC	1.026	1.026	Hamhung
	Household kits (bedding, kitchen items)	EUPS Unit 2/Save the Children	500	1.950	Hamhung
	Shelter kits (tarpaulin, rope)	EUPS Unit 2/Save the Children	500	1.950	Hamhung
Health	IEHK	UNICEF	10	100,000 for 3 months	Pyongyang
	Essential medicines Kits	UNICEF	4	40,000 for 3 months	
	ORS	UNICEF	24	84,000 for 3 months	
	Tents for eatsblishing temporary hospitals	WHO	5		Pyongyang
	IEHK (comprehensive)	WHO	1	10,000 for 3 months	Pyongyang
	IEHK (Basic)	WHO	25	10,000 for 3 months	Pyongyang
	Diarrhoeal kit	WHO	2	3.000	Pyongyang
	Water filter (capacity approx 30-40 l)	WHO	10		Pyongyang
	Water testing kit	WHO	5		Pyongyang
	Oxygen concentrator	WHO	5		Pyongyang
	Dignity kits	UNFPA	50	50	Pyongyang
Nutrition	Plumpynut RUTF	UNICEF	3.000	3,000 (SAM children)	Pyongyang
	Plumpynut RUTF	UNICEF	1.500	6,000 (MAM children)	Pyongyang
	Anthropometric weighting scales	UNICEF	30	30 CMAM sites	Pyongyang

	Height Board	UNICEF	30	30 CMAM sites	Pyongyang
	Vit. A	UNICEF	50.000	50000 (6-59 month-olds)	Pyongyang
	Multi-micronutrient supplements for PLWs	UNICEF	50.000	50000 (PLWs)	Pyongyang
	Multi-micronutrient powder-MNP	UNICEF	50.000	50000 (6-59 month-olds)	Pyongyang
WASH	Water purification tabs	UNICEF	1.200.000	3,500 families for 3 months	Pyongyang
	Water filter (for schools and KG & nurs)	UNICEF	200	10,000 families for 3 months	Pyongyang
	Jerry cans	DPRK RC	5.000		Hamhung, Pyongyang, Chongjin
	Water purification tabs	DPRK RC	600.000	6,700 families for 3 months	Pyongyang, Pyongsong, Pukchang
	Hygiene Kits	DPRK RC	5.000		Hamhung, Pyongyang
	Plastic Scooper, (1 l capacity)	EUPS Unit 2/Save the Children	500	1.950	Hamhung City
	Plastic wash basin (12 l capacity)	EUPS Unit 2/Save the Children	500	1.950	Hamhung City
	Plastic bucket w lid	EUPS Unit 2/Save the Children	500	1.950	Hamhung City
	Jerry cans	EUPS Unit 2/Save the Children	500	500	Hamhung City
	Soap	EUPS Unit 2/Save the Children	2.000	1.950	Hamhung City
Food	Fortified biscuits (44,000 people)	WFP	77 MT	44.000	Chongjin
	Pulses (44,000 people)	WFP	79.2 MT	44.000	Chongjin
Education	Emergency classroom kits	EUPS Unit 2/Save the Children	90	11 Primary/Middle Schools	Hamhung City
	Back to school kits	EUPS Unit 2/Save the Children	1.500	1.500	Hamhung City
	Child-friendly spaces kit	EUPS Unit 2/Save the Children	30	15 Kindergartens	Hamhung City

ANNEX V - North Hamgyong Province (September 2016)

Photo 1: Update on flood status in North Hamgyong Province by Director of External Relation of PPC of North Hamgyong Province.

Photo 2: Video presentation about the flood in Hoeryong City

Photo 3: Devastation of household by the flood in Hoeryong.

Photo 4: Devastation of household by the flood in Hoeryong.

Photo 5: Devastation of household by the flood in Hoeryong.

Photo 6: Devastation of household by the flood in Hoeryong.

Photo 7: Devastation of household by the flood in Hoeryong.

Photo 8: Devastation of household by the flood in Hoeryong.

Photo 9: Devastation of household by the flood in Hoeryong.

Photo 10: Devastation of household by the flood in Hoeryong.

Photo 11: Devastation by the flood in a community in Hoeryong.

Photo 12: Devastation by the flood in a community in Hoeryong.

Photo 13: Devastation of household by the flood in Hoeryong.

Photo 14: Damage of bridge by the flood.

Photo 15: Discussing flood damage with the effected community in Hoeryong.

Photo 16: Discussing flood damage with the effected community in Hoeryong.

Photo 17: Flooded and destroyed pump house which supplies water to Hoeryong city centre.

Photo 18: Hand pump in a household affected by flood in Hoeryong.

Photo 19: Rice crop damaged by flood, Ingari.

Photo 20: Volunteers working to repair road damaged by flood on the way to Musan and Yonsa County.

Photo 21: Relief materials from UNICEF, UNFPA and WHO in Hoeryong City to be distributed.

Photo 22: Fortified biscuits from WFP ready for distribution to the flood affected community in Kang An Dong.

ANNEX VI - Detailed DRR Assesment

Climate change adaptation

Situation

- From all accounts, a disaster of this scale and intensity is not remembered for the last 50 to 60 years in this area. In the past, flooding was reportedly limited to small patches of land.
- Although of an unprecedented scale, this emergency situation part of a trend in the past few years of an increased number of typhoons in the Korean East Sea, torrential rains have led to widespread damage of arable land, infrastructure and damaged a large portion of agricultural production.
- The floods have reduced the regeneration capacity of forests and inflicted huge damage to agricultural production, industrial facilities, people's lives, and properties. Increased deforestation activities have also aggravated the intensity and risk.
- With forest depletion and degradation, sloping fields have become under constant threat of land erosion, worsening year after year, rural energy demands also negatively affected forest resources, and degradation of slopes.

Needs

- DPR Korea has not sufficiently benefitted from the exiting knowledge and systems that are developed globally to monitor climate and environmental data on a real-time basis, detect adverse trends and make reliable prediction of possible impacts while reducing the impact on people, infrastructure, and other economic sectors.
- At the country level, a climate change strategy is yet to be developed, together with proactive measures to reduce incremental risks and existing vulnerabilities that are a likely to result from the changing climate.
- It is also evident, from the observations of the assessment team, that there is a gap in terms of lack of dedicated institutions or under-utilization of these institutions, to fully exploit the opportunity to integrate climate and environmental information into community level decision making.
- With respect to related concrete disaster risk reduction strategies which may easily be implemented, degradation of slopes could be potentially mitigated by agroforestry and forestry inititaitves in the disaster-prone areas of sloping arable lands and riparian zones.

Early warning systems

Situation

- According to the Government, the Early Warning and Evacuation system was activated as of 27 or 28 August 2016.
- It was observed that villagers had not taken with them their belongings and appeared to have been taken in a number of cases by surprise or had not taken seriously the warnings issued – suggesting an awareness gap.
- As a result, most households have lost their food stocks, as well as coal reserves, either by being washed away along with other household assets or by being completely soaked and rendered unfit for consumption.
- There was no indication or reference to, or classification of risks, and related mapping or zoning of flood-prone areas, or vulnerability analysis before the cyclone and tropical depression.
- Standard operating practice (SOP) tools do not seem to have been available or implemented in this particular case at the onset of the crisis. Although there is a strong emphasis on mainstreaming of Disaster Risk Management in planning at the central level, this does not seem to have trickled down to the sub-national level i.e. County and Ri.
- Although DPR Korea established its State Hydro-Meteorological Administration (SHMA), and data may have been available, meteorological and hydrological infrastructure to source weather data could be strengthened.
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Needs

- The current climate variability highlights the need for delivering climate information in a timely manner. If events are predicted early and have established monitoring systems, these impacts could be minimized significantly. A Geographic Information System may assist in delivering information. There is a need to define several zones within the flood-prone area, dependent on the velocity of the river and other physical factors. The mapping of the river is needed, for example, the flood-prone area may be broken down into floodway and flood plain components.
- Sensitization and education programmes to the risks need to be undertaken to ensure better preparedness of population at village level (good understanding of what is expected from villagers in case of evacuation, evacuation routes, emergency shelters, actions to be taken before leaving, such as removing mobile equipment and removing personal goods and furniture, etc.). This should be reinforced through regular simulation exercises.

Response

- As part of early recovery efforts, identification of entry points and capacity building in land zone planning, zoning of flood-prone lands, and enforcement of standards and codes at provincial level.

Disaster preparedness

Situation:

- While tremendous mobilization and solidarity of people to support the relief efforts is observed, and the extraordinary resilience and ability to absorb shocks of the communities is demonstrated, the institutional response to the disaster could be faster and more comprehensive. Lines of command could be clearer, and coordination more visible on the ground.

Need:

- Emergency preparedness and response plan to be made available at the provincial level;
- Mechanisms for coordination, including the structure of response committees, where they will meet and sources of resource information available to them.
- Advance planning, and the ability to mobilize sufficient resources quickly, as well as periodic exercises to identify weaknesses and problems needs to be enhanced/further supported.
- Periodic emergency exercises to simulate real emergency situations and test all aspects of the plan.

Disaster response

Situation

- No pre-positioned storages of emergency relief items (stockpiling of sandbags, emergency food and water supplies, and the evacuation of high value stored crops or goods from flood prone areas), or pre-identify public buildings for emergency evacuation are available. Registration and distribution is also an issue, as indicated by relief items still sitting in storage at the time of the mission, several days after being received.
- With respect to temporary shelter, although in one location dormitories in a factory were mentioned as having been made available, the team was not able to see them. It was observed that victims of the floods were staying overnight at the location of the disaster, with limited plastic sheets available locally.
- While villagers and students were visibly mobilized for labour intensive activities, and civilian assets (tractors, trucks) were contributed at the local level, military assets and manpower (notably medical and logistical, and engineering) does not appear to have been a centrally contributed part of the immediate response.
- Massive mobilization (1,000+ people, and hundreds of trucks and tractors carrying ad hoc relief support) was observed on the way to Musan and Yonsa, this expression of solidarity remains very ad hoc and sub-standard. It also has the potential to complicate the humanitarian situation further,

e.g. if those people remain stranded in unpredictable weather conditions, or if not properly equipped for the task.

- On 8 September 2016, one week after the onset of the disaster, no external humanitarian assistance had yet reached the most affected cities of Yonsa and Musan. In view of the collapse of telephone wires and pylons, communication with Musan and Yonsa was only possible through radio. In mobilizing support, priority is placed on emergency rehabilitation of the roads, in the hope that relief assistance can at some point be transported to the victims. It was estimated that the resumption of traffic on those road would take several days. Due to the delays in arrival of relief items, human loss is on the increase.
- Electricity is immediately affected due to pylons being destroyed. Also, the disaster has seemingly broken water pipes, and negatively access to clean water supply for the villagers concerned and also the population of the city of Hoeryong at large (close to 60,000 people). No plan or disaster preparedness anticipating disruptions to water supply and sanitation services was reported.
- While Provincial authorities express concern for most vulnerable (pregnant and lactating women, children, elderly people, people with disabilities), there is no evident methodologies to measure their vulnerability or address their needs.

Needs

- While roads are indeed critical in getting relief assistance, other ways of bringing assessment and support (including helicopter airlifting and dropping of relief assistance) need to be urgently in place for the tens of thousands currently out of reach.
- Understanding the hazard maps and assessing the vulnerabilities to the scale of a village, which may be done through participatory risk and needs assessments in the selected villages, would be needed to address future challenges.
- Multisectoral analysis and coordination is needed, to identify vulnerable groups and address sectoral needs and articulate response.

Response

- Advocating the immediate reviving/creation of Provincial/Ri Level Task force to review the current actions towards disaster risk reduction, to be supported by multisectoral teams;
- An additional assessment of the causes and effects of the flood and to make recommendations that would improve preparedness for the next event and reduce future flood losses;
- Supporting the prepositioning of food and non-food-items for immediate relief and further distribution, and solar systems for lighting;
- Food for disaster risk reduction should be considered.

'Building back better': construction planning and standards

Situation

In a number of cases observed the assessment team in Hoeryong, houses were built in very close proximity of the river Tumen or its tributaries, sometimes a few meters away, and in other cases less than a kilometer away however on the river bed itself. This, in one case, did not concern only a few isolated houses, but an entire village.

In one village visited in Hoeryong, which had been literally levelled to the ground except for the school, water had reach 2.5 meters. It was evident that buildings completely collapsed due to the poor construction materials. Mud walls have suffered the maximum brunt.

The water supply in Hoeryong is negatively affected by the water pumping stations being damaged by the floods.

The Provincial People's Committee is reportedly planning to establish resettlement areas by the end of October 2016, based on experience in the Rason emergency.

Needs

- Climate proofing of building code/standards for housing infrastructure are needed to 'build back better', a consideration that need to be kept in mind in the process of reconstruction to manage potential river level rise.
- Any new construction permitted in the flood plain should be flood proofed to reduce future damages. Building codes can be developed that minimize flood damages by ensuring that beneficial uses of buildings are located above the design flood elevation. For example, buildings can be raised above the design flood level by placement of fill; stilts or piles used to elevate the structure; and building utilities can be located above the flood level.
- Beyond localized attempts to control the river flow, comprehensive river management is needed that takes into account potential scenarios and broader considerations. Protective works should be considered when major infrastructure has already been developed and costs to protect existing investments are far less than those related to reconstruction, lost economic activity, disaster assistance, or relocation of existing structures and activities.
- To reduce future flood losses, specific attention is to be given to a number of critical services such as water lines, power pylons and telephone services often cross the flood plain, which can be protected against the ravages of flooding at relatively low cost (through additional depth of burial, a higher design standard for exposed components, and raising of components above design flood levels).
- Water supply and treatment plants are particularly vulnerable as they are often located on the flood plain yet are critical for the protection of human health during and after a flood event. Such structures need to be protected against extreme events and designed to prevent cross-contamination from floodwaters or sewers.
- Temporary shelter, including winterized tents, is to be considered pending construction of new houses in new locations, as reportedly planned by Government authorities.

Response

- Winterized tents and shelter construction kits (to be quantified);
- Comprehensive medical/clinic kits (can serve 10,000 for 3 months) - (to be quantified)
- Expertise to be deployed for the purpose of advising on climate and flood-proof post-disaster reconstruction;

Early recovery support: livelihood options

Situation

- As for many other communities in Asia, the vulnerability of population is increased in terms of both climate and weather hazards, due to their close proximity to rivers, and because of agriculture being one of the main source of livelihoods. In one village, 3046 farmer were reportedly living on 350 hectares of land, producing rice, with a yield of 10 tons per hectare. The loss in that village alone was estimated to 3500 tons of rice.
- Vast stretched of paddy cultivated areas has been destroyed which will affect the food security in the coming months. In some cases, the silt, stone powder and muddy water have durably compromise the soil, which will need to be restored to its original state before production can resume for the next planting season (April 2017).
- It was observed during the assessment that the kitchen gardens were destroyed, and that large surfaces of paddy filed and crops were either partially or completely compromised by the floods. Those people are now entirely dependent on the public distribution system (PDS).

Needs

- To avoid soil erosion leading to low crop productivity of the soil, a special effort in the leveling the field which are affected due to sedimentation. - Alternate use of flood-prone land should be considered/identified where possible.
- Alternative livelihoods at household/village level to be identified/recommended reduce dependency on Public Distribution System;

Response

- An additional assessment a few weeks after the disaster to evaluate further early recovery support
- Early recovery support with focus on livelihoods, including material for construction of greenhouses, to be considered