

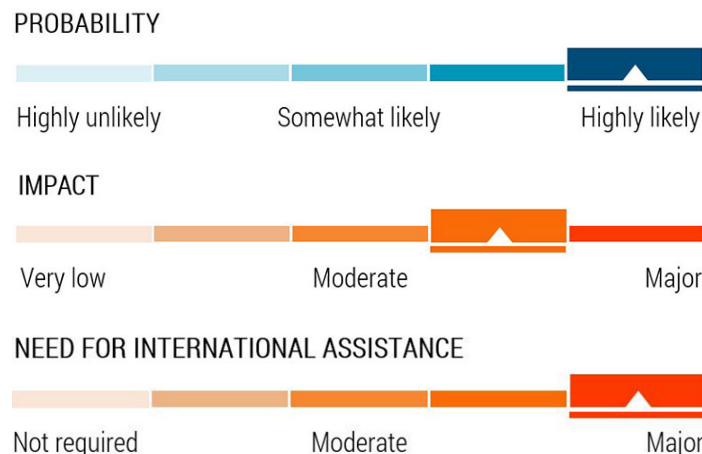
# ROHINGYA CRISIS

## Pre-monsoon review summary report

The rainy season is expected to have a serious impact on life-saving services and ongoing humanitarian aid in Cox's Bazar. The pre-monsoon and monsoon will cause access constraints to sites in both Ukhia and Teknaf, as mud roads become impassable, footpaths slippery and earthen stairs and slopes become dangerous and potentially collapse. Shelters and facilities will be damaged and flooded. The overall impact is likely to be an increase in needs for the 671,000 refugees and a more challenging response environment.

Population movement is expected but this will be mostly spontaneous and as local as possible. Official relocation will be limited and humanitarian actors have been informed that evacuations will not take place. This is likely to result in further overcrowding, bringing with it the increase in a range of interrelated risks including disease transmission, protection concerns and the overburdening of services. Damage to WASH infrastructure is will exacerbate poor sanitation conditions and water contamination, creating ideal conditions for the spread of water-borne diseases.

The international community is prioritizing locating safe land for life-saving services in an attempt to ensure the best possible coverage once the rains commence. Though necessary, this could be at the expense of medium-longer-term planning for other sectors including education and protection. Initial mapping has been carried out to identify areas of most risk in an effort to move people out of the most vulnerable locations. This is being updated and the ISCG has initiated a Preparedness Task Force that is working with Sectors to compile an inter-sector contingency plan.



### Scope of this report

This note summarizes a longer document on the potential impact of pre-monsoon and monsoon rains in the Rohingya camps of Cox's Bazar. It has drawn on the past impact of rains in the Rohingya settlements and in Cox's Bazar and Bangladesh more generally. The Rohingya camps at this scale have never existed in this season before so there is no direct past experience of how they have withstood a monsoon in Bangladesh. **The number of people in the settlements and the nature of the temporary living conditions and facilities all indicate that the impact of a normal rainy season will make the provision of on-going response to the influx challenging. A severe monsoon will have a serious impact on needs.**

Disclaimer: This note is based on a subjective assessment of the potential impact of the monsoon on camps and is considered a worst-case scenario.

### Key priorities



**Highly unsanitary conditions**

**Damage to latrines and structures, contamination of water sources**



**Waterborne diseases**

**Ideal conditions for spreading**



**Damage to shelters**

**will result in exposure to the elements, displacement and overcrowding**

### Humanitarian Constraints



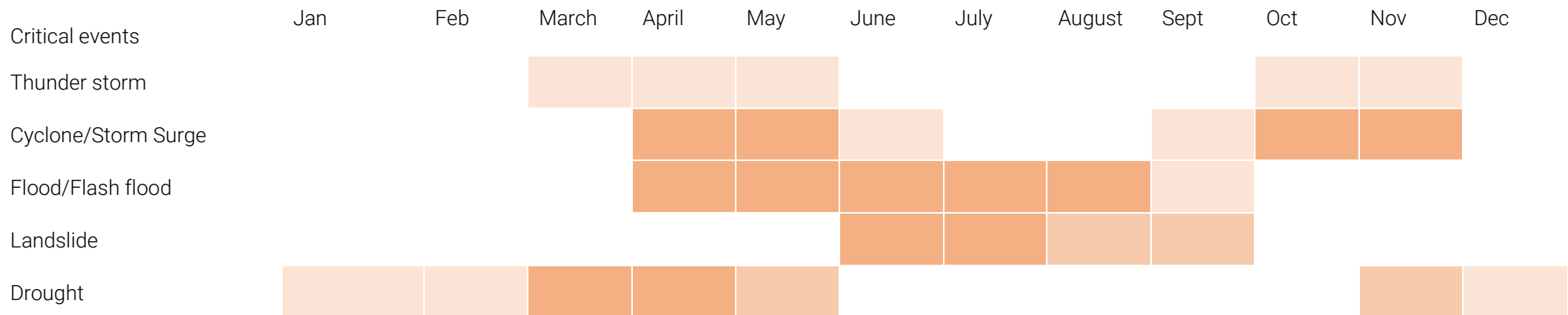
Physical access will be a key concern. Roads made of mud within camps, including key roads such as the Military Road in Ukhia, are likely to become impassable, damaged or destroyed by rains and floods. Footpaths are likely to become muddy and difficult to navigate. This will severely reduce access to affected population and disrupt aid delivery.

#### Limitations

There is limited information on the potential impact of rains, floods and landslide in sites of Teknaf, yet two camps, Chakmarkul and Unchiprang, are of high concern, as they seem particularly prone to landslides and floods due to their terrain.

## Rainfall

Key seasonal data Cox's Bazar district	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Average rainfall precipitation 1977-2013 mm	4.68	16.68	29.42	83.59	301.27	802.38	915.45	690.70	380.49	222.58	64.79	11.45
Average Wind Speed 1985-2013 Celsius Km/hour	5.13	5.80	6.41	6.92	7.22	8.35	8.41	7.47	5.46	4.05	3.58	3.72
Rainy Season/Monsoon (percentage of annual rainfall)	Dry season					Main rainy season (72%)					Dry season	
				Pre-Monsoon (18%)				Post-Monsoon (8%)				



Source: BMD and BWDB, Cox's Bazar

## Introduction: The monsoon in Cox's Bazar

Cox's Bazar is one of the most flood prone areas of Bangladesh. The monsoon season lasts from June–September. The first rains (the pre-monsoon) begin in late March. From May to August flash floods (rapid flooding from heavy rains) and landslides are a regular occurrence with the risks associated with them increasing throughout the season as the ground becomes unable to absorb water.

The 2018 monsoon is estimated to have one in two chance of above normal rainfall in Cox's Bazar, higher than the 33% chance of above normal rainfall at any given year if no forecast is available (IRI 02/2018).

## Flood and landslide risks in camps

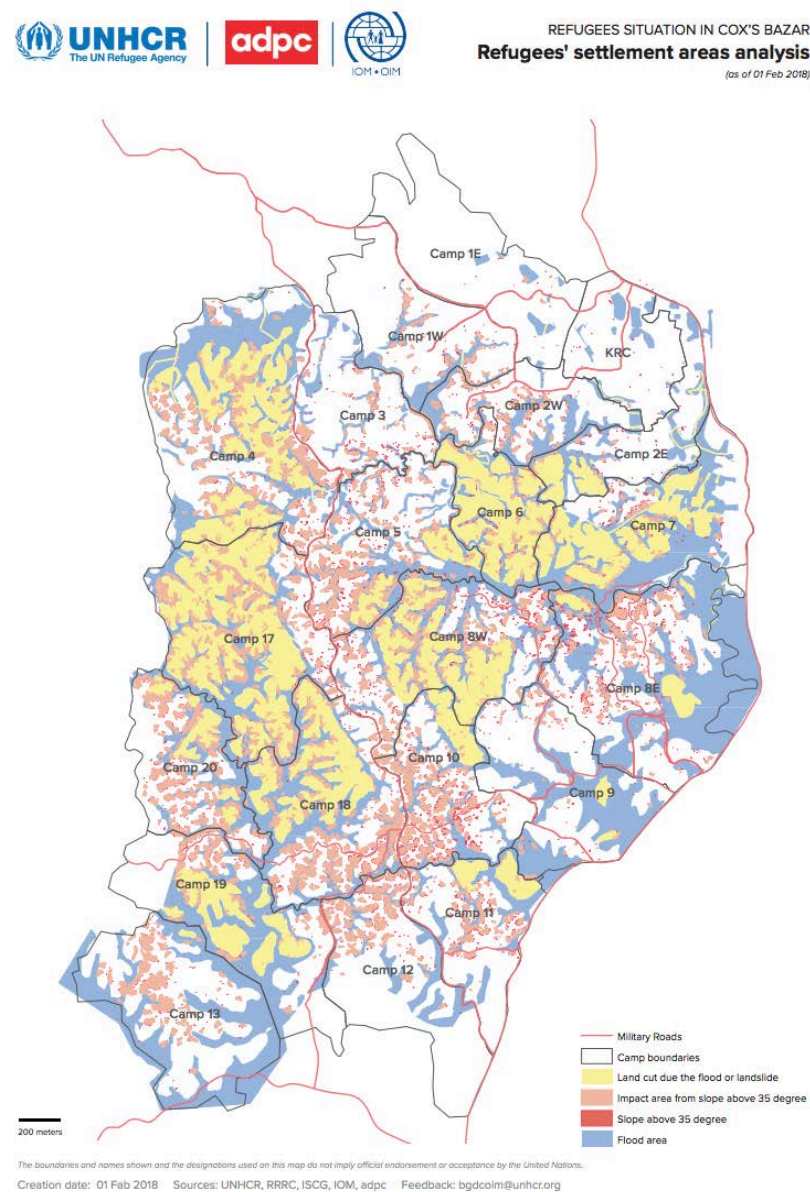
Mapping indicates that 102,000 people in Kutupalong-Balukhali expansion and Thangkhalii are directly at risk of floods and landslides (UNHCR, ADPC and IOM 21/01/2018, UNHCR 02/02/2018). Teknaf has not yet been mapped but there are also concerns of landslides, flash flooding and riverine flooding in the sites there.

The rapid expansion of sites has put pressure on the terrain causing it to become more prone to flash floods, water-logging and landslides. Flatter, coastal sites hosting Rohingya (in Teknaf) are prone to river flooding. The fragile soil, a combination of clay and sand, has been weakened by:

- **Hill cutting** to make space for shelter construction. Altering the natural slope of hills, making them much steeper than they would naturally be makes them more likely to collapse under heavy rains.
- **Deforestation** to accommodate new arrivals (1,060 acres destroyed as of 18 December), alters land characteristics and deteriorates the quality of soil (Zamanet al. 2010). Removal of vegetation decreases rainwater absorption and increases runoff, which accumulates as floodwater in lower areas.

The monsoon regularly results in both flash flooding and prolonged flooding. The Rohingya will be vulnerable due to their living conditions in temporary shelters and dependent on shallow latrines and wells. 31% of households include a person with a physical vulnerability (older persons, people with physical disabilities). The elderly and people with disabilities will be especially impacted by the challenges to physical movement that the rains will bring and particularly will not be able to move quickly at the time of sudden danger such as a landslide.

Map 1: Flood and landslide prone areas in the Kutupalong–Balukhali expansion and Thangkhalii.



Source: UNHCR, ADPC and IOM 20/01/2018

At least 85,000 people are estimated to be living in areas of the Kutupalong-Balukhali expansion and Thangkhal at risk of being directly affected by floods in the camps, mainly in low-lying areas (UNHCR, ADPC and IOM 21/01/2018). Analysis of Kutupalong-Balukhali expansion and Thangkhal found at least 23,000 people are estimated to be living in areas at risk of landslides, with the western and southern areas at most risk. There are concerns the number could be much higher if a different approach to measuring the risk was taken. New mapping is underway (UNHCR, ADPC and IOM 21/01/2018).

Although fewer refugees are in Teknaf than Ukhia, the high population density of Unchiprang, Leda MS and Nayapara RC (less than 25m<sup>2</sup> per person) means the number of people likely to be affected by the monsoon will still be significant. Plans to relocate the people living there have not been made.

## Key challenges

### Access

Aid provision will be disrupted because of physical access constraints. **Roads** in the camps are made of clay and can become impassable with heavy rains. If key roads such as the Military Road becoming impassable, access to most parts of the Kutupalong-Balukhali camp, home to 559,400 people, will be severely reduced. Over 80% of people rely only on footpaths, which will become muddy and difficult to use, increasing time and difficulty in accessing services.

Hilly roads will cause difficulties for trucks in aid delivery when muddy. Soil erosion on the sides of the road may cause collapse. Water is likely to accumulate on roadsides creating large areas of stagnant water. 75% of bridges (149 out of 199) in Kutupalong-Balukhali expansion and Thangkhal have been found to be at risk of collapse (UNHCR, ADPC and IOM 21/01/2018).

**Centres providing services** to the population; health facilities, distributions points, temporary learning centres or safe spaces for women and children are all temporary structures made from bamboo and tarpaulins. These are likely to be damaged by heavy rains and floods. Services in the north-east and south of the Kutupalong-Balukhali expansion and Thangkhal are most at risk of being directly impacted by floods and landslides. A mapping of service centre locations in relation to flooding and landslide risk found that no services are considered to be without risk.

Muddy footpaths and damaged staircases will limit people's access to services, particularly for older people and people with disabilities. This will increase needs overall with the greatest challenges facing the most vulnerable. 73% of blocks are only

accessible by foot, and 8% have only limited access by small vehicles (NPM round 8). This means that up to 500,000 people in the Kutupalong-Balukhali expansion and Thangkhal could face challenges accessing and receiving services.

## WASH

**Sanitation** conditions will significantly deteriorate. **Latrines** constructed on hills could collapse and be washed away and flooded latrines in low lying areas could overflow. One third of people across the sites already report challenges in latrine access. The main challenges are that latrines are full or dysfunctional. The main sanitation risk is that faecal matter will spread, increasing the risk of faecal oral contamination. Waste will flow downhill with floodwaters; low-lying areas could become effectively open sewers. People living in these areas will be most affected by unsanitary conditions

An estimated 25% of latrines are at risk of being affected by floods and landslides in the Kutupalong-Balukhali expansion and Thangkhal. 18% of latrines in sites assessed by IOM were full, and over half of these were shallow (less than five feet deep) (IOM 12/2017). Operations to decommission full latrines and dig new latrines will become more difficult with the muddy conditions. **Waste management** is also frustrated by a lack of clear protocols on sludge management in the camps and an absence of available land. An estimated 8,000 latrines need to be decommissioned before the monsoon; 2,000 have been decommissioned as of March (WASH Sector).

This means that the number of full and dysfunctional latrines will increase, and their conditions will deteriorate; both already significant barriers to latrine access in camps with the person to latrine ratio exceeding the Sphere indicators of 50 people per latrine in 16 out of 31 zones in Kutupalong-Balukhali (WASH Sector 08/02/2018). As sharing of latrines increases, protection concerns will increase. Insufficient available latrines is also likely to increase the use of open defecation. In October 2017, nearly one third of Rohingya families assessed by IRC and RI reported practicing open defecation (IRC and RI 10/10/2017).

**Water** contamination and reduced access to drinking water are likely to be exacerbated. Water contamination is likely to increase during the rains, as there is the risk that unprotected tube wells could become contaminated through seepage, unsealed tube-wells (or ones where the protective seal around the base of the hand pump is broken) will be contaminated when floodwaters cover the base decreasing water quality and increasing health concerns. As of March, 20% of tube wells were reported as not operational (WASH Sector 03/2018, WASH Sector 22/02/2018).

**Water quality** at the household level is already poor with 81% of water samples collected from households contaminated with *E.coli* (Health Sector Bulletin 31/12/2017). It will be more

challenging to keep water storage containers clean and to boil water. Bucket chlorination at the household level is being promoted but is unlikely to reach enough people due to time-constraints.

An estimated 46% of hand-pumps and tube-wells are at risk of being directly affected by both floods and landslides in the Kutupalong-Balukhali expansion and Thangkhal, and 70% of unimproved water sources are at risk of being affected by landslides and floods (UNHCR, ADPC and IOM 21/01/2018). In Teknaf, up to one third of people in both Unchiprang and Chakmarkul are likely to be affected by water access problems, and field observations suggest that these sites are at high risk of flooding and landslides due to their topography (NPM round 8).

## Shelter

Damage to and flooding of shelters will result in displacement, overcrowding and exposure to the elements. Shelters built against hills and in valleys are at risk of being washed away, posing protection concerns and will increase shelter needs. Shelters are made from fragile materials and unable to withstand rains (NPM round 8).

Sites have defined boundaries, and land is scarce. This is a major issue, as useable space within the camps will decrease increasing congestion. Shelters located in water-affected areas will become unusable. People are likely to move to safer areas less affected but within the camp boundaries. At least 102,000 people could be directly affected by floods and landslides in the Kutupalong-Balukhali expansion and Thangkhal, the most vulnerable of these are likely to be relocated to safer areas ahead of the rains (UNHCR, ADPC and IOM 21/01/2018) but it is estimated that there will only be very limited relocations.

**Overcrowding** is likely to be a major concern as a result of displacement of the population to safer areas within sites. Due to lack of available land in sites and the absence of plans for further expansion, people are likely to gather in areas less affected by rains such as high ground, the logistics base, the rubber garden, high roadsides, transit centres, and other places where services continue to be dispensed. This may lead to people sleeping in the open, which would exacerbate health issues.

People are likely to look for sturdier structures in which to shelter, including madrassas and mosques, and areas where structures were built before the influx, such as in Kutupalong Refugee Camp. Congestion in safe shelters and communal buildings will have a link to increasing health risks and could accelerate the spread of diseases and result in protection concerns, particularly for women and children (CARE 18/10/2017).

**Lack of land** is also an issue in the sites in Teknaf, hampering relocation (IOM 01/02/2018). Land adjacent to the sites is a mixture of government and privately owned, in

contrast to Ukhia where land beside the camps is all owned by the government. There are reports that some locals have been renting land to Rohingya at inflated prices with the threat of eviction. As available space reduces during the rains, tensions over land could increase.

Lack of land is also an issue in the sites in Teknaf, hampering relocation (IOM 01/02/2018). Land adjacent to the sites is a mixture of government and privately owned, in contrast to Ukhia where land beside the camps is all owned by the government. There are reports that some locals have been renting land to Rohingya at inflated prices with the threat of eviction. As available space reduces during the rains, tensions over land could increase. Chakmarkul and Unchiprang in Teknaf are at particular risk of floods and landslides due to their hilly terrain, there are concerns that they could need to be fully evacuated. The two camps together constitute over 30,000 people (NPM round 8).

Shelter upgrade activities have started, but timeliness is likely to be an issue. As of 25 February, 28,293 households have been supported with shelter upgrade kits (ISCG 25/02/2018, ISCG 08/02/2018). Considering the temporary nature of shelters and the conditions, this is a small fraction of the overall population.

## Health

Deteriorating sanitation, contamination of water, standing flood waters and congestion create ideal conditions for the spread of water-borne diseases, vector-borne diseases and respiratory problems.

Reduced access will make all aspects of healthcare provision including access of patients to **health facilities**, and movement of ambulances difficult. As medical teams do not live at the camps, difficulties accessing sites could significantly reduce health workers' availability in camps and thus the provision of health services.

Permanent health facilities outside the sites such as the Ukhia Health Complex are already unable to meet all the needs of people in camps due to insufficient resources. These may no longer be able to be accessed by the Rohingya population if movement in and out of the camps is restricted, or they could be overwhelmed if Rohingya access is maintained and they become the only remaining functional health services (ISCG 25/02/2018).

Increased morbidity will drive already extremely high malnutrition rates (23.4% GAM and 7.5% SAM in Kutupalong Refugee Camp as of November 2017).

ARI cases are likely to increase during the rains, as damaged or destroyed shelters will result in wet and cold sleeping conditions. ARI is a leading cause of under-five morbidity and mortality in Bangladesh and Myanmar. As of beginning of March, 99,140 ARI cases

were reported since the beginning of 2018, with over 10,000 cases reported a week and a morbidity rate of 12.8% (WHO 06/03/2018, WHO 26/11/2017).

**Acute Watery Diarrhoea** (AWD) cases are likely to spike during the rains. In 2015, AWD accounted for 7-9% of morbidity in the refugee camps and for 22% of medical consultations (Chan et al. 03/01/2018). With conditions being more crowded and a dramatic increase in population numbers together with the water and sanitation risk factors, there are concerns that the situation will be far worst this year (WASH and Health sector AWD Plan 07/11/2017). Diarrhoea treatment centres (DTC) and oral rehydration points (ORP) do not have capacity to receive in-patients and adequately meet the predicted needs. Lack of space in current health facilities is an issue (WASH and Health sector AWD Plan 07/11/2017).

**Hepatitis E** is transmitted through faecal-oral contamination and is particularly deadly for pregnant women and new-borns (WHO 19/11/2017). During the rains, contamination of water and unsafe disposal of human excreta will result in the kind of conditions that could lead to a Hepatitis E outbreak. Jaundice is one of the Hepatitis E symptoms, and 1,056 cases of acute jaundice have already been reported in the first three months of 2018 (WHO 06/03/2018).

Stagnant water is likely to become a breeding ground for mosquitoes, increasing the risk of vector-borne diseases such as chikungunya, dengue and malaria, all endemic in Bangladesh and reported during a normal rainy season. No major chikungunya outbreaks have been reported in Bangladesh since 2008 but there have been recent cases reported in Dhaka in 2017 (WHO Public health analysis 11/01/2018). Cox's Bazar district is one of the 13 districts of Bangladesh (out of 64) where malaria is endemic. Malaria is estimated to be moderately endemic in Cox's Bazar district however it is most pronounced on the border with Myanmar (The Independent 27/07/2015, WHO 14/01/2013, WHO Public health analysis 11/01/2018). Limited vector surveillance and diagnostics at health facilities level complicates monitoring and reporting (WHO Public health analysis 11/01/2018).

Overcrowding in areas less affected by floods or landslides is likely to accelerate the spread of air-borne diseases such as measles and diphtheria. Between September 2017–March 2018, 3,000 measles cases were reported and around 6,025 suspected diphtheria cases with 38 deaths were reported (WHO 03/03/2018, MSF 26/01/2018, UNICEF 11/03/2018). A diphtheria vaccination campaign was initiated in December and the third round is ongoing as of mid-March.

## Food

**Food shortages** will result if there are disruptions in food distribution; because of the high dependency on food aid.

Food shortages will be compounded by higher prices in the **markets**, and lead to negative coping mechanisms.

People in the camps do not have their own food production or food stocks, and in most cases no regular income. 91% of Rohingya in camps (pre- and post-August arrivals) are benefitting from food assistance (REVA 19/01/2018). Any reduction in access to food aid will increase the use of negative coping mechanisms such as reducing food intake. Negative coping strategies are already used by over 30% of the refugee population (REVA 19/01/2018, NPM round 8). If this happens it will compound already high malnutrition rates. Cooking available food will be hampered by shortages of dry firewood and space to cook.

Contingency plans for immediate food assistance during the floods are planned including fortified high energy biscuits but stakeholders know this is not sustainable long-term. The pre-positioning food supplies and setting up a porter system to distribute it is underway.

## Nutrition

Most **nutrition infrastructure** is temporary with limited protection from natural disasters (Nutrition sector 12/2017). Outpatient therapeutic programmes, stabilization centres and supplementary feeding centres are likely to become difficult to access, increasing interruptions in services. Maintaining regular attendance in nutrition programmes is already a challenge as of March 2018 (UNICEF 11/03/2018). Community outreach messaging at household level is likely to become more challenging with reduced access, meaning follow up on malnutrition cases, defaulter tracing and active finding of cases could be severely hampered (Nutrition Sector).

**Micronutrient and supplementary feeding** will be disrupted if food aid distribution slows down. Regular supply of food aid and nutrition therapeutic supplies may be difficult and floods could damage stocks.

Extremely high malnutrition rates are an underlying concern, with 24.3% GAM prevalence, and 7.5% SAM prevalence; both significantly above the WHO emergency thresholds of 15% and 2% respectively in Kutapalong (SMART 10/2017). GAM and SAM rates above the WHO emergency thresholds were also recorded in Nayapara refugee camp (14.3% GAM and 1.3% SAM) and in makeshift settlements (19.3% GAM and 1.3% SAM) (REVA 19/01/2018).

**Disruption to nutrition treatment** will increase malnutrition rates and increase risks of exposure undernourished children and pregnant and lactating women to diseases due to weak immune systems.

Lack of shelter means that it is likely that women will have limited available space for comfortable breastfeeding and adequate complementary feeding (ACAPS SDR 2013). Food shortages experienced by pregnant and lactating women can reduce milk flow, which pushes women to feed infants less nutritious alternatives. This interruption in breastfeeding practice increases the risk of diarrhoea and other diseases, especially for infants under six months (Nutrition Sector).

## Education

At least 10,000 children are likely to be prevented from participating in **education activities** because at least 244 Temporary Learning Centres (TLC) have been identified as being located in areas of high risk will need to close (Education Sector). Alternative ways to deliver education, such as shared use of alternative spaces, mobile learning and radio-based teaching are being explored (ISCG 27/01/2018, UNHCR, ADPC and IOM 21/01/2018).

There are concerns that TLCs which remain open will be appropriated as shelters preventing learning programmes and putting, facilities and teaching and learning materials at risk of damage.

**Attendance** is likely to decrease due to school closures, and difficulties accessing education facilities by both children and teachers. This is concerning as the provision of education is already challenged by multiple factors including the period of time children have been out of school. The majority of Rohingya children currently do not go to school (Education JNA 01/2018). A further negative consequence of reduced school attendance is that children have a greater likelihood of being exposed to protection concerns including trafficking.

## Protection

**Risk of injuries** will increase during the monsoon. Injuries from landslides are reported every year in both Ukhia and Teknaf. Damage to structures, particularly shelters, could result in injuries and deaths amongst the population in camps.

Displacement and a rise in protection concerns are often linked. Congestion in areas less affected by floods and landslides is likely to increase protection concerns, particularly for women and children as they come into close contact with people they are not familiar with.

Spontaneous displacement during the rains may lead to **family separation**, especially a risk for children, as they can become lost from their parents and unable to find them in new locations. 1,998 unaccompanied and separated children have been identified as of 11 March (UNICEF 14/03/2018). School closures are likely to lead to more unaccompanied

children spending time playing or looking for work or food. When children attend school, they benefit not just from an education but also from the safety and protection schools provide.

As more people **share latrines** (see WASH), protection concerns will increase. In October 2017, 50% of women reported that they feel unsafe in camps, particularly when using latrines and washrooms (Child Protection sub-sector 18/10/2017).

**Protection service provision** is likely to be disrupted by access constraints. Access to safe spaces for women and children is likely to decrease or become more challenging for both the refugee population and the staff of these facilities. This could set back gains programmes have made in raising awareness of these spaces and generating trust. Lack of access to general services (e.g. food, NFIs, health), particularly for women and girls, may result in the use of negative coping mechanisms in the long term including trafficking and early marriage.

**Elephant activity** increases during the rainy season as elephants look for food. This increases the risk of attacks and possible casualties. Between September 2017 and March 2018, elephants have been the cause of at least ten deaths of Rohingya in Kutupalong-Balukhali camps (Dhaka Tribune 02/03/2018).

People with physical vulnerabilities (people with disabilities, older people) generally live in low-lying parts of the sites in order to be able to access service easily and not have to traverse the network of earthen stairs and slopes. These areas are at risk of floods, structures are likely to be damaged, and debris and sewage is likely to slide down from likely to receive debris and sewage sliding down from the higher areas. People with physical disabilities and older people in these low-lying areas face the double risk of being in areas affected and not being able to easily move to either access services or get out of the area, they are therefore likely to rely on dysfunctional infrastructures, posing severe sanitation and health risks.

## Preparedness and pre-positioning

Pre-positioning of aid (food, tarpaulins, ropes and bamboo to reconstruct shelters) is recognized as essential. Stock-piling is limited due to insufficient storage space and security concerns. 24-hour staffing of facilities is currently not possible due to curfews in camps and the lack of provision for employing the refugees.

Porters are being used by agencies to deliver relief items and help people move around in camps. A system of mobile units will be developed to move around camps during the monsoon. Although transport by foot is the most effective form of movement in the monsoon, it is likely to be severely hampered by muddy pathways.

Under the leadership of CwC, sectors are compiling a list of key safety messages to disseminate to the Rohingya population in camps. Security and safety committees are being trained for emergency response including search and rescue. Particular attention needs to be given to ensure all people receive messages, e.g. adolescent, girls and women could not be accessed during diphtheria campaign due to the fact that many of them observe purdah and do not come out of their shelters.

## Coordination of disasters

Disaster management in Bangladesh is the responsibility of the Ministry of Disaster Management and Relief (MoDMR), which has the responsibility of coordinating for coordinating disaster response efforts across agencies. The GoB has a well-developed system of responding to disasters including monsoon floods and landslides which extends to the local level. Coordination of any disaster response in the Rohingya camps will come under the ISCG and RRRC and so the degree to which other experienced government and non-government actors in Bangladesh will be involved remains unclear.

NPM-ACAPS Analysis Hub is supported by

