

# ROHINGYA CRISIS

## Pre-monsoon review

Humanitarian actors expect operations to be seriously impacted during the rainy season in Cox's Bazar. This will result in interruptions in humanitarian operations including life-saving services such as ambulances and on-going aid such as food distribution. Heavy rains, brought annually by the pre-monsoon and monsoon, are expected to cause major access constraints to sites in both Ukha and Teknaf, as mud roads become impassable, footpaths slippery and earthen stairs and slopes become dangerous and potentially collapse. Rains are likely to flood and damage shelters and infrastructure including health and WASH facilities. As a result, population movement towards areas that are less affected by rains is expected. Due to the scarcity of space in sites, official relocation will be limited and evacuations will not take place: most movement is expected to be spontaneous and, at first, local. This displacement is likely to result in further overcrowding, bringing with it the increase in a range of interrelated risks including disease transmission, and protection concerns as well as the overburdening of services. Damage to WASH infrastructure is likely to exacerbate poor sanitation conditions and water contamination, increasing incidence of water-borne diseases. There is the potential for cyclones during April-May and this would further exacerbate humanitarian needs (cyclones are addressed in a separate document).

In preparation for the monsoon the allocation of safer land for life-saving services is being prioritised by the international community to ensure the best possible coverage of these services once the rains commence. Though necessary, this could be at the expense of medium-longer-term planning for other sectors including education and protection. Mapping is well underway to identify areas most at risk in an effort to move people out of the most vulnerable locations.

### PROBABILITY



### IMPACT



### NEED FOR INTERNATIONAL ASSISTANCE



## Scope of this report

This brief outlines the potential impact of rains, floods and landslides in the camps of Cox's Bazar. To do so, it draws on past impact of rains in these camps, as well as in Cox's Bazar and in Bangladesh more generally. It also draws on similar camp settings and natural disasters in other countries. Wherever possible, it is grounded in informal discussions with experts in their sector, meeting notes and field observations. **The 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.**

*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, 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 Ukha, 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.

## Key challenges

- **Aid provision** is likely to be disrupted because of physical access constraints. Roads in the camps are made of clay and may become impassable with heavy rains. If key roads such as the Military Road crossing the Kutupalong-Balukhali expansion becoming impassable, access to most parts of the site, home to **559,400 people**, is likely to be severely reduced. 73% of majhis in camps and camp-like settings report that their block is only accessible by foot, where people rely only on clay footpaths, which will become muddy and difficult to use, increasing time and difficulty in accessing services. The result of these access disruptions will be increased humanitarian needs.
- **Sanitation** conditions are expected to significantly deteriorate. Latrines are at risk of overflowing and those constructed on hills could be washed away by rains or landslides. Around one third of majhis in camps and camp-like settings reported that only about half of people in their block have access to sanitation facilities, and 13% reported that only some people have access to latrines. The main challenges are that latrines are not gender-segregated, are full, or dysfunctional. Overflowing latrines risk spread of faecal matter around the camps, which increases the risk of faecal-oral contamination.
- **Water** contamination and reduced access to drinking water are likely to be exacerbated during the monsoon. As of December 2017, 81% of water samples collected from households were contaminated with *E.Coli*. Water contamination is likely to increase during the rains, as unprotected tube-wells could become contaminated through seepage, decreasing water quality and increasing health concerns. As of March, 20% of tube-wells were reported as not operational.
- **Shelters** built against the hills and in the valleys prone to floods are at high risk of being washed away, posing severe protection concerns and increasing shelter needs. Overall, 91% of mahjis report that people in camps and camp-like settings live in jhupri houses and 9% in kutcha houses.<sup>1</sup>These are fragile materials and unable to withstand rains. Shelter damage is likely to prompt displacement and overcrowding.
- **Lack of land** is a major issue, as useable space within the camps is already limited and is likely to decrease with the rains, increasing congestion. Shelters as well as services located in water-affected areas will become unusable.

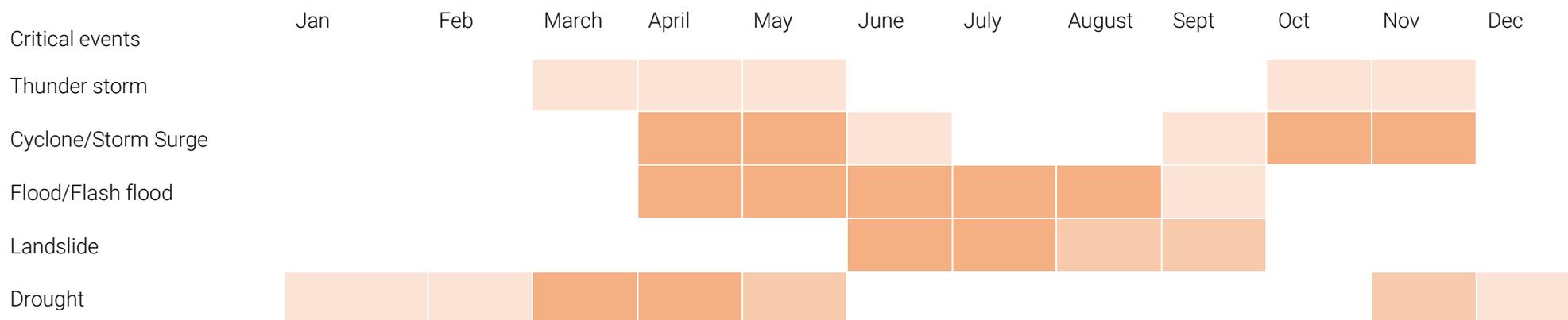
People are likely to move to safer areas less affected by rains. Congestion will put strains on the services that are located on unaffected areas

- Deteriorating sanitation, contamination of water, standing floodwaters and congestion create ideal conditions for the **spread of water-borne diseases**, vector-borne diseases and respiratory problems. Reduced access will further complicate all aspects of healthcare provision including access of patients to health facilities and movement of ambulances. Health facilities are likely to be overwhelmed and to be unable to respond to all health needs.
- **Food shortages** will result if there are disruptions in food distribution because of the high dependency on food aid (91%) from humanitarian actors. Food shortages will be compounded by higher prices in the markets, which will also be impacted by difficult access, and lead to negative coping mechanisms, such as sharing food and reducing meals per day. This will have a negative impact on already high malnutrition rates.
- Increased morbidity and mortality, compounded by potential food shortages, will drive already extremely high malnutrition rates (23.4% GAM and 7.5% SAM in Kutupalong Refugee Camp).

<sup>1</sup> Jhupri houses are shacks made mostly of straw. Kutcha houses are temporary houses made mostly of mud.

# Rainfall

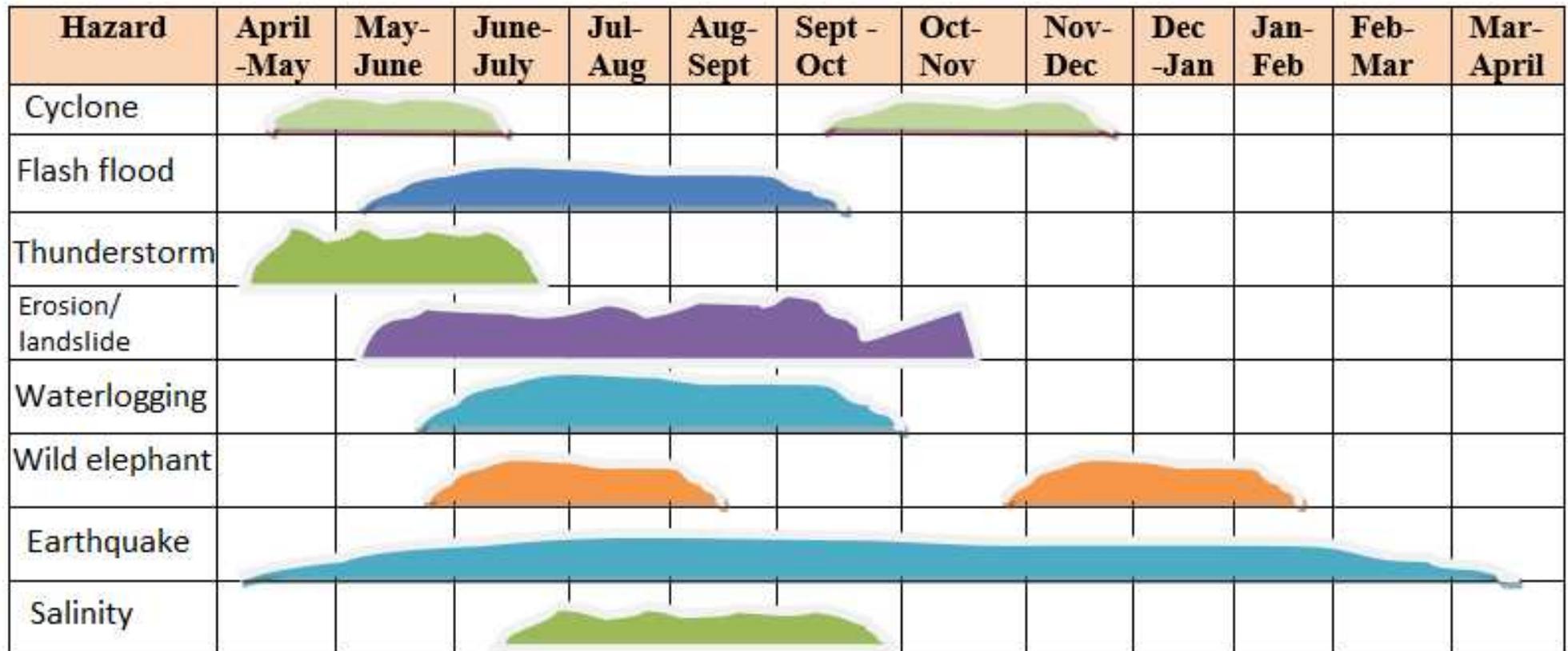
Key seasonal data Cox's Bazar district	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Average rainfall precipitation 1977-2013 mm	4.68	16.68	29.42	83.59	301.27	802.38	915.45	690.70	380.49	222.58	64.79	11.45
Average Wind Speed 1985-2013 Celsius Km/hour	5.13	5.80	6.41	6.92	7.22	8.35	8.41	7.47	5.46	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

## Hazard Calendar for Cox's Bazar District

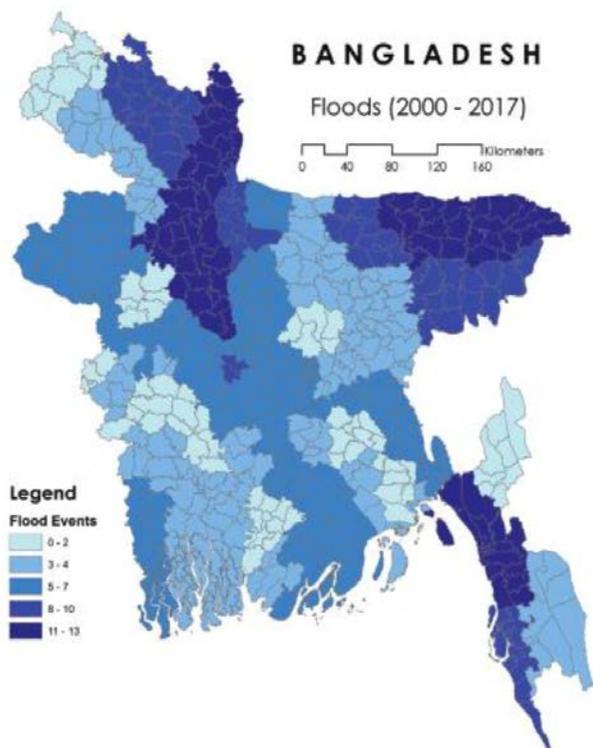
From District Disaster Management Plan: Cox's Bazar (2014)



## Introduction: The monsoon in Cox’s Bazar

Cox’s Bazar records heavy rains every year and is one of the most flood prone areas of Bangladesh (see map below). Flash floods (rapid flooding from heavy rains) are the most common type of floods in hilly southeastern areas of Bangladesh (Shaw *et al.* 2013). Ramu, Cox’s Bazar Sadar, and Chakaria upazilas generally record the highest number of people affected by floods across Cox’s Bazar district during the monsoon.

### Floods in Bangladesh 2000-2017



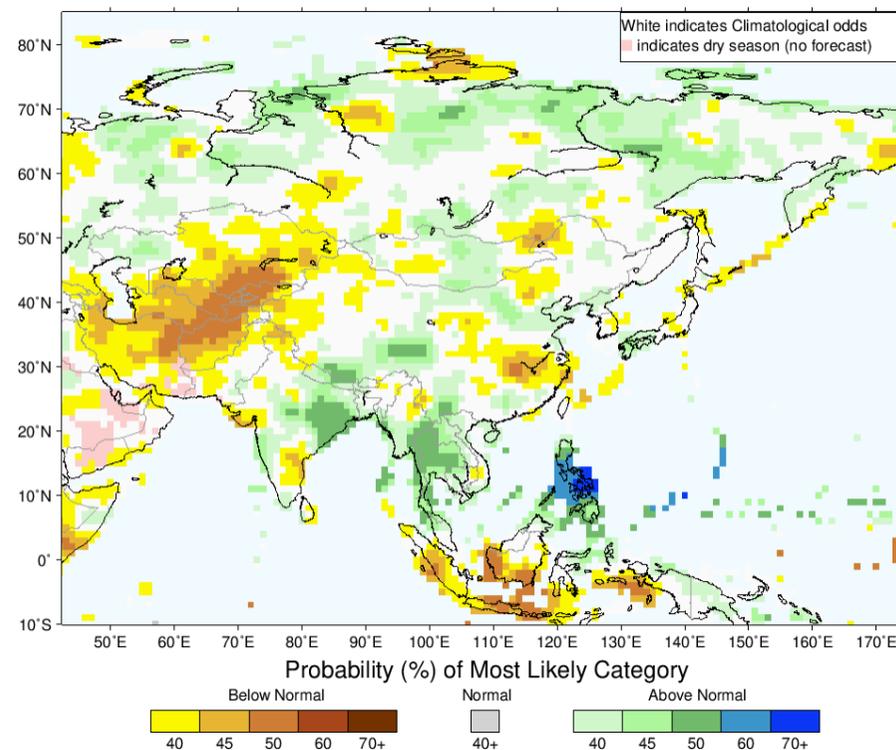
Source: Seeds and Cred 04/01/2018

The monsoon season lasts from June–September, with its peak between June and August, according to the rainfall table above. However, first rains (the pre-monsoon) are expected in late March. From May to August the rains frequently result in flash floods and landslides. The risk of floods and particularly, of landslides, will increase throughout the season, as the ground will be increasingly unable to absorb large amount of water.

Rain forecast for March-May 2018 estimates a 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).

### Rainfall forecast April-May-June 2018

IRI Multi-Model Probability Forecast for Precipitation for April–May–June 2018, Issued February 2018



Source: IRI 02/2018

This brief focuses on the impact that the pre-monsoon rains (late March–June) and the monsoon (June–September) are likely to have in the Rohingya sites in Ukha and Teknaf upazilas, where most Rohingya live. This refers to camps or camp-like settings as defined by the Inter-Sector Coordination Group (ISCG) based on the new camp boundaries: the Kutupalong-Balukhali expansion, Thangkhali (camp 13), Hakimpara (camp 14), Jamtoli (camp 15), Bagghona/Potibonia (camp 16) in Ukha, and Chakmarkul, Unchiprang, Leda MS and Nayapara Refugee Camp in Teknaf.

## Humanitarian and operational constraints

- **Building of semi-permanent or permanent structures** in any of the sites is prohibited by the GoB. This limits humanitarian actors' ability to build structures to withstand weather conditions. Permission for construction work is necessary before work can begin; this means that repairs to damaged roads may take longer than expected while permission is in process.
- **Hard to reach areas** in sites are likely to be completely cut off as they are only accessible by small pathways which will become muddy. Hills are also likely to be harder to navigate.
- **Acquiring an FD7**, a permit for non-UN international organisations to bring in foreign donations to work in the camps, from the Bangladeshi government's NGO Affairs Bureau is difficult. An increase in visa checks up on entry to the camps, and the detainment of international aid workers have been reported. Obtaining official work visas can take a long time and be challenging, especially for NGOs. National staff members are being heavily relied upon to deliver response however there are concerns that there may be an overall capacity gap if international staff access continues to be restricted during the monsoon.
- **The authorities may restrict aid distribution.** Anecdotal reports suggest that the Government of Bangladesh restricted aid distribution near key roads of the camps during the September 2017 rains, in order to incentivise Rohingya people to stay in camps rather than attempt to move out (Reuters 17/09/2017).

## Flood and landslide risks in camps

Since 25 August 2017, 671,000 people have arrived in Cox's Bazar (NPM round 8). Ukhia upazila hosts most Rohingya and the largest camp, known as the Kutupalong-Balukhali expansion site. Teknaf upazila hosts a smaller number of Rohingya in long standing formal camps, and newer arrivals in spontaneous sites and host communities. The impact of the 2018 monsoon is thought to be different due to the increase in population size, and the fact that most of these people live in vulnerable areas and in shelters made of temporary materials.

Ukhia upazila, where most Rohingya reside, is not prone to riverine flooding (overflowing of a river inundating adjacent land). However, heavy rains have been known to result in flash floods and landslides, and lead to damages affecting both the local Bangladesh community and the Rohingya population, as highlighted by the September 2017 rains

(Reuters 17/09/2017). Heavy rains may also result in waterlogging (stagnant water unable to recede) as the soil struggles to absorb water in the sites.

In contrast, Teknaf hosts Rohingya on flatter land along canals beside the coast, making it prone to riverine flooding in addition to flash floods. Both types of floods and landslides are likely to result in damages in the sites and exacerbate humanitarian needs of Rohingya people.

## Topography

The significant increase in population has altered soil structures complicating water absorption and heightening the risk of landslides. While topography varies across the sites of Ukhia and Teknaf, already fragile soils made of clay and sand have been further weakened by:

- **Hill cutting**, flattening hills to build on the land, accelerated with the high number of people who self-settled during the influx. Hill cutting alters the natural slope of hills, making them much steeper than they would naturally be. These hills are 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). As vegetation holds soil in place, its removal decreases rainwater absorption and increases runoff, which accumulates as floodwater in lower areas.
- **Building of infrastructure** on weak soils reduces absorption and increases runoff.

The Kutupalong-Balukhali expansion is particularly hilly and largely devoid of vegetation that helps hold fragile soils. These areas are currently home to 559,400 people. Of these an estimated 102,000 people are at risk of being directly affected by landslides and floods (85,000 for floods and 23,000 for landslides) (UNHCR, ADPC and IOM 21/01/2018, UNHCR 02/02/2018).

These experts suggest the number of people at risk of being directly affected by landslides is likely to be even higher because less steep slopes than those considered initially are now also considered to be at risk of collapse. New mapping is underway. For the purposes of this brief however, the published mapping will be taken into account as this is the best estimate to date.

Sites in Ukhia and Teknaf.

Topography of the Kutupalong-Balukhali expansion.



Source: NPM 14/02/2018

## Floods

Pre-monsoon rains, and the monsoon, are expected to result in both flash flooding and waterlogging in the sites of Ukha. While these are threats that will be faced by everyone living in Cox's Bazar, the Rohingya will be especially vulnerable due to the poor standards of shelter and shallow depth of latrines and wells. At least 85,000 people are estimated to be living in areas of the Kutupalong-Balukhali expansion and Thangkhali at risk of being directly affected by floods in the camps, mainly in low-lying areas (UNHCR, ADPC and IOM 21/01/2018). While all areas of the Kutupalong-Balukhali expansion are vulnerable to floods, most particularly singled out by the flood and landslide mapping (map 1) and the flood mapping (map 2) were:

- The eastern areas of the Kutupalong-Balukhali expansion, where over 30,000 people live in each of the camps,
  - Camp 8W
  - Camp 8E
  - Camp 7
  - Camp 9

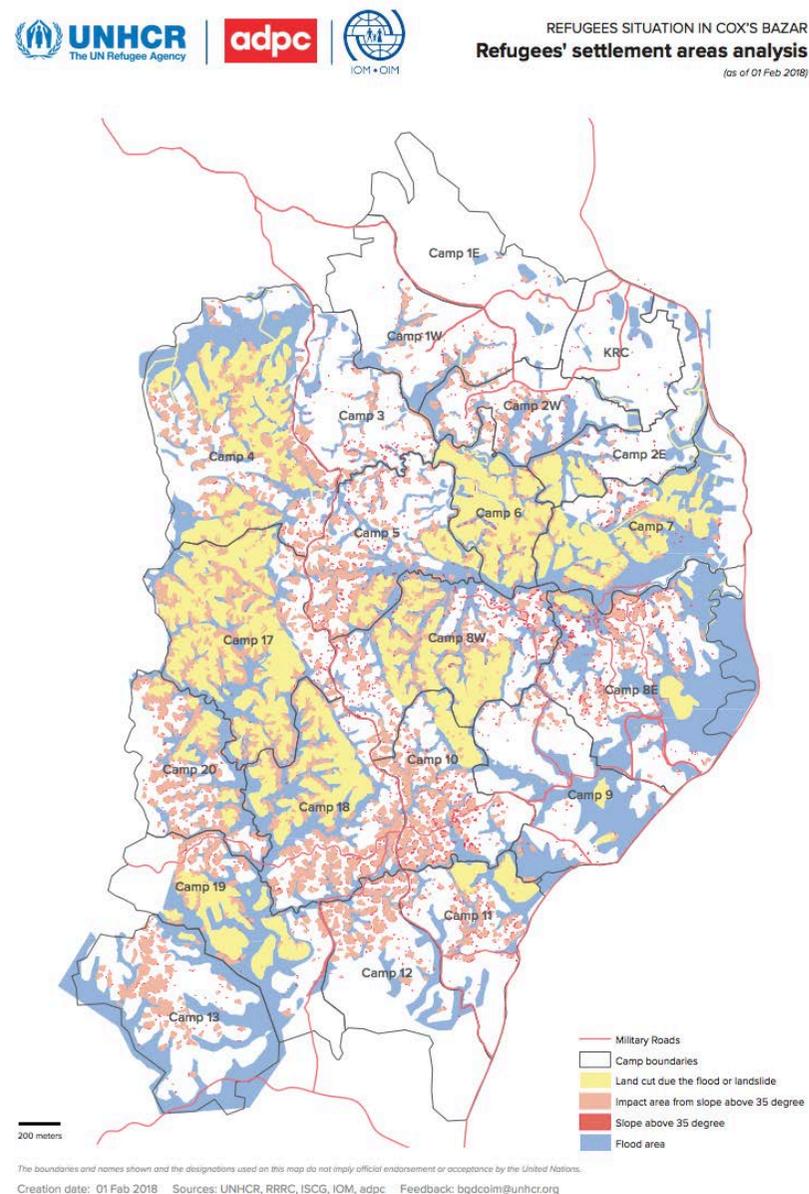
The eastern camps of the Kutupalong-Balukhali expansion are among the most densely populated overall, with less than 15m<sup>2</sup> of space per person, far lower than the minimum Sphere indicator of 45m<sup>2</sup>per person (see map 3).

- South-western areas, including:
  - Camp 11,
  - Thangkhali, (camp 13)
  - Camps 18-20

While these areas are generally less densely populated than the east of the camps, population numbers in some camps are still high with over 44,500 people living in Thangkhali (ISCG 22/01/2018, UNHCR, ADPC and IOM 20/01/2018, NPM Round 8).

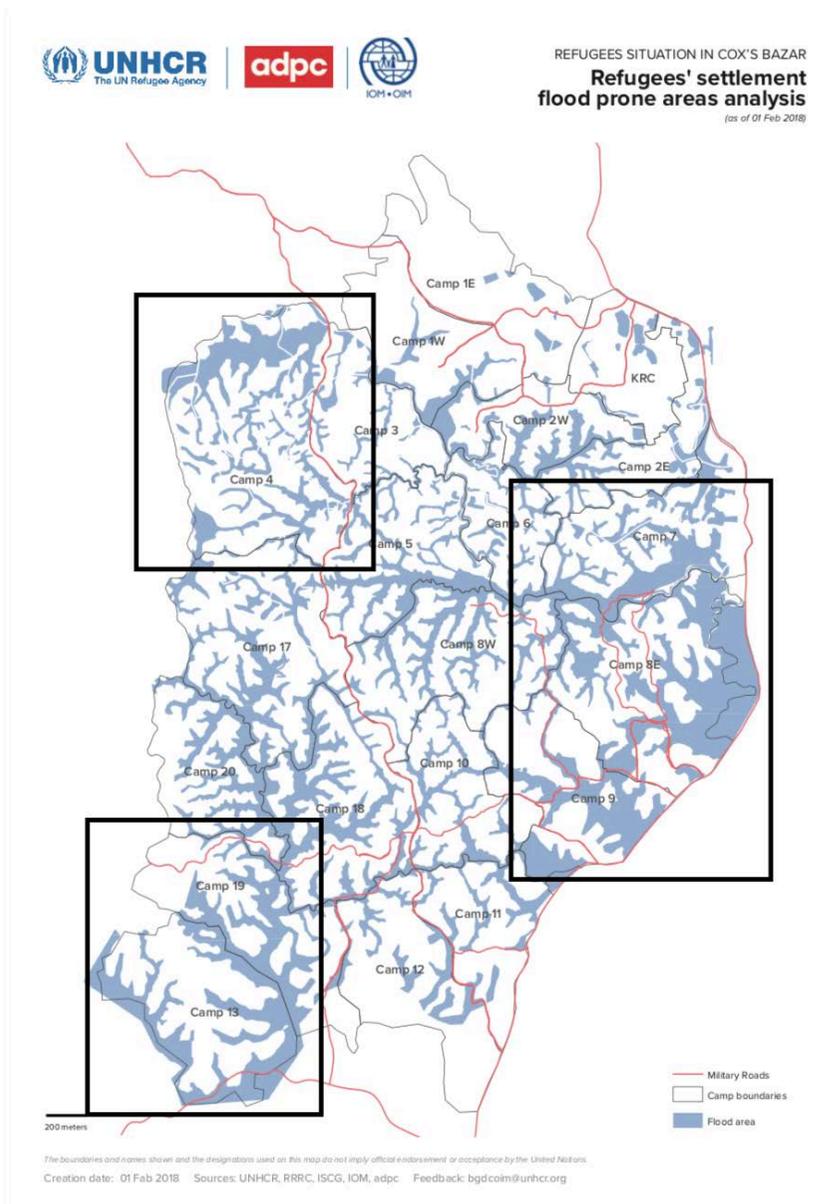
- In the northwest, camp 4 stands out as prone to flooding, and is less densely populated than those in the east (UNHCR, ADPC and IOM 20/01/2018, NPM Round 8).

Map 1: Flood and landslide prone areas in the Kutupalong-Balukhali expansion and Thangkhali.



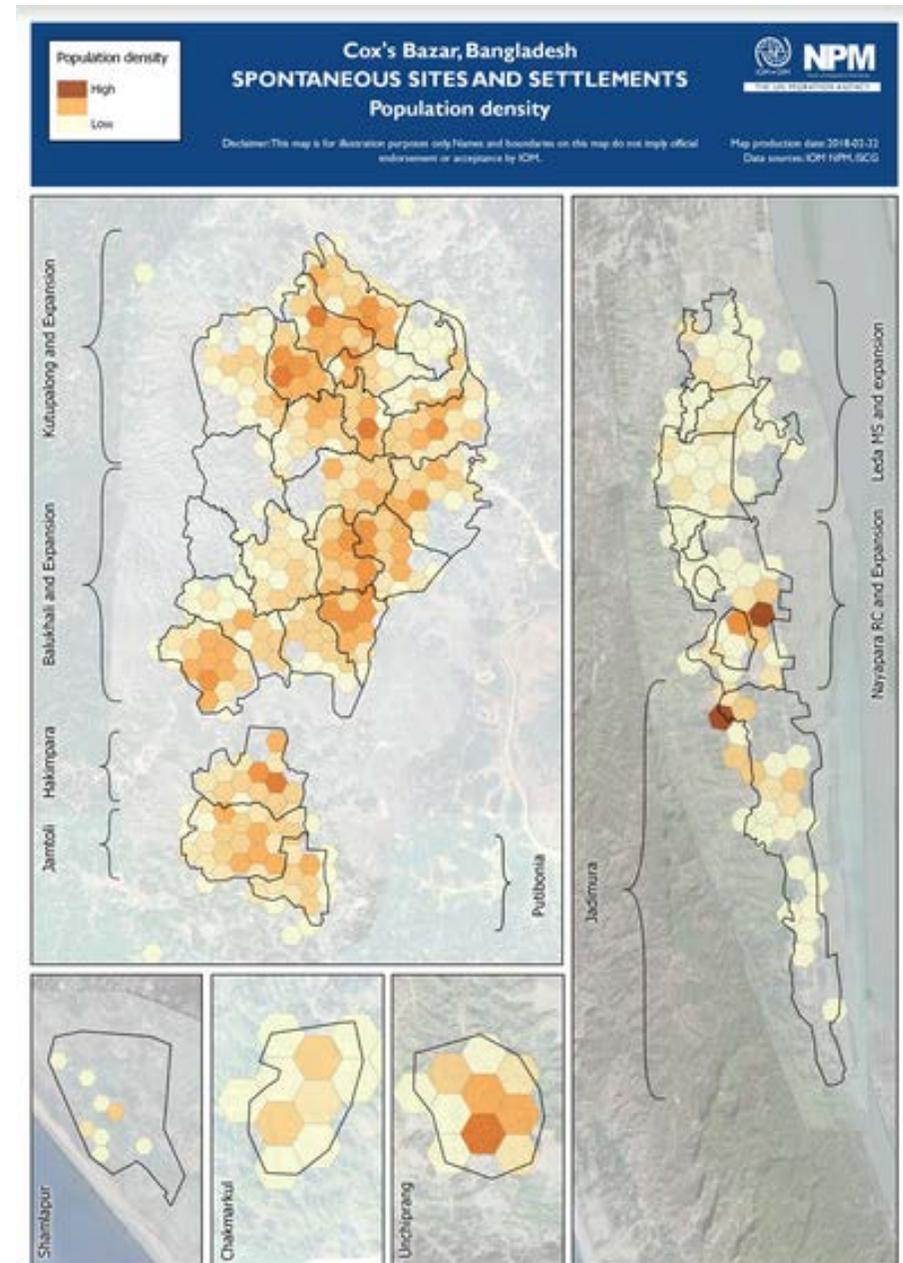
Source: UNHCR, ADPC and IOM 20/01/2018

Map 2: Flood prone areas of Kutupalong-Balukhali expansion and Thangkhali.



Flood-prone areas are highlighted in blue.  
Source: UNHCR, ADPC and IOM 20/01/2018

Map 3: Density maps of sites.



Source: NPM round 8

Sites in Teknaf will also be affected by heavy rains and are at risk of flooding with some areas also at risk of landslides, potentially exacerbating the poor living conditions. Although fewer Rohingya 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 (see map 3) will still be significant. Over 21,310 people live in Unchiprang, 9,320 in Leda MS and 24,790 in Nayapara RC (NPM round 8).

Unchiprang and Chakmarkul are both very hilly and are at high risk of floods and landslides. As with sites in Kutupalong–Balukhali, hill cutting and deforestation, used to make space for new arrivals have eroded the soil, weakening its capacity to absorb water. Shelters and other structures built on the side of hills risk collapse and specific plans to relocate the people living there have not been made.

Unlike most of the areas where the Rohingya now live, the areas on which the Leda MS is situated is flat and prone to river flooding. Several canals run through the original site and its expansion, these are likely to overflow with heavy rains. While the main site of Leda MS has existed since 2008 and has developed slightly sturdier infrastructure, the expansion sites, which accommodate the August 2017 influx, consist of fragile infrastructure and very poor housing. These people are likely to be particularly affected by heavy rains and floods.

## Landslides

In Kutupalong-Balukhali expansion and Thangkhali, 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, according to the flood and landslide mapping (see map 1). The mapping takes into account slopes that are at a 35-degree angle but does not take into account small localised landslide risks as a result of the newly built infrastructure. This means that the number of areas at risk could be even higher than suggested above. As noted above, a revised mapping for landslides is underway, taking into account less steep slopes.

With 31% of households reporting at least one member with a physical vulnerability (older persons, people with disabilities etc.) rapid movement out of the area at the time of danger will be challenging (UNHCR, ADPC and IOM 21/01/2018). Specific needs of these people are likely to increase, as the monsoon will make their movement particularly challenging.

## Anticipated sectoral needs

### Access and services at risk

**Roads** to enter the sites, and within sites, are made of clay. During heavy rains these roads will become muddy and damaged (Reuters 17/09/2017). They will require continual repair or become unusable. Hilly roads mean that trucks are likely to be unable to drive up and down without sliding. Soil erosion on the sides of the road is a concern as the roads risk collapse. Roads in sites have largely been built without culverts to drain water, consequently, with water accumulating on either side, the roads themselves could become like dam walls. As a result, low-lying areas along roads are at particular risk of floods, cutting whole areas and people off from aid, and becoming large areas of stagnant water. Key infrastructure such as bridges are likely to collapse if they have not been constructed specifically to withstand the rains. 75% of bridges (149 out of 199) in Kutupalong-Balukhali expansion and Thangkhali have been found to be at risk of being affected (UNHCR, ADPC and IOM 21/01/2018).

Most roads in the Kutupalong-Balukhali expansion cross the eastern and southern areas of the site. These roads provide the major access routes for humanitarian actors delivering services and provisions. These roads will become increasingly difficult to use throughout the monsoon as they are on hilly terrain and will become dangerously slippery. Even if they remain accessible by 4x4 vehicle, journey times will increase. Smaller pathways within the camps, which are mostly only traversable by foot, are likely to become difficult to use, as they become slippery or completely submerged. This will make access to any supplies or services much more difficult for camp residents; particularly older people or people with disabilities.

The road crossing the Kutupalong–Balukhali expansion from north to south, referred to as the Military Road, remains mostly unpaved and is of major concern as it is the main access route into the camps (see map 4). On-going efforts to pave this road from both the north and the south are underway, but it is unclear whether this will be finished before the rains start. Should it not be fully paved before rains start, and if bridges in the southern half of the Kutupalong-Balukhali expansion are not completed, access to the centre and western parts of the camps could be completely cut off. While roads have been built by IOM and UNHCR to access the eastern side of the camp, they have less capacity to accommodate heavy traffic and large trucks and will not be sufficient to make up for the Military Road, should it become impassable.

The challenges of the monsoon will not be limited to the rainy months, after floodwaters recede roads and pathways can be expected to require significant work to clear and repair before they are fully functional.

**Service provision centres** are likely to be damaged by heavy rains and flash floods, as most infrastructure is temporary, made of bamboo and tarpaulin. Building permanent infrastructure is prohibited. Services are likely to be interrupted due to the increased difficulty in conducting distributions, and due to limited capacity to supply sites with aid.

As demonstrated by the squares in the density map of services at risk (map 4), services in these areas of Kutupalong-Balukhali expansion and Thangkhali are most at risk of being directly impacted by floods and landslides. No services are considered to be without risk.

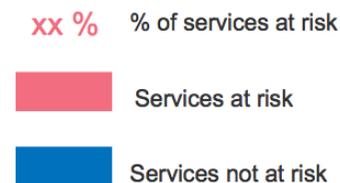
It is likely that people will face severe constraints in **accessing distribution sites** and essential services, as footpaths become muddy and movement becomes more challenging. According to NPM round 8, 73% of majhis interviewed in camps and camp-like settings reported that their block was only accessible by foot, and 8% reported that there is only limited access through small vehicles (NPM round 8).

- In the Kutupalong-Balukhali expansion and Thangkhali: Thangkhali in the south, and camp 8E, camp 8W, camp 9 in the east are likely to be severely difficult to access during rains, as they are at high risk of floods (see map 2), and an estimated 80% of people in each of these camps only rely on footpaths to move around.
- In Teknaf: Unchiprang and Chakmarkul in Teknaf are also of high concern as they are mostly only accessible by foot and the terrain is challenging, posing risks of floods and landslides.

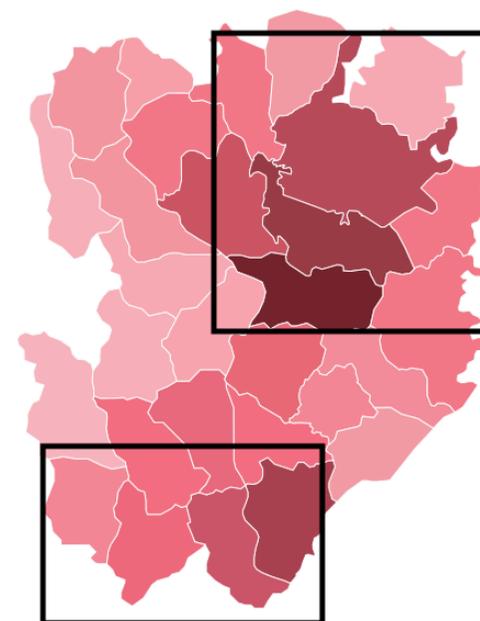
As people are likely to move towards the roads to acquire assistance and high ground, it is possible that they may block roads. This could cause tensions with local authorities who may adopt crowd control measures.

Muddy footpaths and damaged staircases and are likely to further limit people's access to services, particularly for older people and people with disabilities. This will increase people's needs overall with the greatest challenges facing the most vulnerable. As low-lying areas become inundated, hilltops and facilities located there may become islands.

**Map 4. Density map of the services at risk in Kutupalong-Balukhali expansion and Thangkhali.**



#### DENSITY MAP OF SERVICES AT RISK



Source: UNHCR, ADPC and IOM 21/01/2018

## Water, sanitation and hygiene (WASH)

**Latrines** of most concern are those constructed on hills that are likely to collapse and those in lowest lying areas that are likely to flood and overflow. This risk is heightened when latrines are unsealed, making low-lying areas likely to effectively become open sewers. People living in low-lying areas, many of whom are there specifically because they have restricted mobility, 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 Thangkhali (UNHCR, ADPC and IOM 21/01/2018). As the latrines in flood prone and landslide prone areas mappings (see map 5 and 6) below illustrate, a high number of latrines in the areas highlighted by the squares are in flood-prone and landslide-prone areas.

An additional issue is the design of latrines. Pit latrines have often not been built with the five feet minimum depth required and are thus too shallow and prone to overflow. An IOM WASH assessment covering four areas of the Kutupalong-Balukhali expansion found 38% of latrines to be less than five feet deep (IOM 12/2017). Furthermore, many latrines have been built too close to tube-wells: as of March 2018, over 30% of latrines were located less than ten meters away from water points across the camps (WASH Sector 03/2018). This increases the risk of faecal contamination of soil and thus water sources, which in turn increase the risk of disease (Devex 17/11/2017, Health Sector Bulletin 31/12/2017).

As latrines become damaged and full during the rains, there will be a reduced number of functional latrines available. As of February, access to latrines is already a challenge with the person to latrine ratio exceeding the Sphere indicators of 50 people per latrine in about half of the zones<sup>22</sup> in the Kutupalong-Balukhali expansion (WASH Sector 08/02/2018). Further, around one third of mahjis in camps and camp-like settings reported that about half of people in their block have access to sanitation facilities, and 13% reported that only some have access to latrines. Barriers reported are lack of gender-segregated latrines (reported by 64% of mahjis), full and not functional latrines (reported by 47% of them) and unclear and unhygienic latrines (reported by 42% of them) (NPM round 8). These barriers are likely to increase, as:

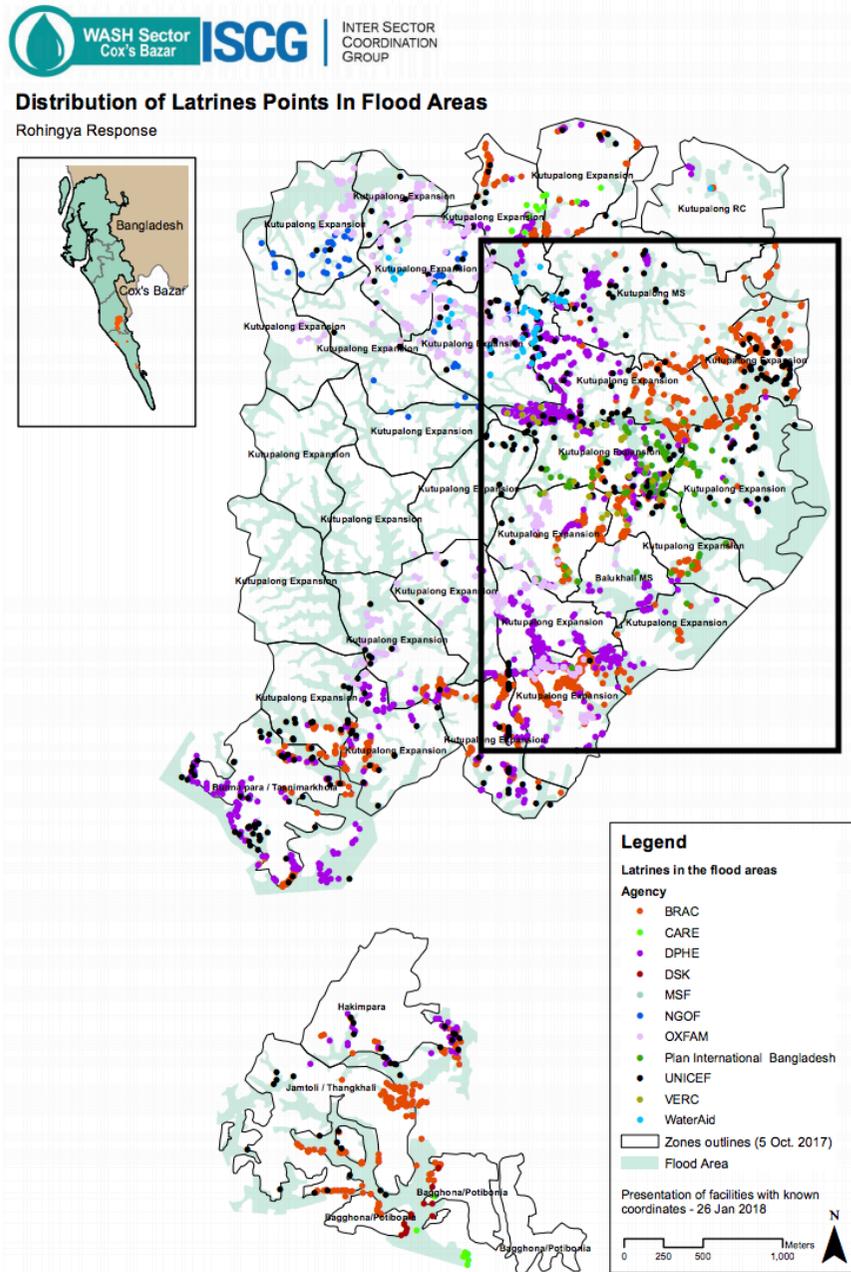
Sharing of latrines will increase during the monsoon, as a smaller number of functional latrines become available, further exacerbating protection concerns in sanitation facilities. As of November 2017, an estimated 60% of households used communal latrines, (40% used family latrines) (UNHCR HH survey 11/2017).

Operations to decommission full latrines and dig new latrines will become much more difficult in the muddy conditions the monsoon will bring. 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.

Insufficient functional latrines available is likely to increase the use of open defecation. In October 2017, nearly one third of newly arrived Rohingya families assessed by IRC and RI reported practicing open defecation (IRC and RI 10/10/2017). An increase in open defecation practices combined with the raw sewage from flooded latrines increases the risks to health from faecal-oral contamination. Increase in open defecation practices is particularly concerning for young children, whose excreta carries more risks of diseases and who are often more likely to practise it: 78% of mahjis in camps and camp-like settings reported that open defecation is a normal practice for children in their community (WASH Sector 03/2018, NPM round 8).

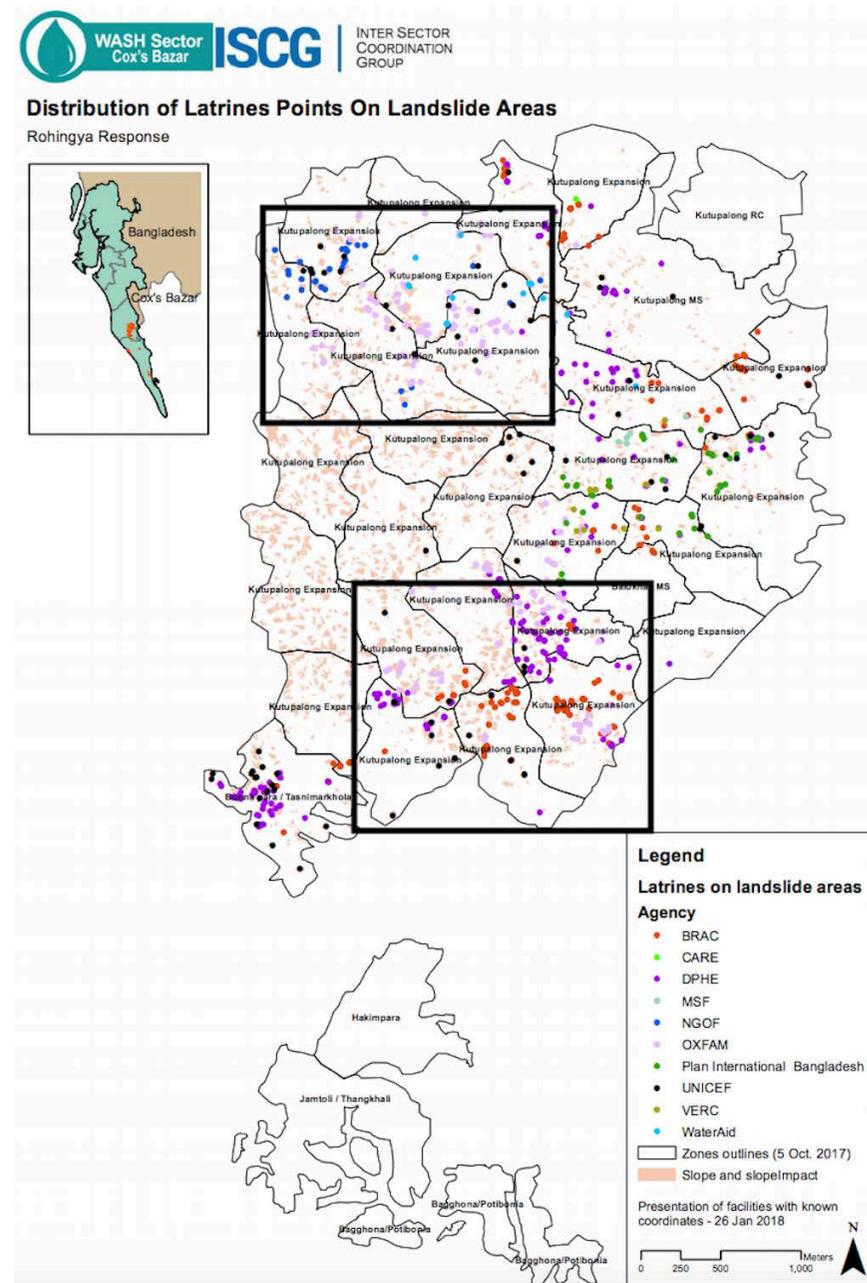
<sup>22</sup> New camp boundaries no longer refer to "zones".

Map 5. Latrines in flood prone areas as of 24 January 2018.



Source: WASH Sector 24/01/2018.

Map 6. Latrines in landslide prone areas as of 24 January 2018.



Source: WASH Sector 24/01/2018.

As of December 2017, 18% of latrines in sites assessed by IOM were considered full, and over half of these full latrines were shallow (less than five feet deep) (IOM 12/2017).

**Waste management** is likely to be more difficult during the monsoon as floods will impede desludging and decommissioning operations. Poor waste management is compounded by a lack of clear protocols on sludge management in the camps and an absence of available land.

Current monsoon preparedness activities include the decommissioning of sub-standard and full latrines. An estimated 8,000 latrines need to be decommissioned before the monsoon; 2,000 have been decommissioned as of March (WASH Sector).

**Water points** could be damaged by heavy rains, leading people to rely on less safe water sources. Several tube-wells are already dysfunctional, 20% of the 6,057 tube-wells across the camps in need of immediate rehabilitation or replacement as of March (WASH Sector 03/2018, WASH Sector 22/02/2018). An estimated 46% of hand-pumps and tube-wells are at risk of being directly affected by both floods and landslide in the Kutupalong-Balukhali expansion and Thangkhali, and 70% of unimproved water sources are at risk of being affected by landslides and floods (UNHCR, ADPC and IOM 21/01/2018). As the distribution of water points mapping (see map 7 and 8 below) shows, water points in the areas highlighted by the squares are in flood and landslide prone areas and are most at risk of being directly affected.

Current reasons cited by mahjis for reduced access to water points in camp and camp-like settings are lack of sufficient water points (reported by almost half of the mahjis in camps and camp-like settings), followed by long waiting time at water points (39%), long distances to water points (38%) and water points not functioning (34%) (NPM round 8).

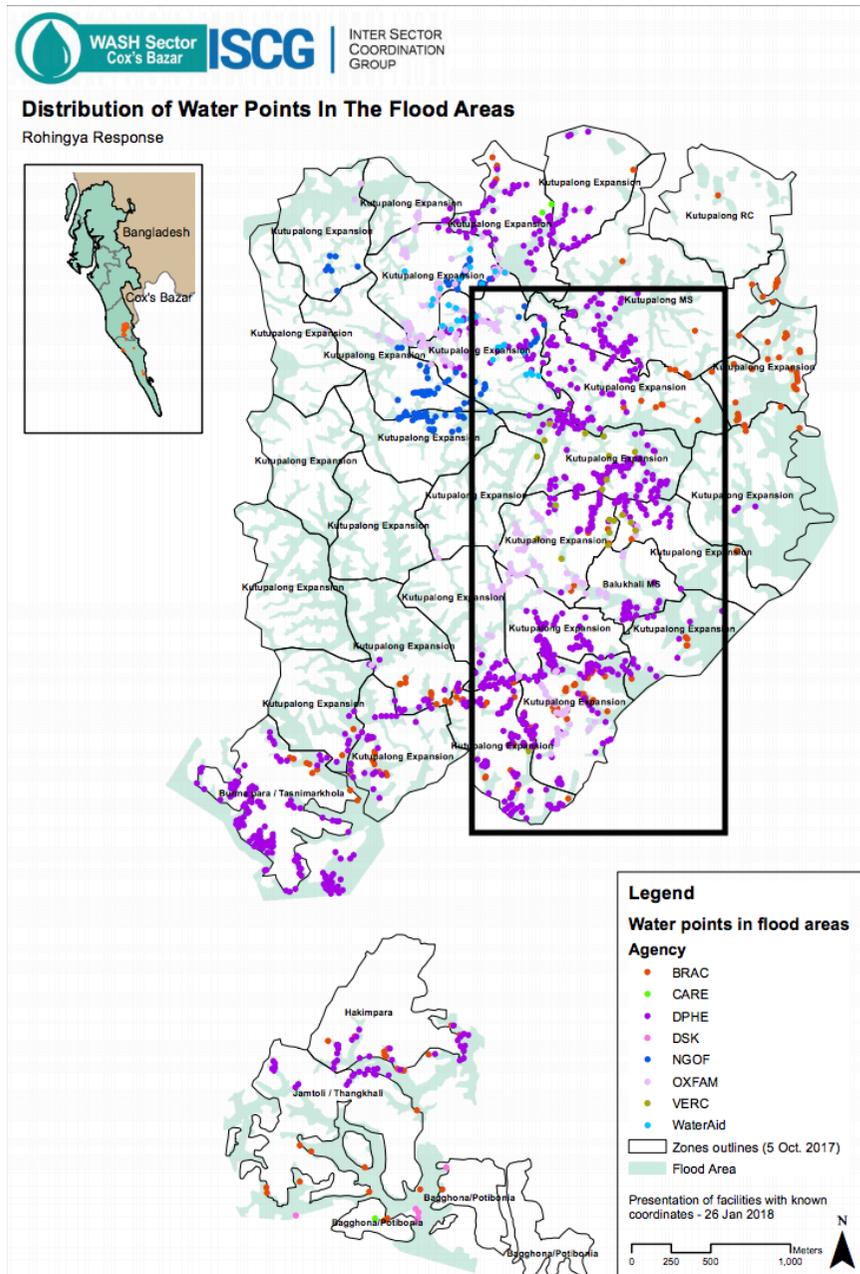
Of most concern in Kutupalong-Balukhali expansion and Thangkhali are camp 11 and Thangkhali, as they are in flood-prone areas (see map 2), and over a third of the population in each of these camps is likely to be affected by water access problems as of March. Similarly, in Teknaf, up to one third of people in both Unchiprang and Chakmarkul are likely 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).

**Water quality** at the household level is generally poor (Health Sector Bulletin 31/12/2017, ACAPS 11/2017). It will be more challenging to keep water storage containers clean and more challenging to treat water through means such as boiling. 81% of water samples collected from households during the third round of water quality monitoring were contaminated with *E.coli* (Health Sector Bulletin 31/12/2017, NPM round 7). Bucket chlorination at

the household level is being promoted but is unlikely to reach enough people due to time-constraints

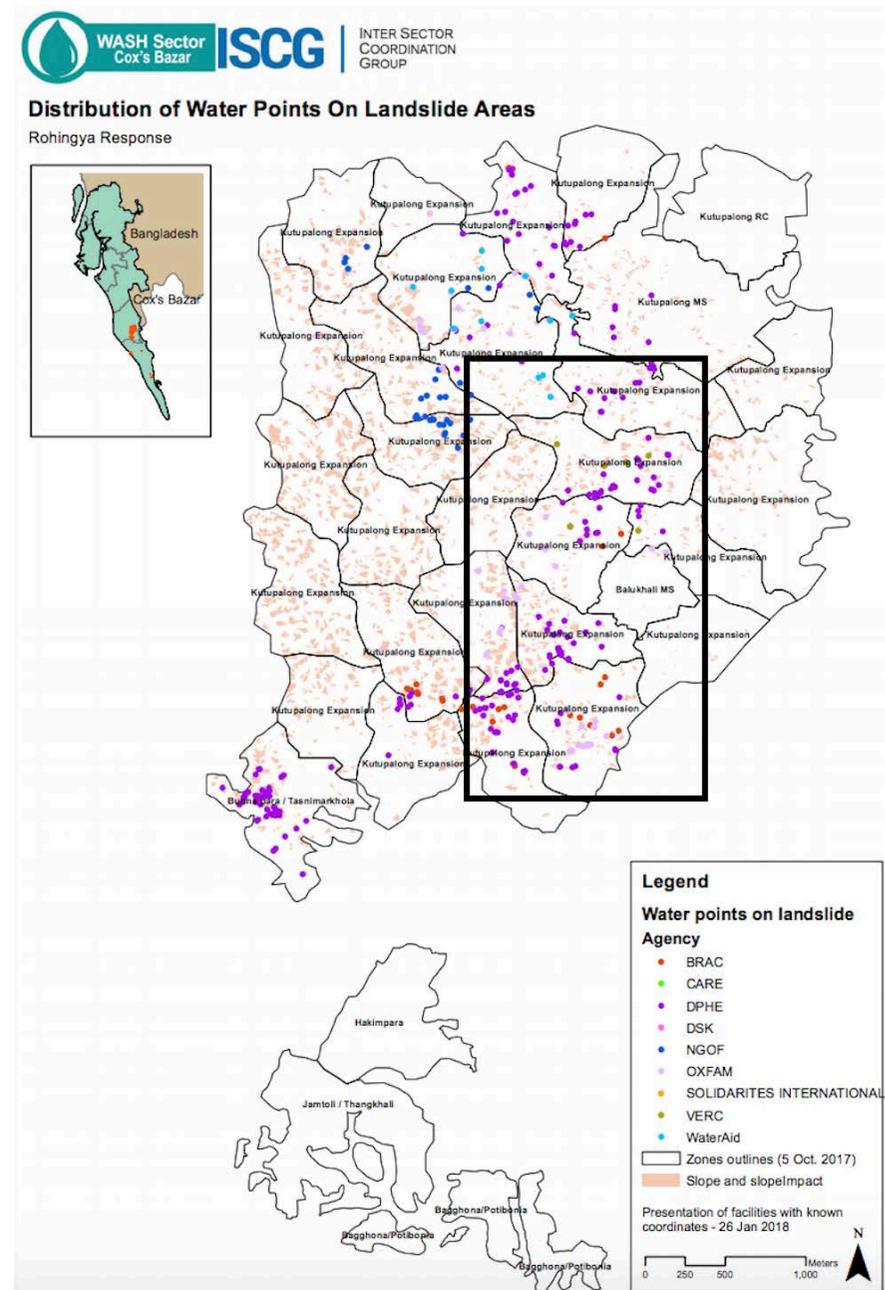
There is the risk that tube-wells which are not adequately protected could become contaminated and some risk that shallow tube-wells maybe contaminated through seepage, increasing health concerns. Low lying tube-wells installed in camps are likely to be inundated during the rains, contaminating the water point. 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.

Map 7. Waterpoints in flood prone areas as of 24 January 2018.



Source: WASH Sector 24/01/2018.

Map 8. Water points in landslide prone areas as of 24 January 2018.



Source: WASH Sector 24/01/2018.

Access to **bathing facilities** is likely to reduce during the monsoon with potential damage to infrastructure and restricted movement. As of November 2017, only one third of households of the Kutupalong–Balukhali expansion reported using a designated bathing facility. The remaining households rely on alternative places for washing, such as around hand pumps (UNHCR HH survey 11/2017).

31% of the majhis in camps and camp-like settings reported that only about half of the people have access to bathing facilities, and 13% said that only some have access to bathing facilities (NPM round 8).

An estimated 23% of washrooms are at risk of being affected by floods and landslides in the Kutupalong–Balukhali expansion, which could reduce available washrooms and increase hygiene concerns (UNHCR, ADPC and IOM 21/01/2018).

## Health

As staff do not live at the camps, difficulties accessing sites could significantly reduce health workers availability in camps and thus the **provision of health services**. Ambulance movement will be impeded and inaccessible pathways will hamper porter systems. Should access be completely cut, it will be difficult to replenish medical supplies (see Access). Health facilities are already unevenly distributed in the camps. Some health facilities are likely to be surrounded by water, effectively becoming islands (the Health Sector is describing these locations as landlocked – see map 9) (ISCG 25/02/2018) In the Kutupalong-Balukhali expansion and Thangkhali, health facilities at risk of becoming inaccessible are those highlighted by the squares in maps 9 and 10 below (camp 4, 17, 18, 6, 7, 8W).

**Health infrastructures** in camps are temporary structures, which may be damaged by heavy rains and floods. In the Kutupalong–Balukhali expansion and Thangkhali, 32% of fixed health posts and 20% of the primary health centres are at risk of being directly affected by floods and landslides (UNHCR, ADPC and IOM 21/01/2018). Most health facilities in flood-prone areas are highlighted by the squares on map 11 (camp 7, camp 8E, camp 9, camp 10, camp 11, Thangkhali (camp 13), Jamtoli (camp 15)). Flooding or damage to health infrastructure will reduce their capacity to provide healthcare, which is already constrained by lack of inpatient care and beds (ISCG 25/02/2018).

More 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).

In the Kutupalong-Balukhali expansion and Thangkhali, disrupted healthcare provision will be of particular concern in camps in camp 9, camp 8E, camp 7, and in Thangkhali (camp 13), as population density is high.

Sanitary conditions of health facilities on sites are likely to deteriorate, as unpaved floors become muddy and clean water scarce.

**Graveyards** are generally located on designated hills, and beside mosques. Anecdotal evidence suggests that in some cases bodies have been buried at the side of shelters due to lack of space or long distances to designated burial hills. Graves should be dug deep enough so as to not contaminate drinking water; however, it is likely that bodies have been buried close to the surface due to lack of means to dig and knowledge of minimum standards. Mud and potential erosion of hills from rains may degrade these graveyards and expose bodies, posing sanitation, health as well as psychological trauma from people's direct exposure to dead bodies. Dead body management will be challenging during the monsoon, as camps will be difficult to navigate.

**Cold and wet-related health issues:** Damage to shelters and a lack of dry clothes may lead to an increase in respiratory disease. During the initial influx, young children suffered from cold fever having been unable to change out of their wet clothes (Child Protection 10/2017).

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). The likelihood of dying, or Case Fatality Rate (CFR), was 0.09% as of end of November (WHO 26/11/2017). Children with respiratory problems should remain in health facilities for the duration of their treatments, as there are not enough inhalers to send home with families; any movement restriction is likely to further reduce access to this treatment and increase fatalities.

**Acute Watery Diarrhoea (AWD):** 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, less established and with such a dramatic increase in population numbers, there are concerns that the situation will be far worst this year.

Although 700,000 people were vaccinated during the October 2017 vaccination campaign, cholera oral vaccine efficacy is 70% and the vaccination starts to become less effective after six months. Risk factors related to sanitation and drinking water

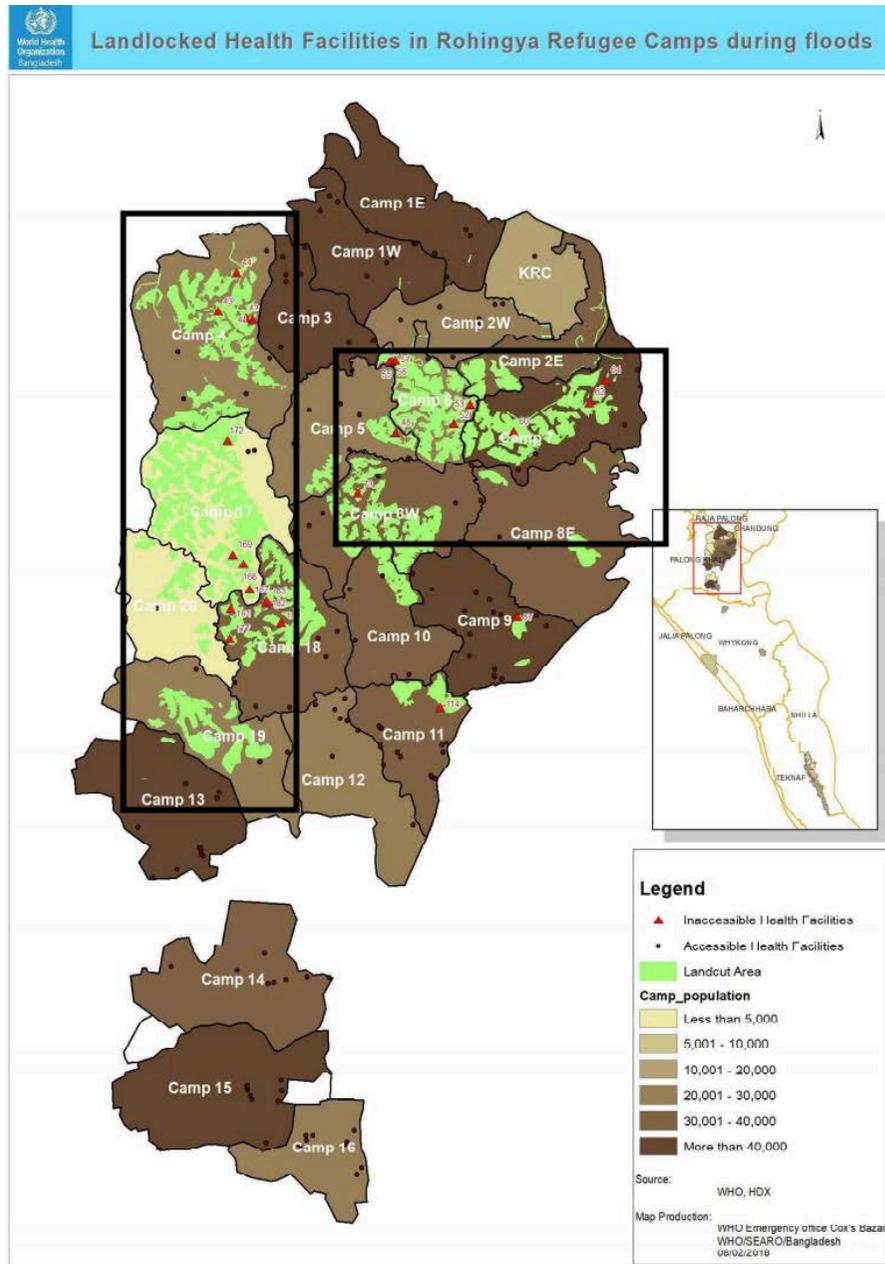
cannot be eliminated and will increase during the rainy season (see WASH), heightening the risk of developing water-borne diseases (WASH and Health sector AWD Plan 07/11/2017).

Risk factors related to sanitation and drinking water cannot be eliminated and will increase during the rainy season (see WASH), heightening the risk of developing water-borne diseases (WASH and Health sector AWD Plan 07/11/2017).

Malnourished children are extremely susceptible to AWD and need to be treated according to specific protocols. As of 31 December, an estimated 16,965 Rohingya children were in need of SAM treatment (Nutrition Sector 22/01/2018).

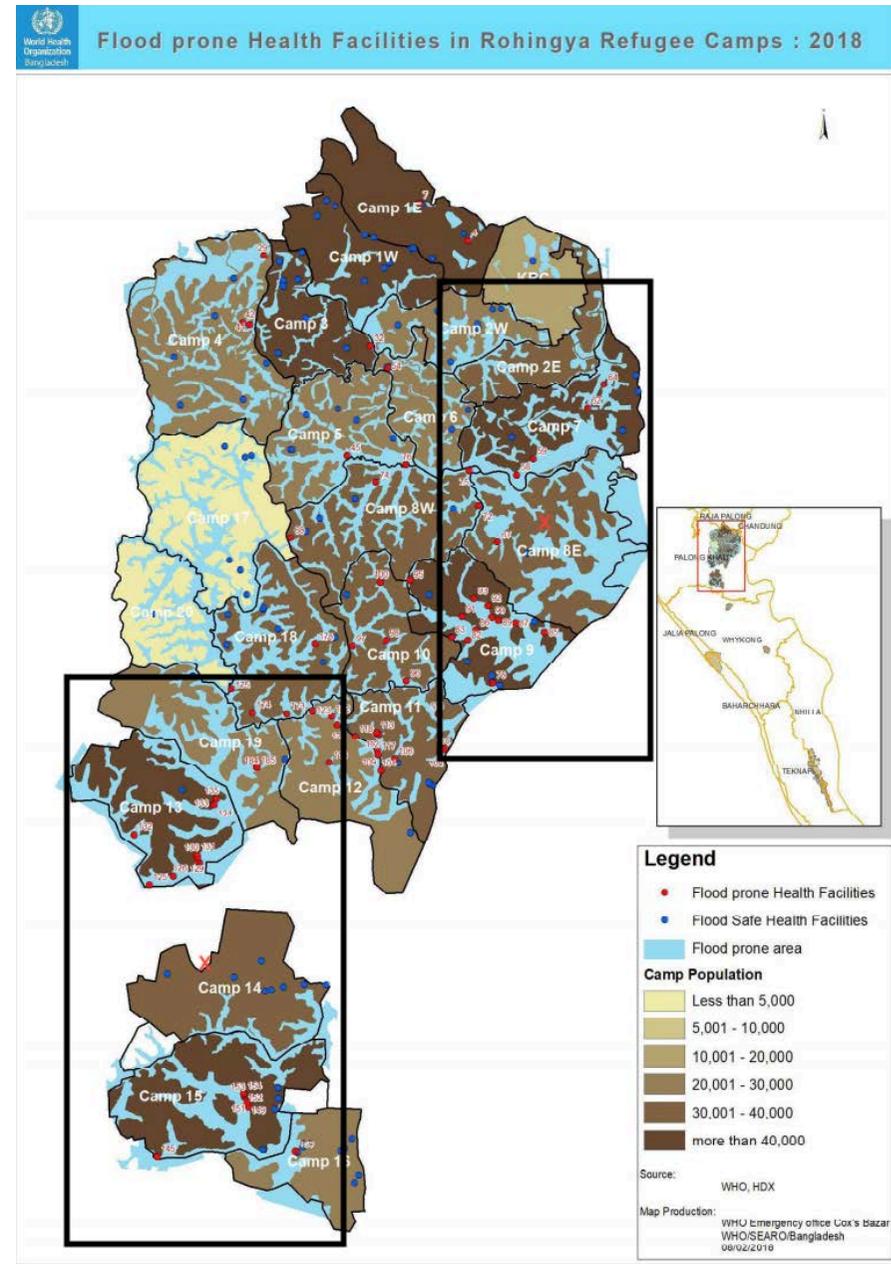
The health sector estimates that an AWD outbreak could reach 34,400 cases, with the possibility of over 5,000 cases reported a week during the peak of the outbreak. The CFR is estimated at 5% for unvaccinated people but could increase to 30-50% for people without treatment. This is of high concern given the anticipated challenges in ensuring health care provision due to access constraints as discussed above (WASH and Health sector AWD Plan 07/11/2017).

Map 9. Landlocked health facilities in camps in Ukhia during floods.



Source: WHO 02/2018.

Map 10. Flood prone health facilities in camps in Ukhia.



Source: WHO 02/2018.

Diarrhoea treatment centres (DTC) are necessary to treat severe dehydration cases, and oral rehydration points (ORP) to treat cases with no or some dehydration. As of March 2018, these centres did not have capacity to receive in-patients and adequately meet the predicted needs. In the event of an outbreak Cholera Treatment Centres (CTC) will have to be set up; however, lack of space in current health facilities, some of which were converted to respond to the diphtheria outbreak is an issue (WASH and Health sector AWD Plan 07/11/2017, Health Sector coordination meeting 14/03/2018).

**Hepatitis E:** 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). Midwives are usually the first to detect hepatitis E cases because of their contact with pregnant women. In the camps, the difficulty of accessing health facilities combined with the common practice of delivering at home, means these cases may remain undetected.

**Vector-borne diseases:** Stagnant water is likely to become a breeding ground for mosquitoes. This will increase the risk of vector-borne diseases such as chikungunya, dengue and malaria, all endemic in Bangladesh and reported during a normal rainy season. Dengue prevalence is particularly high in Chittagong with 45% of dengue positive cases reported amongst suspected patients. 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, with a CFR of 0.07% likelihood of dying from the disease (Case Fatality Rate), however it is close to highly endemic districts 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).

**Air-borne diseases:** 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 among both the Rohingya and Bangladeshis, with a CFR of 0.7% as of 11 March (WHO 03/03/2018, MSF 26/01/2018, UNICEF 11/03/2018). Although a third round of diphtheria vaccination campaign started on 10 March and will last until 25 March, it is unclear whether this campaign covers enough people and whether the vaccine will be effective. Contamination occurs

through droplets in the air, so the risk of transmission is heightened by close contact between individuals carrying the disease and will increase with congestion.

## Shelter

Sites have defined boundaries, and land is scarce. Both **spontaneous displacements** to locations less affected by accumulating water, such as hill tops, and **organized relocations** are expected to occur, mostly within the existing camp boundaries. As camps are already overcrowded the prospect of these movements very limited.

**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 well 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).

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). Only 30% of the land in the Kutupalong–Balukhali expansion is useable and habitable. It is therefore estimated that there will only be very limited relocations. People living near roads that become inaccessible are likely to be prioritised.

In newer camps of Kutupalong-Balukhali expansion, some places have been strategically reserved for the allocation of life-saving services. However, continuous self-settling of new arrivals has encroached on the space available for relocation and for essential.

During the 2017 rains, the Government of Bangladesh took the initiative to relocate people within sites to safer areas within camps, pre-empting any spontaneous movement out of the designated boundaries of Kutupalong. The operation mostly targeted those living by the roads, who were relocated to the Balukhali expansion sites. Some Rohingya refused to move in fear that they would not find shelters in the new areas. Others do not wish to relocate as they want to stay within their community (AP News 20/09/2017, Garda 20/09/2017, Reuters 17/09/2017).

**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. During the rains, people are likely to move to areas near to the camps and disperse among the host community or move to the sites in Ukhia. In sites where both Rohingya and Bangladeshi communities live, such as Shamlapur, 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 rent could increase.

During the September 2017 rains, anecdotal reports suggest Rohingya were reportedly asked by locals to pay to resettle in the safer areas of the camps. People left their homes with only their belongings, and many were unable to afford a plot of land to resettle (AP News 20/09/2017). Some were seen to hide under plastic sheets on the side of the road (Reuters 17/09/2017).

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).

Most shelters in sites are made of bamboo walls and plastic sheeting, with over 91% of mahjis reporting that people in camps and camp-like settings live in jhupri houses and 9% in kutchas (NPM round 8). These are **fragile housing structures** that will suffer damage in heavy rains (Shelter/NFI JNA 01/2018). During the rains in September 2017, the majority of shelters in low-lying areas around Balukhali MS were flooded, resulting in many shelters washed away or becoming uninhabitable (ISCG 19/09/2017, AP News 20/09/2017). Shelters built on hillsides also risk being washed away. As rains reduce, people are likely to return to their shelters, which will have been weakened and become unsafe.

Shelter upgrade activities have started, but timeliness is likely to be an issue. As of 25 February, 28,293 households had been supported with shelter upgrade kits (ISCG 25/02/2018, ISCG 08/02/2018).

People in sites are almost totally reliant on firewood for cooking (90%) (WFP SAFE 11/2017, REVA 19/01/2018). They have been drying firewood for a few days before using it; however this will be harder during the monsoon. Wet firewood for fuel is less efficient; therefore, more wood would be needed for cooking. Further, burning wet **firewood** increases smoke which is linked to respiratory diseases; children are particularly vulnerable to ARI.

## Food

**Food distributions** target over 150,000 households; the entire Rohingya population is dependent on food assistance. During the monsoon these distributions could be

severely disrupted as access reduces. Food distribution points in the sites of Ukhia that have been identified to be in areas at risk are highlighted by the squares on map 12, mostly camp 2W, camp 3, camp 4 and Thangkhal (camp 13). These will likely be difficult to access due to muddy roads and footpaths. Food aid distribution points are generally close to access roads. In September 2017 during the rains, anecdotal evidence suggested that the Government of Bangladesh limited food distribution at these points in order to ensure that Rohingya people remained in the camps, rather than use the roads to move outside camp boundaries (Reuters 17/09/2017).

The high dependency on food aid means that any disruption is of major concern. 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). It is difficult to see any other outcome than **food shortages** if the food assistance households can access is reduced. This will increase the use of negative coping mechanisms such as sharing rations between households or reducing food intake to make the available food last longer. These 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.

Even when households are able to receive food rations, cooking will be hampered by shortages of dry firewood and possibly by unusable damaged shelters.

Contingency plans for immediate food assistance during the floods are planned in the form of fortified high energy biscuits and cooked meals. This is not sustainable long-term and the population is likely to become dissatisfied with biscuits alone.

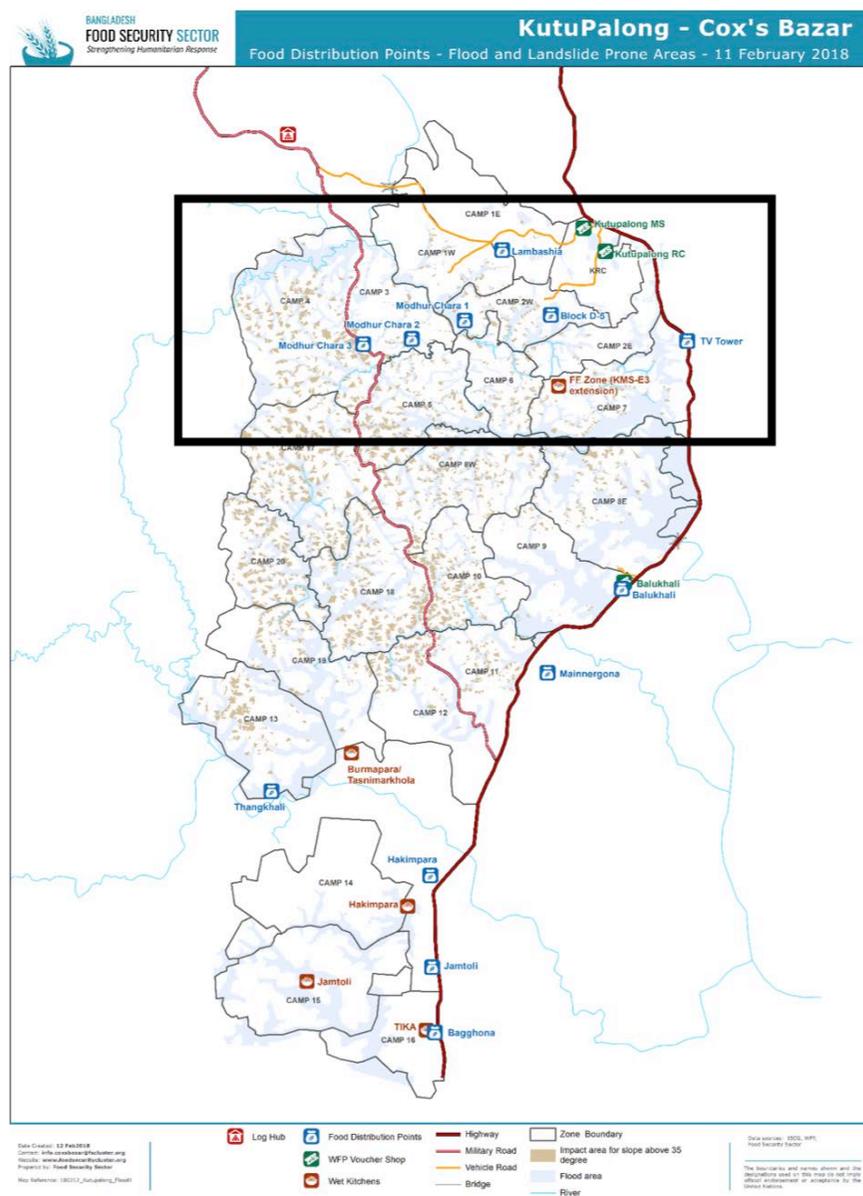
The pre-positioning of food supplies and setting up a porter system to distribute it is underway.

Reduced food assistance will reduce **dietary diversity** and exacerbate **poor food consumption**. While dietary diversity amongst Rohingya households is currently estimated to be acceptable, this is largely due to the food rations being provided (REVA 19/01/2018). While morbidity and water contamination are among key underlying causes for malnutrition, as of January 2018, lack of food is likely to have a more direct role in driving high malnutrition rates as food availability reduces.

Some Rohingya households are partially dependent on **markets** with 64% of people reporting markets as their primary or secondary source of food (Oxfam 11/2017). Although most households have good physical access to markets, reduced movement on roads is likely to complicate this (REVA 19/01/2018). As movement becomes more difficult costs of supplying markets with food will increase (Dhaka Tribune 06/07/2017). The usual seasonal increase in food prices, compounded by the price rises since August 2017 because of

the influx, will present a significant obstacle to people in terms of their quantity, quality and diversity of food (Dhaka Tribune 14/09/2017).

Map 11. Food distribution points in flood and landslide prone areas.



Source: FSS 11/02/2018

## Nutrition

Most **nutrition facilities** are temporary and have limited protection from natural disasters (Nutrition sector 12/2017). Outpatient therapeutic programmes, stabilisation centres and supplementary feeding centres are likely to become difficult to access. This will increase interruptions in services and treatments. 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 could be damaged by floods. 10,725 children have been receiving treatment for malnutrition between 25 August and 7 January 2018 (UNICEF 07/01/2018). The SMART survey conducted in October 2017 found extremely high malnutrition rates amongst the new arrivals in Kutupalong refugee camp, with 24.3% GAM prevalence, and 7.5% SAM prevalence; both significantly above the WHO emergency thresholds of 15% and 2% respectively (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 not only increase malnutrition rates, as it will reduce the calorie intake of children and pregnant and lactating women but will also further expose them to diseases such as diarrhoea, respiratory infections and measles due to weak immune systems associated with under-nutrition. Malnutrition is exacerbated by water contamination and morbidity: 80% of assessed households reported at least one household member including children suffering from a disease, and 35-40% of children suffering from diarrhoea (REVA 19/01/2018). Malnutrition makes children more vulnerable to AWD, which in turn increases the risk of relapse of malnutrition. Likely increase in water contamination (see WASH) and water-borne diseases (see Health) during the rainy season will exacerbate complicated malnutrition cases with a bigger risk of death. Potential disruption of treatment of complicated SAM cases (SAM cases with medical complications) is of particular concern.

Lack of shelter means that it is likely that women will have limited available space for comfortable breastfeeding and complementary feeding (ACAPS SDR 2013).

Possible food shortages experienced by pregnant and lactating women will reduce milk flow, which pushes women to feed infants alternative foods including smashed rice. 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 to floods and/or landslides (Education Sector). These are dispersed throughout all camps and will need to close unless new locations for them are found. 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).

In sites that were established prior to the August influx, 41% of teachers indicated that space for education was not available and 47% in post-August sites (Education JNA 01/2018).

There are concerns that when TLCs are located in safe areas, these will be used 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 they have been out of 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 and death** will increase during the monsoon. Flash flooding and resultant landslides threaten people living on hillsides whose shelters risk being washed away while storm winds and floods can also damage shelters in low-lying areas. Damage to structures, particularly shelters, could result in injuries and deaths amongst the population in camps. Injuries from landslides are reported every year in both Ukhia and Teknaf. The latest deadly landslide was reported in Teknaf in 2015 with two people killed, and in 2008 with 13 people killed (Dhaka Tribune 27/06/2015, ICIMOD 03/07/2008). 10 people died in a landslide in Ukhia in 2012 (Dhaka Tribune 08/6/2012).

Spontaneous displacement during the rains may lead to **family separation**, which is especially a risk for children, as they can become lost from their parents in the predicted congestion 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 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 people are likely to rely more on **sharing latrines** (see WASH) protection concerns are likely to 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). Women generally do not use WASH facilities at night as they lack lighting and are not gender segregated. This drives hygiene concerns as women stay in their households and rely on negative coping mechanisms such as reducing food and fluid intake to avoid using latrines.

**Protection service provision** is likely to be disrupted by limited movement. 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 have a negative impact on mental health issues and 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 it will be the cropping season in which 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).

## Vulnerable groups affected

- 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. As 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 will likely have difficulty moving to safer areas and are therefore likely to rely on dysfunctional infrastructures, posing severe sanitation and health risks.
- If people with physical vulnerabilities relocate to safer areas they may face challenges accessing services, due to their restricted movement. The difficulty to identify these people at most risk, and a lack of trained staff to respond to their specific needs, are additional challenges to ensure equity of service provision.

- Pregnant, lactating women and malnourished children will likely be affected by reduced aid, as they will not be able to obtain necessary nutrition supplements. Health issues are likely to be most exacerbated amongst these groups.

## Preparedness/early warning

- **Service relocation:** Current monsoon preparedness planning indicates that as many services as possible will be relocated to the safer areas of the sites with priority being given to life-saving services. The limitations of suitable land means that important longer-term activities (education, protection) are less likely to be relocated. Relocation plans, both for services and for residents pose a major challenge that the humanitarian community is currently trying to address within the key constraints of available space and limited time until the first rains could commence. Communicating changes of location of services to the community could also be challenging with reduced access.
- **Mitigation work:** Small-scale flood mitigation work including improving the drainage system, protecting pathways, stabilising steps and reinforcing bridges is underway (ISCG 25/02/2018). Larger construction work is restricted by the GoB, requires specific permission and will also face time constraints.
- **Pre-positioning of aid:** Pre-positioning of aid (food, tarpaulins, ropes and bamboo to reconstruct shelters) ahead of the monsoon is essential. As of mid-March, IOM and UNHCR containers have been mapped in both Ukhia and Teknaf and emergency items (tarpaulin, rope, aquatabs) have been allocated to these sites. More mapping of warehouse facilities is underway. Stock-piling is unlikely to be a long-term solution due to limited storage space and likely security concerns. 24-hour staff would be needed to secure the storage units, and this is not possible due to current curfews in camps and the lack of provision for employing the refugees. General lack of storage space also continues to be an issue, particularly in Teknaf. A prioritisation system to organise trucks and aid items coming into the camps and being prepositioned is essential.
- **Mobile teams:** 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 by each sector to move around camps during the monsoon. Although transport by foot is likely to be the most effective form of movement in the monsoon, it is likely to be severely hampered by muddy pathways.
- **Strengthening of buildings:** Sectors are currently identifying which facilities need to be strengthened before the rains. Upgrade, replacement and repairs of

facilities is ongoing in camps ahead of the monsoon within time constraints. Restrictions on the construction of permanent structures limit the degree to which they can be reinforced. Once the rain begins, repair and maintenance operations will become increasingly challenging.

- **Early warning:** Under the leadership of CwC, sectors are currently compiling a list of key messages to disseminate to the Rohingya population in camps and during the monsoon. Safety committees, of people able to respond in the camps, are being trained for emergency response including search and rescue. It is worth noting that adolescent, girls and women could not be accessed during the early warning phase of the diphtheria campaign due to the fact that many of them observe purdah and do not come out of their shelters very often.

## Response capacity

### Local and national response capacity

Disaster management/flood response in Bangladesh

Coordination of disaster management in Bangladesh is the responsibility of the Ministry of Disaster Management and Relief (MoDMR). The GoB has a well-developed system of responding to disasters including monsoon floods and landslides, which includes initial needs assessments and distribution of cash and rice to affected households.

In addition to a comprehensive national coordination structure, districts, upazilas and unions have their own Disaster Management Committees (DMC) coordinating disaster response activities (Government of Bangladesh 06/2014). These function to differing degree.

The Standing Orders on Disasters (SOD) first published in 1997 and revised in 2010, the Disaster Management Act of 2012, and the 2014 Flood Response Preparedness plan are key documents that guide preparedness, coordination and response to natural disasters and floods in Bangladesh (Government of Bangladesh 06/2014). However, the SODs and the established government coordination structures including the HCTT do not apply to the Rohingya population in Bangladesh. If a natural disaster impacts Cox's Bazar district, responding to it in the Rohingya sites will be coordinated by the ISCG. The regular disaster coordination mechanisms will be utilized for Bangladeshi communities.

The Cyclone Preparedness Programme (CPP), usually used by the GoB to prepare for and respond to cyclones in Bangladesh, has been activated and covers for the first time the Rohingya camps in Cox's Bazar. So far, this is the only mechanism with which humanitarian actors have been able to prepare for both cyclones and monsoon. This

includes the training of Safety Committees in early warning messaging and as first responders within camps. However, there is no evacuation plans.

Based on evidence from the rains in September 2017 in the camps, it is likely that the RRRC and Bangladeshi Armed Forces currently operating in the camps will be first to respond, notably with crowd control methods should displacement occur.

## International response capacity

I/NGOs and UN agencies have significantly increased their presence and activities since the August 2017 influx. Ensuring stable staffing levels and developing longer term plans are currently unfolding as the influx is stabilising. FD-7 permits remain difficult to obtain for I/NGOs who want to operate in camps.

An Emergency Preparedness and Response Task Force has been established by the ISCG to coordinate preparedness and response activities ahead of both monsoon and cyclones. A contingency plan is being finalised with input from all sectors.

## Information gaps and needs

- Information on flood/landslide prone areas in Teknaf camps.
- Specific information on potential service disruption and impact on services in Teknaf camps.
- More granular information on flood/landslide prone areas in all sites.
- Details of how the CPP will be used in the Rohingya sites during the monsoon, including what the key messaging will be.
- Details on the structure of a response to natural disasters in the Rohingya sites.

NPM-ACAPS Analysis Hub is supported by

