

# IMPACT OF THE MONSOON & COVID-19 CONTAINMENT MEASURES

## Shelter and infrastructure damage in the Rohingya refugee camps

Extreme monsoon-induced flooding coupled with prolonged inundation in northeast India, eastern Nepal, Bangladesh, Bhutan, and northern Myanmar has impacted more than five million people in Bangladesh alone (NAWG, 03/08/2020). The majority of this flooding occurred along river systems, such as the Brahmaputra and the Ganges, and flowed to the northern regions of Bangladesh (NAWG, 25/07/20). However, the Rohingya refugee camps in the south-eastern district of Cox's Bazar have been largely untouched by this large-scale river flooding. Despite this, the monsoon season continues to impact the Rohingya refugees, with heavy rains and strong winds severely diminishing quality of life.

Between May and July 2020, an alarming number of Rohingya refugee shelters were damaged, with an increase of more than 100% compared to the same time period in 2019. In just three months, weather events such as windstorms, heavy rains, slope failure (landslide and soil erosion), and flooding have impacted more than 20,000 households in the camps who urgently need of more substantial shelter assistance.

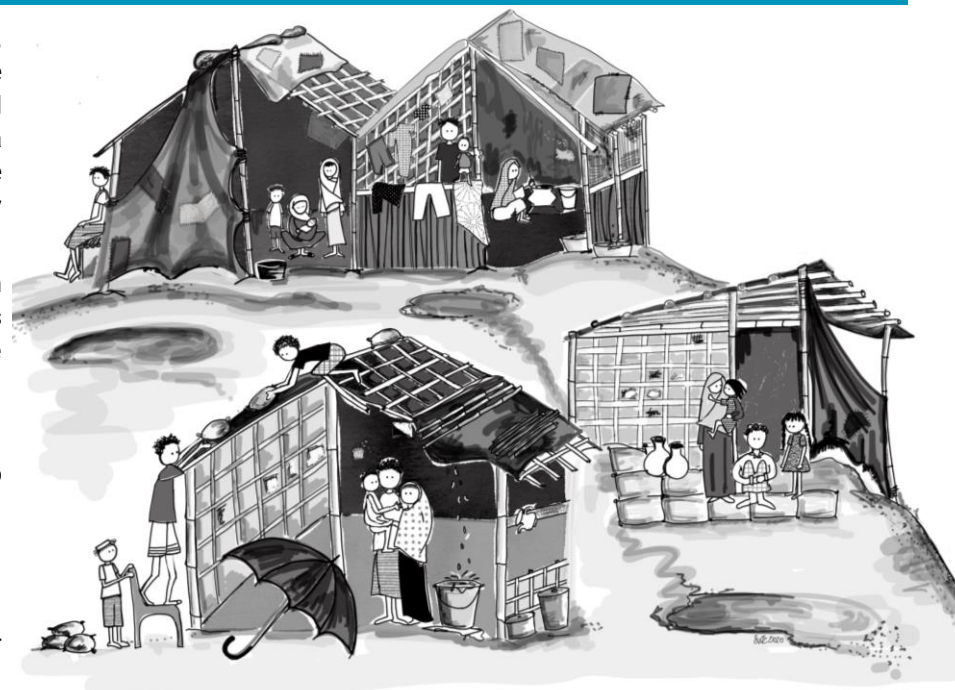
The main factors contributing to this radical increase in damages:

- Reduction of shelter and site development programming and monsoon preparedness activities due to COVID-19 containment measures.
- Monsoon season (heavy rainfall and windstorms) and Cyclone Amphan.
- Ongoing use of lightweight and temporary materials such as untreated bamboo and tarpaulin.
- The 2020 monsoon season is ongoing, with continued rain and poor weather conditions forecasted for August, which will likely lead to further shelter damages (BMD, UNDP 06/08/2020).

In previous years, the vast majority of shelters and public infrastructure received pre-monsoon support so that they could, to some extent, resist the effects of heavy rainfall and windstorms. However, this year Covid-19 containment measures resulted in a significant reduction in pre-monsoon and monsoon Shelter and Site Development program implementation negatively impacting preparedness and resilience to weather effects.

### Recommendations

- The urgent provision of additional shelter assistance and increased field presence are needed, which may require a revision of the COVID-19 containment measures in line with the current health precautions.
- Increased resources and funds are necessary to respond to the surge in shelter needs.
- Additional resources are required to ensure Rohingya refugees' safety and access to humanitarian assistance by repairing infrastructure, such as bridges and walkways. Likewise, actors require additional resources to mitigate slope failure.
- Approval for more reliable and safe medium-term shelter solutions are needed to avoid the continuous need for short-term shelter support and to provide dignified living conditions for all Rohingya refugees.



### Purpose

This report highlights to decision-makers the significant need for increased shelter support for Rohingya refugees. The combination of COVID-19 containment measures, temporary shelter materials, and monsoon weather events has made living conditions in the camps extremely difficult.

### Methodology

This report was developed by the ACAPS-NPM Analysis Hub, the Shelter Sector, and the Site Management and Site Development Sector, with support from UNDP on the analysis of precipitation data. The main data sources include: Daily Incident Monitoring Mechanism managed by IOM's NPM Unit, Shelter Rapid Damage Verification Mechanism, Community Feedback and Response Mechanism. Average rainfall for 2019 and 2020 is based on analysis by UNDP's DRR project using Bangladesh Meteorological Department rainfall data and Regional Integrated Multi-hazard Early Warning System, and monthly precipitation data for 2020 is aggregated from Climate Forecast System Reanalysis (CFSR) daily precipitation data.

### Limitations

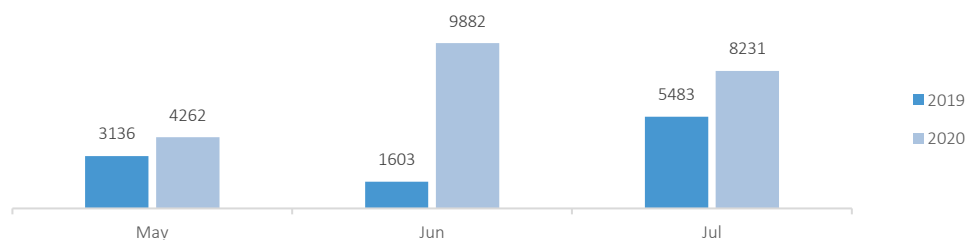
The 2020 monsoon is ongoing and the final impact of the weather on shelter and infrastructure in the camps cannot be known. Remote sensing and satellite images were used for precipitation data because not all rain gauges located in and around the camps are currently functional. Analysis of the damages was done at the response level, so an understanding of which camps or locations are most impacted cannot be drawn from this report.

## Increase in shelter and infrastructure damages

Due to congestion, site typography, and temporary shelter structures, Rohingya households are extremely exposed to harsh weather events such as windstorms, heavy rains, slope failure, landslides, and flooding. The most sought assistance through the response-wide Community Feedback and Response Mechanism has been shelter-related assistance, with more than 14,000 referrals made between March and July 2020. In comparison, WASH support, the second most requested service, had approximately 3,500 referrals over the same time period (SMSD, 01/08/2020). According to incident reporting mechanisms within the Shelter/NFI (SNFI), Site Management, and Site Development (SMSD) sectors, there has been a 100% increase in shelter damage recorded during this monsoon period.<sup>1</sup> At the same time, weather-related damages to pedestrian infrastructure including pathways, bridges, and staircases are also being reported which constitutes a serious safety concern for all refugees, especially those most vulnerable.

The SMSD Daily Incident Report managed by IOM's Needs and Population Monitoring Unit (NPM) records the impact of small-scale weather-related incidents, including slope failure, flooding, lightning, and windstorms across the camps (NPM 02/08/2020).<sup>2</sup> Between the 1 May and 31 July 2020, 949 small-scale weather-related incidents affected 22,823 households resulting in 20,352 partially damaged shelters and 1,986 completely damaged shelters. In comparison, between May and July 2019, a total of 10,518 households were impacted by 1,443 small-scale weather-related incidents with 9,083 partially and 1,139 totally damaged shelters. Damages reported through the daily incident report are indicative, from rapid on-the-day assessments conducted to inform the mobilization of first responders. A more detailed technical shelter assessment is then

**Total number of reported shelters damaged (total & partial)**



Daily Incident Monitoring Mechanism, IOM's Needs and Population Monitoring Unit,

<sup>1</sup> There have been no major changes in methodology in the daily incident monitoring mechanism or shelter verification exercises between 2019 and 2020 that would have resulted in an increase of 100% in the number of shelter damages recorded.

<sup>2</sup> The small-scale weather-related incident types that are included in the analysis above include floods, drowning, infrastructure damage, slope-failure, and lightning. The 600+ households impacted by fire in Camp 1E at the beginning of May were not

completed to verify and assess the damages. The Shelter Sector's Rapid Damage Verification Mechanism also recorded a 100% increase in damages, with a total of 19,276 verified damaged shelters recorded between May and July 2020 compared to 9,600 during the same timeframe last year.

## What has caused such a large increase in damages?

The implementation of COVID-19 mitigation measures combined with the temporary shelter materials used in housing construction and poor weather conditions all contributed to the drastic increase in damages. As shelter support was not considered lifesaving, regular programming was suspended in late March and Rohingya refugees were left without further shelter support or replacement of perishable materials, such as bamboo and tarpaulin. Not all shelter repair and improvement programs could be implemented over this period, aggravating the overall risk of damage. Only emergency shelter response continued without disruption.

## Weather related events

Between 19 and 21 May 2020, the tail of Cyclone Amphan, one of the largest tropical cyclones to make landfall in the Bay of Bengal, swept across Cox's Bazar, resulting in 2,439 partially and totally damaged shelters in the camps. However, while there is a direct correlation between weather events such as heavy rainfall and windstorms and an increase in shelter damages, these events alone do not explain the 100% increase in housing damages.

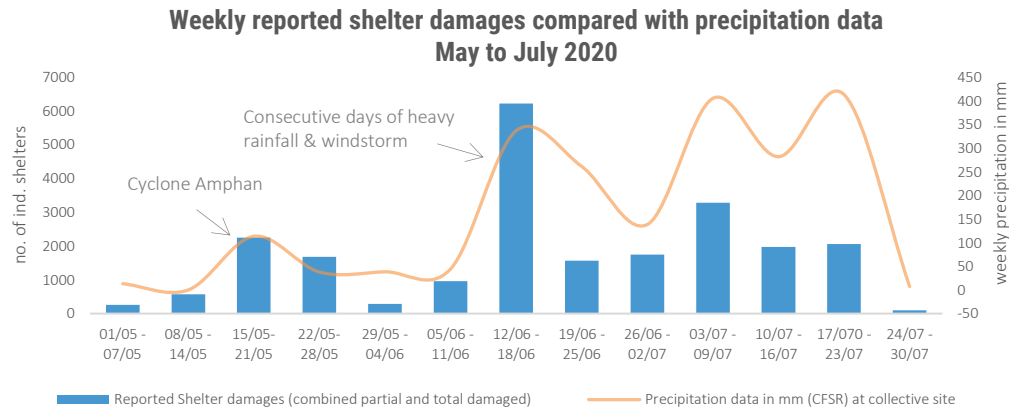
Though the 2020 monsoon season is ongoing and further shelter damages are likely, with continued rainfall and poor weather conditions forecasted for August,<sup>3</sup> it is important to analyse the impact of the monsoon season so far as the number of reported shelters damaged has surpassed those reported between April and November 2019 (BMD, UNDP 06/08/2020, NPM 02/08/2020). However, as the 2019 and 2020 monsoon seasons began in different months, with heavy rainfall starting in July 2019 and in June 2020, a direct comparison of precipitation data per month to measure the difference in severity of the monsoon seasons is inaccurate. Therefore, an analysis of different weather events and rainfall trends over a longer period of time is more appropriate. According to the Bangladesh Meteorological Department, the amount of rainfall for between May to July 2020 was classified as Normal to Below Normal, based on the average calculation of

included in this analysis and incidents associated with traffic accidents that occurred within the timeframe that are also recorded in the daily incident monitoring were not included in the analysis for this report.

<sup>3</sup> Rainfall forecast generated under UNDP DRR project using Bangladesh Meteorological Department's data with technical support from Regional Integrated Multi-hazard Early Warning System (RIMES) indicate Normal to Above Normal rainfall for the month of August 2020, which is higher than that recorded average for August during past 30 years.

past rainfall patterns from the past 30 years (BMD, UNDP 08/2020).<sup>4</sup> Although observed rainfall in May 2020 was higher than in May 2019, it was still in the Normal to Below Normal range.

During the months of May to July in both 2019 and 2020, the most commonly reported weather incidents impacting shelters were wind/rainstorms and slope-failure, with wind/rainstorms accounting for higher amount of damage in 2020 and slope-failure causing the most incidents in 2019 (NPM 02/08/2020).<sup>5</sup>



Daily Incident Monitoring Mechanism, IOM's Needs and Population Monitoring Unit, updated 02/08/2020.  
Precipitation data for 2020 is based on Climate Forecast System Reanalysis (CFSR) daily precipitation

## Temporary shelter & COVID-19 containment measures

Government regulations have prevented the use of durable shelter materials. Currently, only the use of temporary shelter materials, such as tarpaulin and bamboo, is permitted. Therefore, small-scale weather events commonly cause recurrent damage to shelters, resulting in an almost-constant need for repairs. Prior to and during the monsoon season, there has generally been a spike in support and materials required to reinforce and repair damages to shelters and public infrastructure in the camps. However, COVID-19 containment measures put a temporary halt to activities carried out by Shelter Sector partners, such as shelter improvements, repair, maintenance, training, preparedness messaging, and the delivery of additional shelter materials. Site development partners could not complete pre-monsoon infrastructure reinforcement work on bridges and pathways or slope failure mitigation initiatives. As a result, accessing essential services

<sup>4</sup> "Normal" in climate terms is the Long Period Average (LPA) of rainfall over a location, using 30 years or more of rainfall data for the region (measured at a station). The average is considered the "Normal" amount of rainfall for the region. A classification of below normal does not indicate the intensity of the rainfall. There can be high intensity rainfall over a short period of time followed by dry spells which may still result in a Below Normal classification.

and assistance, including distributions, is even more challenging and dangerous, especially for older people, people with disabilities, people with chronic illness, pregnant women, and children.

The shift to critical-only programming on 25 March 2020<sup>6</sup> meant:

- Only a limited amount of planned shelter improvements, repairs and maintenance were conducted pre-monsoon. Emergency assistance continued to be provided, as necessary.
- Technical assistance and installation support normally implemented along with the distribution of shelter materials was not provided. For example, tie down kits were distributed prior to the monsoon season. However, reduced staffing in the camps due to COVID-19 containment measures meant that no technical support and face to face assistance was possible. This impacted the quality of installation and the correct use of the materials by less skilled households or households without access to labour.
- The ongoing heavy rain and unstable soil impacts the installation and longevity of important structural repairs when made during, rather than prior to, monsoon season. Therefore, only temporary repairs can be made during the monsoon, and more substantial structural upgrades that would help shelters withstand poor weather conditions are required pre- or post-monsoon, when the ground is dry and sturdy.
- In some cases, materials (i.e. steel footings) could not be distributed as they require training for proper installation and group activities were restricted as they would increase the risk of COVID-19 transmission.
- Preparedness messaging on how to "prepare your shelter for bad weather" was not conducted at the scale that was planned due to the need to prioritise COVID-19 public health messaging.

In addition to the challenges posed by the COVID-19 containment measures, many households have not received shelter assistance in more than a year. Given that bamboo and tarpaulin weaken over time, shelters become more susceptible to the impacts of small-scale weather events. Therefore, building materials require frequent replacement, highlighting the incremental nature of temporary shelter assistance in Cox's Bazar, which is unsustainable without a shift to more durable materials and structures such as mud walls or metal double story shelters. The inability to conduct comprehensive, planned shelter improvements, repairs and maintenance prior to May of this year correlates with twice as much damage as last year, highlighting the need for robust materials, monsoon preparedness activities, and continued access to the camps for shelter assistance conducted in accordance with COVID-19 prevention recommendations.

<sup>5</sup> Definitions of the different small-scale weather events used in the Daily Incident Monitoring Mechanism can be found here. [https://npm-iom.shinyapps.io/Incident\\_Dashboard/](https://npm-iom.shinyapps.io/Incident_Dashboard/)

<sup>6</sup> RRRC guidance on program restrictions in light of COVID-19: <https://rrrc.portal.gov.bd/>