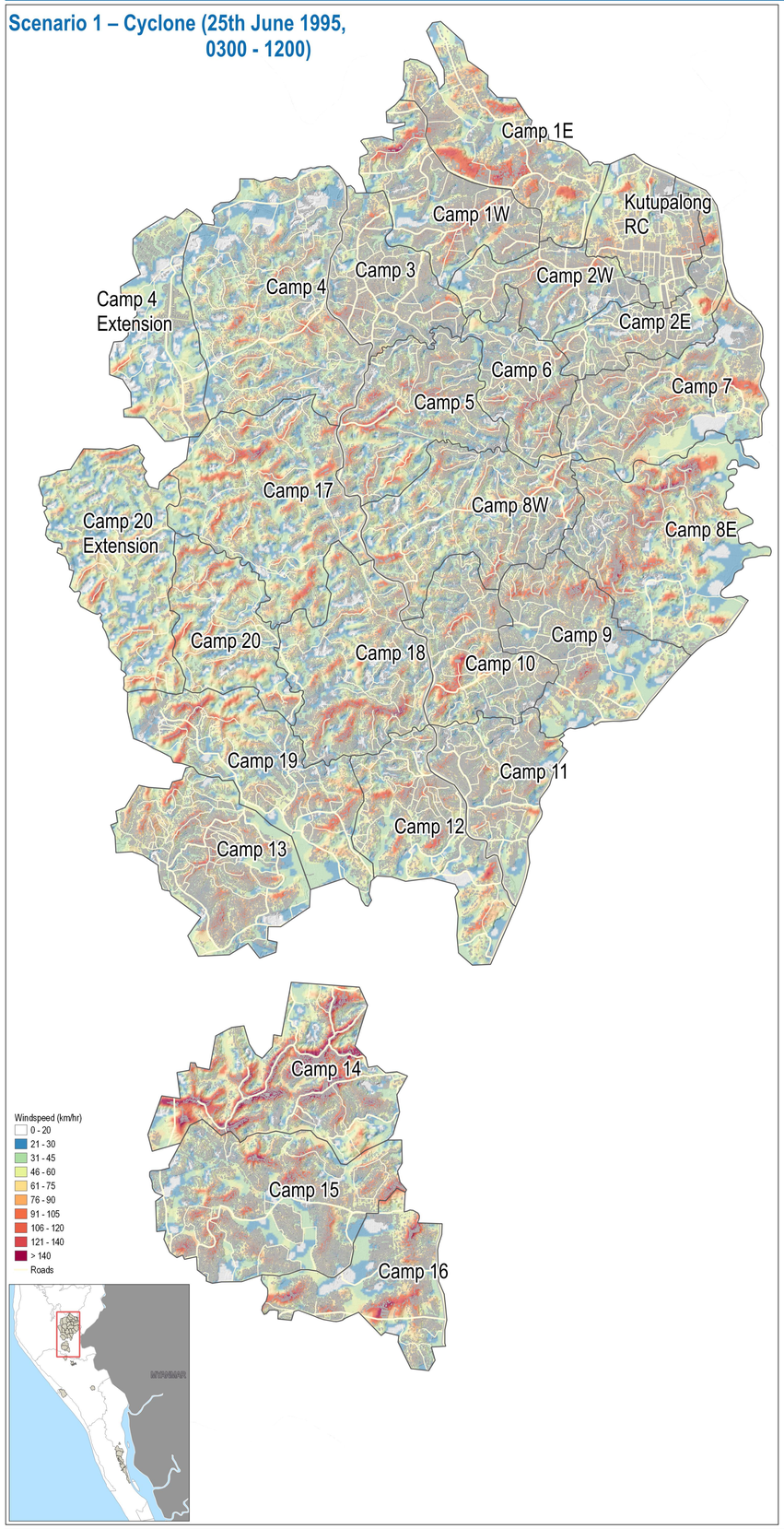
ISCG | Inter Sector Coordination Group

Bangladesh – Cox's Bazar District - Kutupalong Balukhali Expansion

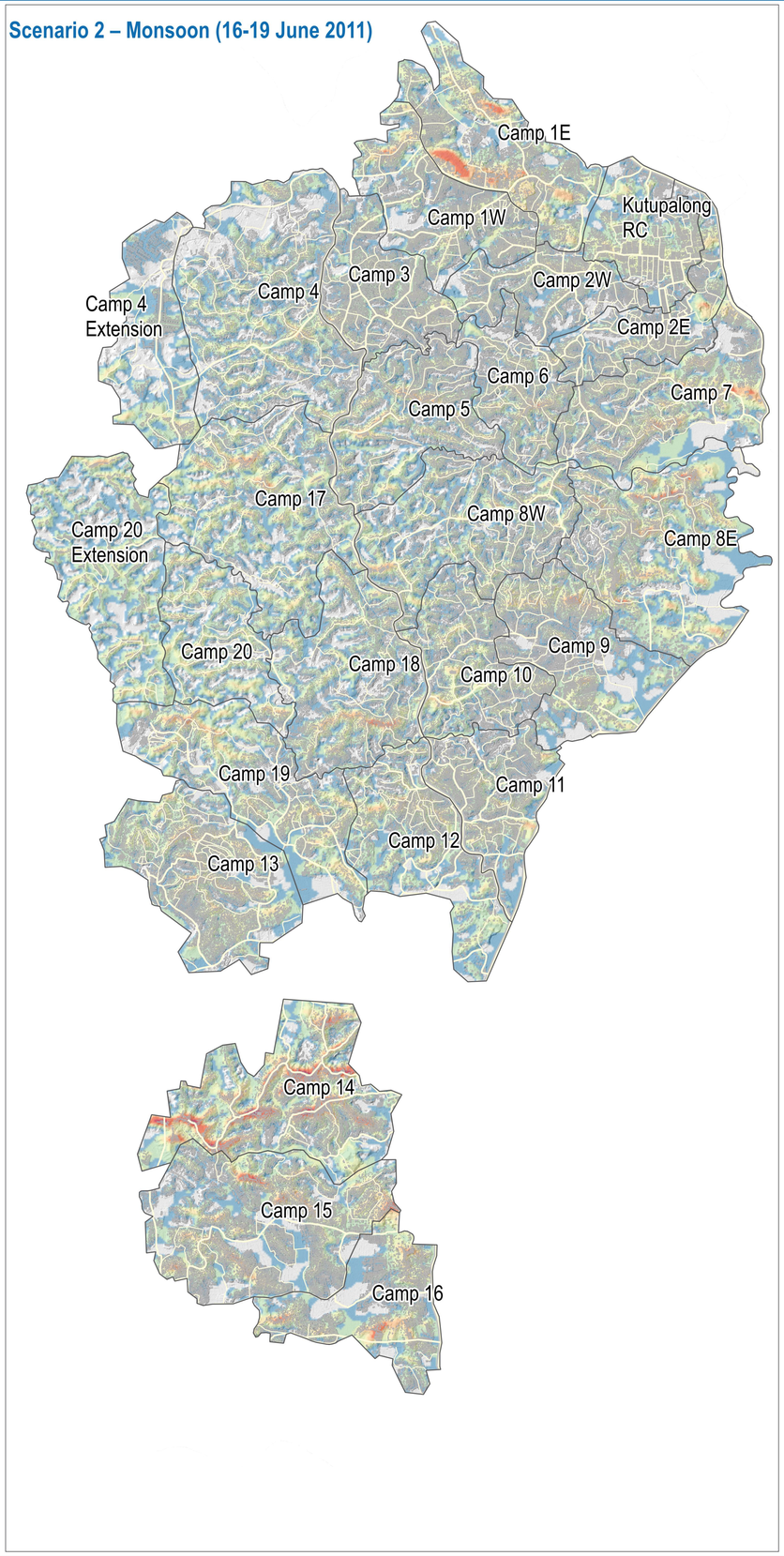
Wind Hazard – Maximum Wind Speed From 3 Historical Simulations

For Humanitarian Purposes Only
Production date:30.04.2020

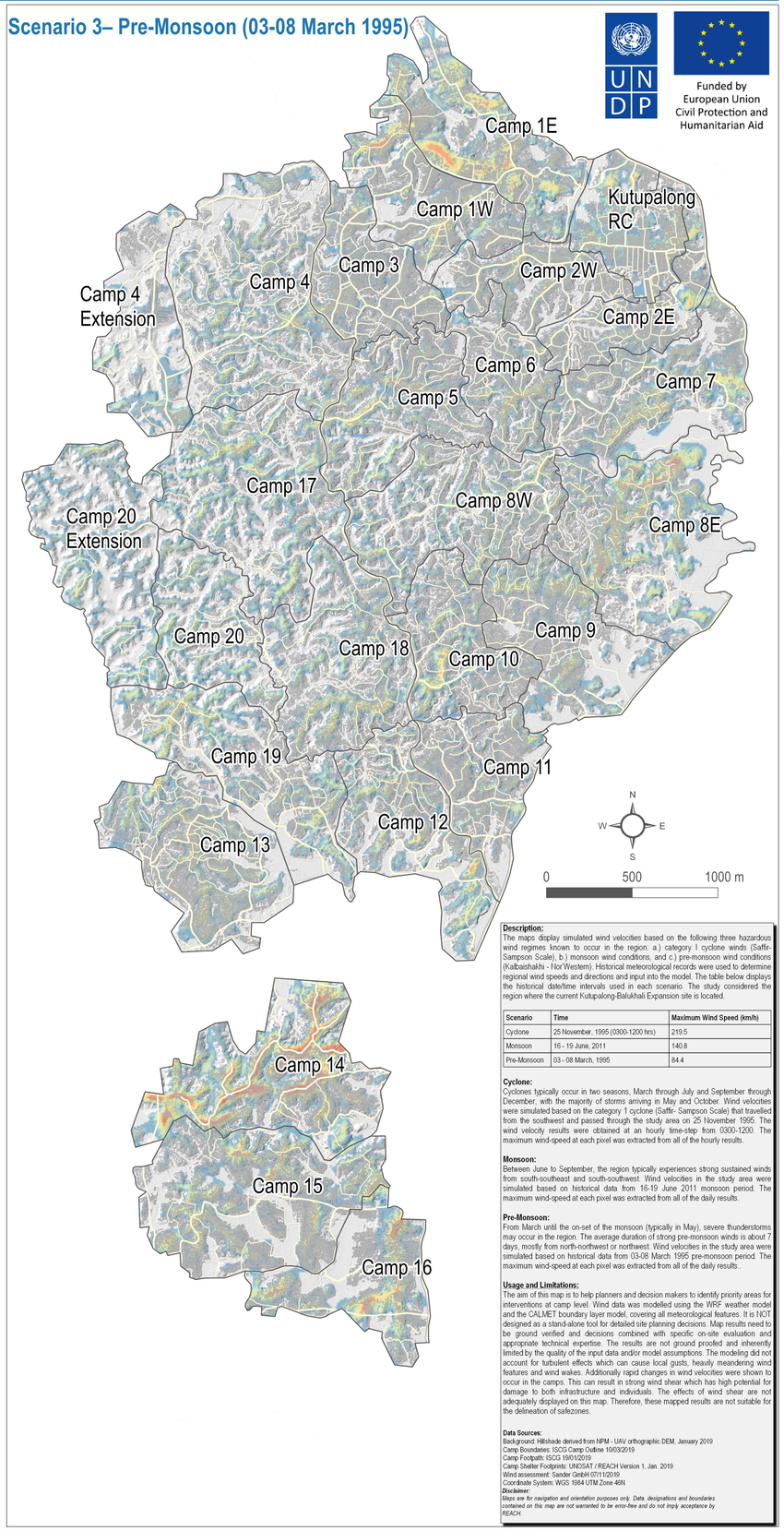
Scenario 1 – Cyclone (25th June 1995, 0300 - 1200)



Scenario 2 – Monsoon (16-19 June 2011)



Scenario 3– Pre-Monsoon (03-08 March 1995)



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Description:
The maps display simulated wind velocities based on the following three hazardous wind regimes known to occur in the region: a.) category 1 cyclone winds (Saffir-Sampson Scale), b.) monsoon wind conditions, and c.) pre-monsoon wind conditions (Kalbaishakhi - / Nor'Western). Historical meteorological records were used to determine regional wind speeds and directions and input into the model. The table below displays the historical date/time intervals used in each scenario. The study considered the region where the current Kutupalong-Balukhali Expansion site is located.

Scenario	Time	Maximum Wind Speed (km/h)
Cyclone	25 November, 1995 (0300-1200 hrs)	219.5
Monsoon	16 - 19 June, 2011	140.8
Pre-Monsoon	03 - 08 March, 1995	84.4

Cyclone:
Cyclones typically occur in two seasons, March through July and September through December, with the majority of storms arriving in May and October. Wind velocities were simulated based on the category 1 cyclone (Saffir- Sampson Scale) that travelled from the southwest and passed through the study area on 25 November 1995. The wind velocity results were obtained at an hourly time-step from 0300-1200. The maximum wind-speed at each pixel was extracted from all of the hourly results.

Monsoon:
Between June to September, the region typically experiences strong sustained winds from south-southeast and south-southwest. Wind velocities in the study area were simulated based on historical data from 16-19 June 2011 monsoon period. The maximum wind-speed at each pixel was extracted from all of the daily results.

Pre-Monsoon:
From March until the on-set of the monsoon (typically in May), severe thunderstorms may occur in the region. The average duration of strong pre-monsoon winds is about 7 days, mostly from north-northwest or northwest. Wind velocities in the study area were simulated based on historical data from 03-08 March 1995 pre-monsoon period. The maximum wind-speed at each pixel was extracted from all of the daily results.

Usage and Limitations:
The aim of this map is to help planners and decision makers to identify priority areas for interventions at camp level. Wind data was modelled using the WRF weather model and the CALMET boundary layer model, covering all meteorological features. It is NOT designed as a stand-alone tool for detailed site planning decisions. Map results need to be ground verified and decisions combined with specific on-site evaluation and appropriate technical expertise. The results are not ground proofed and inherently limited by the quality of the input data and/or model assumptions. The modeling did not account for turbulent effects which can cause local gusts, heavily meandering wind features and wind wakes. Additionally rapid changes in wind velocities were shown to occur in the camps. This can result in strong wind shear which has high potential for damage to both infrastructure and individuals. The effects of wind shear are not adequately displayed on this map. Therefore, these mapped results are not suitable for the delineation of safezones.

Data Sources:
Background: Hillshade derived from NPM - UAV orthographic DEM, January 2019
Camp Boundaries: ISCG Camp Outline 10/03/2019
Camp Footpaths: ISCG 19/01/2019
Camp Shelter Footprints: UNOSAT / REACH Version 1, Jan. 2019
Wind assessment: Sander GmbH 07/11/2019
Coordinate System: WGS 1984 UTM Zone 46N

Disclaimer:
Maps are for navigation and orientation purposes only. Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by REACH.

REACH Informing more effective humanitarian action