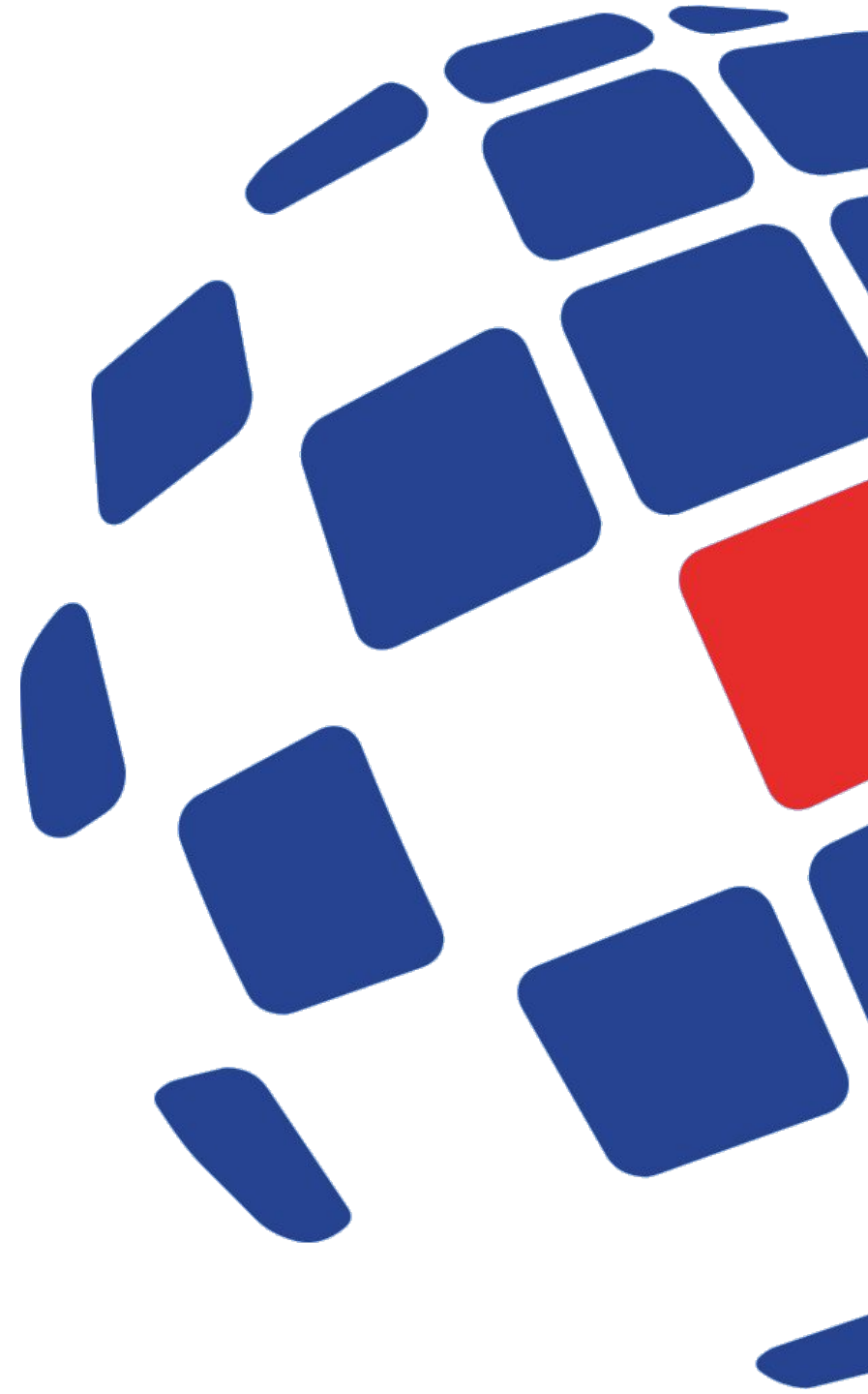


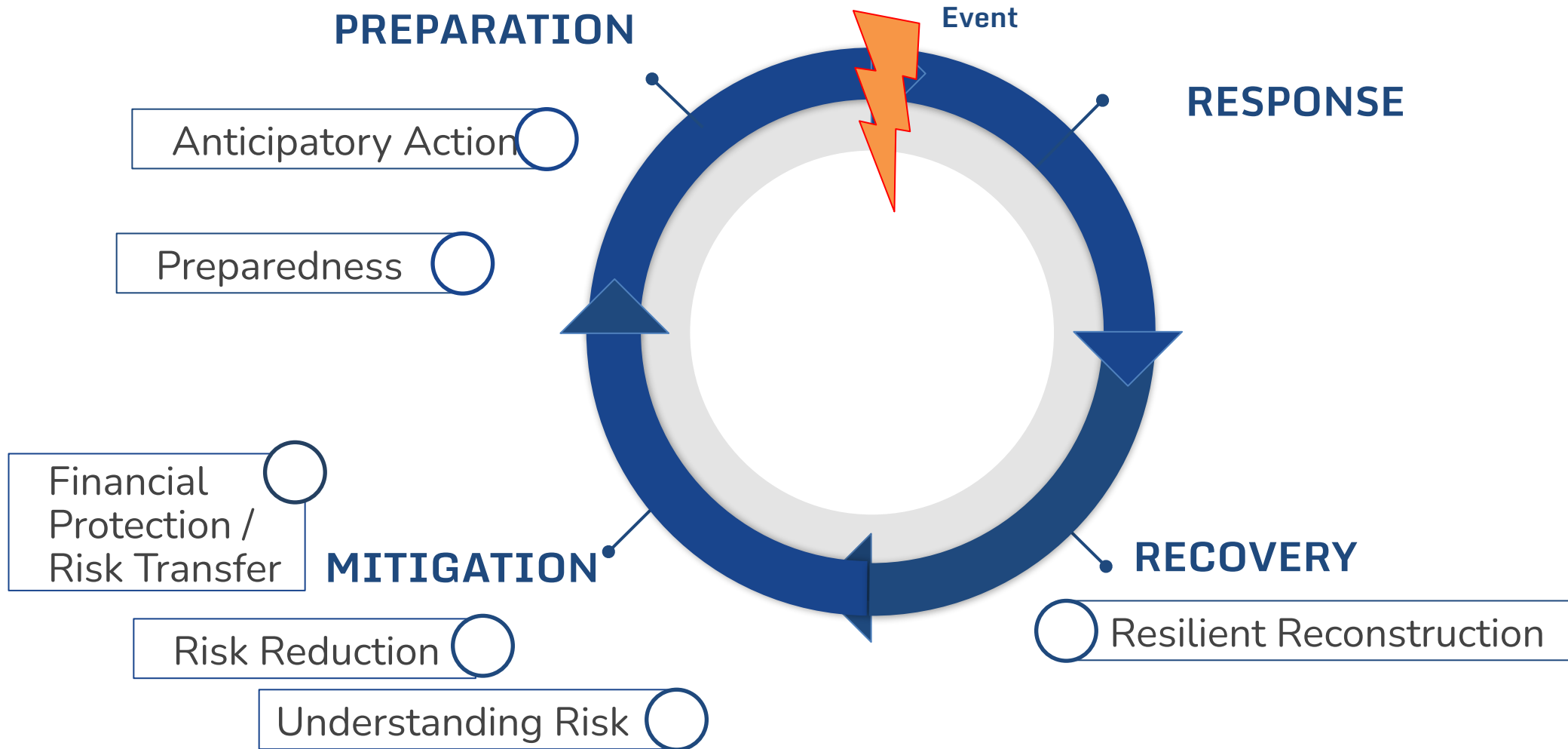


October 2023 - Dominica

Mapping in Disaster Management



Disaster and Risk Management Lifecycle



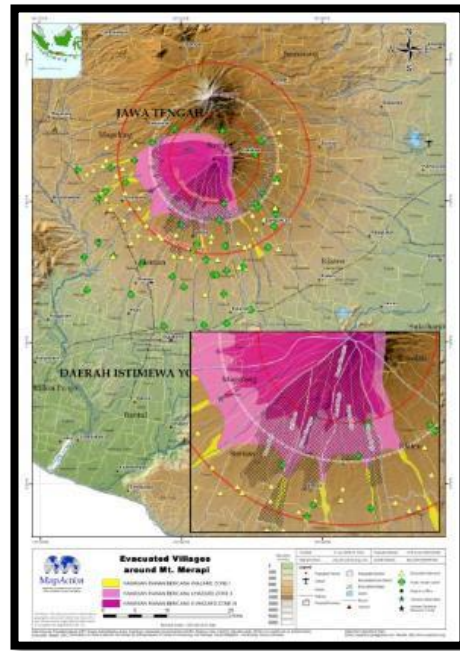
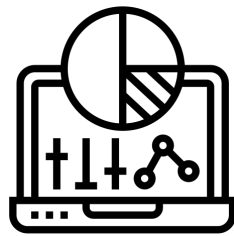
Disaster Risk Management Lifecycle

- Mapping and spatial data used in
 - Disaster Risk Reduction
 - Hazard and Risk Mapping
 - Contingency Planning
 - Critical Infrastructure Asset Management
 - Predictive Analysis and Early Warning
 - Donor relations

- “Where?”

Mapping as part of the process

Mapping or Spatial Data by themselves are not going to provide the mitigation and preparedness. They are part of the process.

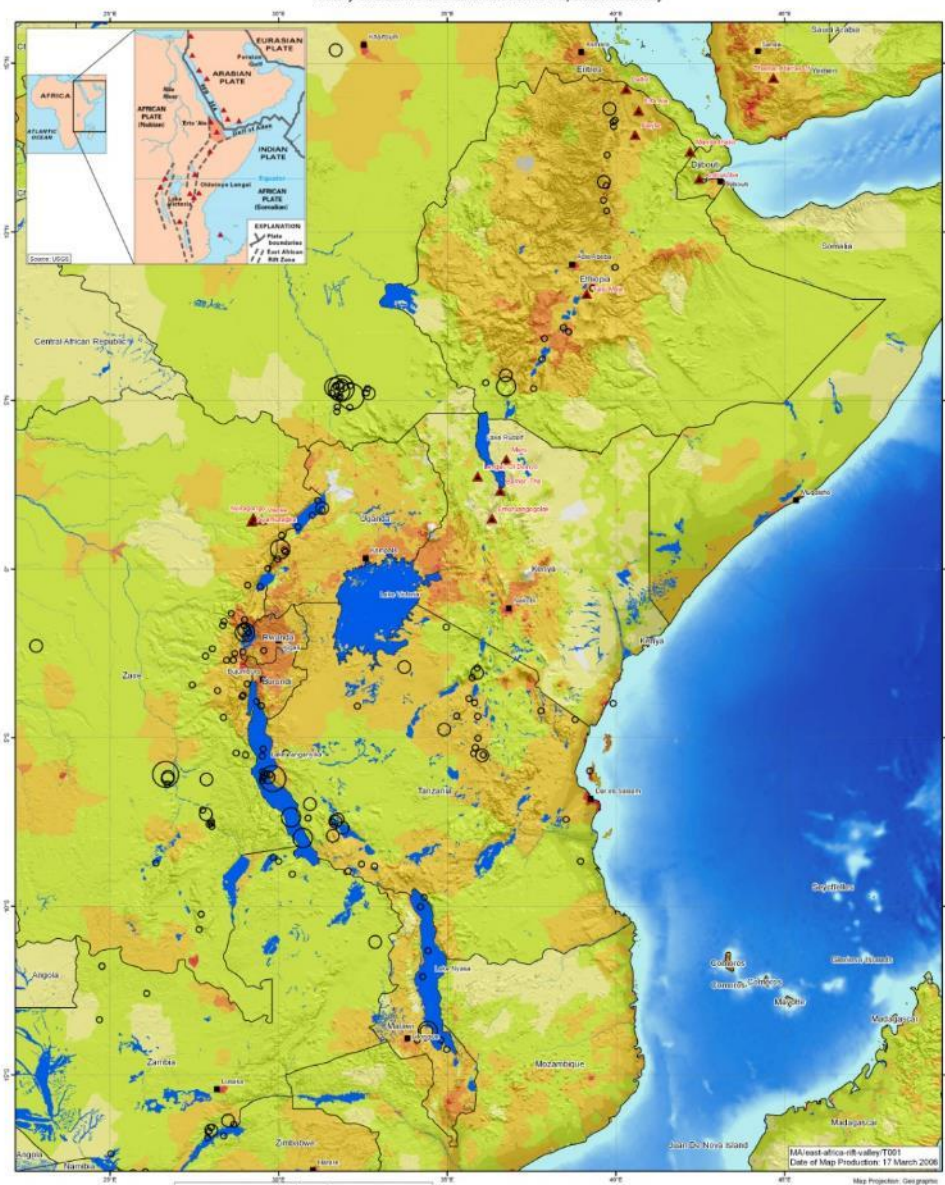


Early warning / risk assessment

Maps are a good way of showing underlying risks in a particular area. This map shows earthquake and volcanic activity in East Africa since the 1970s, alongside locations of settlements.

It thereby aims to highlight areas where people are at potentially higher risks from these events.

East African Rift Valley
History of Seismic Events in relation to Population Density

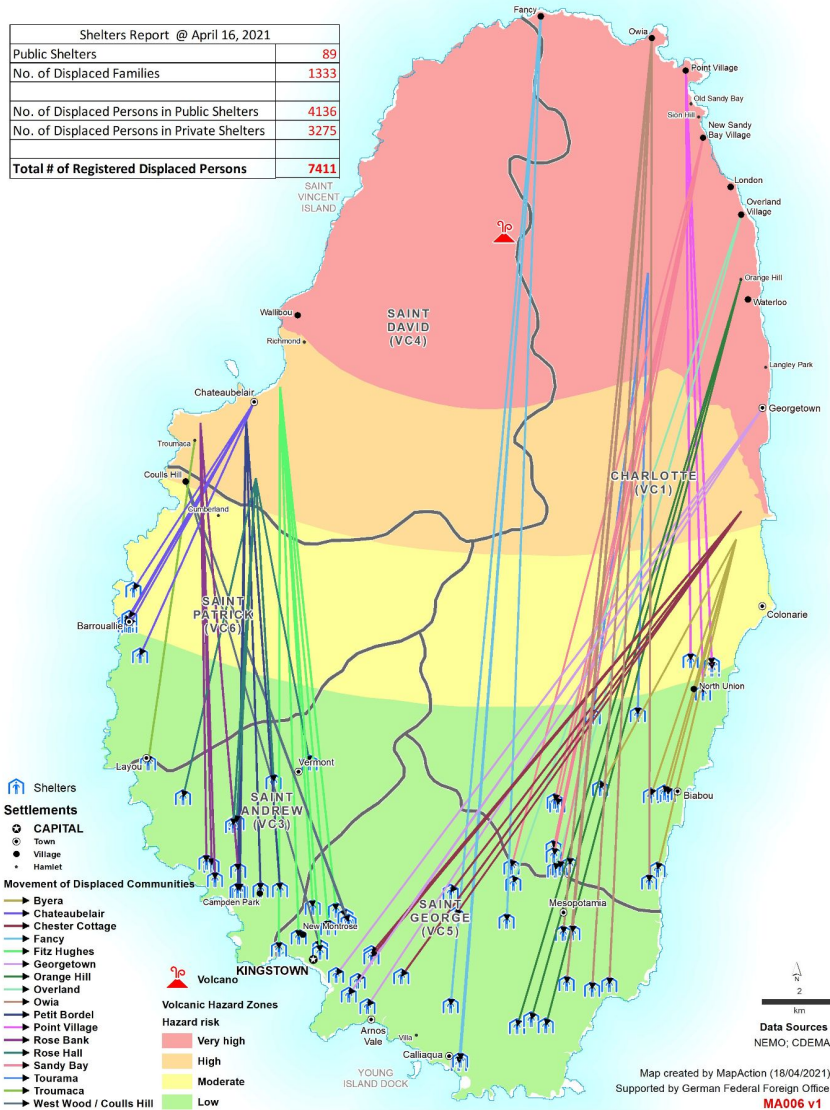


Evacuation Planning

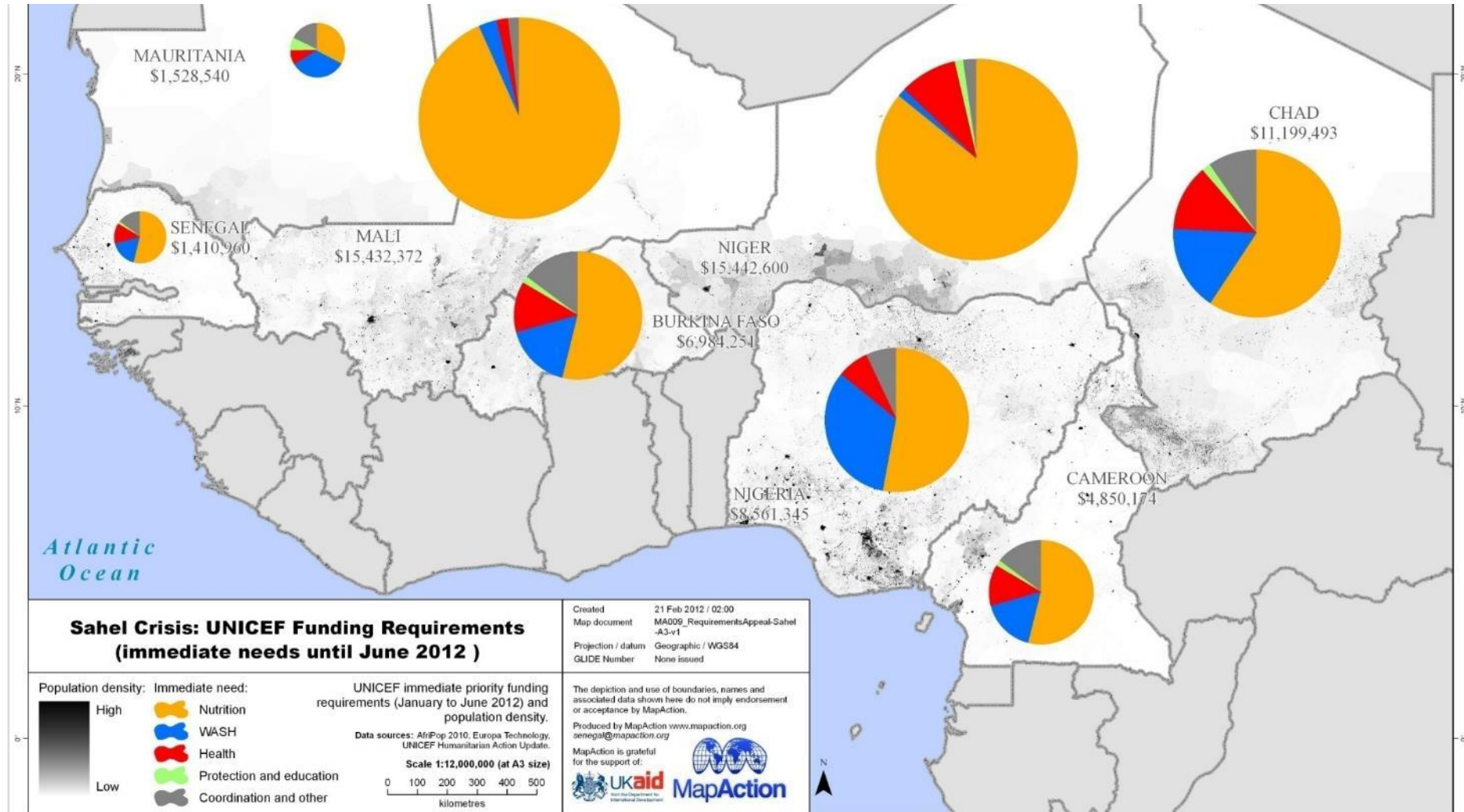
- Evacuation map
- La Soufriere active volcano
- Settlements and hazards
- Shows scale of evacuation

Shelters Report @ April 16, 2021

Public Shelters	89
No. of Displaced Families	1333
No. of Displaced Persons in Public Shelters	4136
No. of Displaced Persons in Private Shelters	3275
Total # of Registered Displaced Persons	7411



Advocacy / Donor Relations



Response and Recovery

Next section of Disaster Management Cycle:

- Response and Recovery
- Two crucial stages after the disaster event
- Part of humanitarian activities
- "Where?" question important

“Where” questions

In emergencies... many questions about “Where?”

- What is **extent of affected area**?
- Where are **people with specific needs**?
- Where have people **moved to**?
- Where are required **resources**?
- What logistics **infrastructure**?
- **Who** is doing **What, Where** (3W)

Applications of Maps and Geospatial Analysis

Applications of maps in humanitarian emergencies:

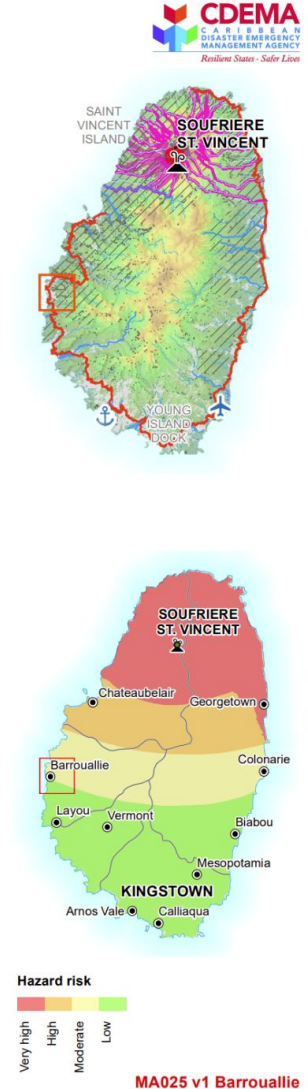
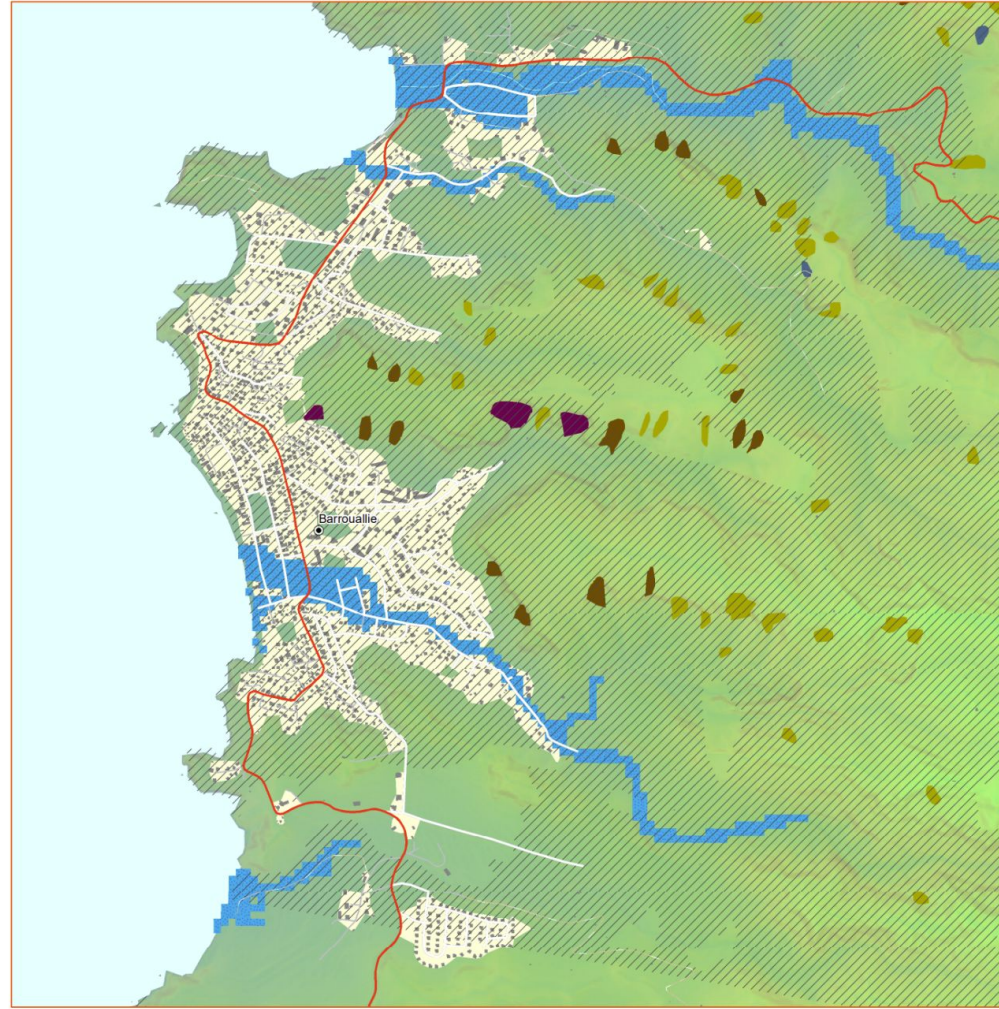
- Early warning and alerting
- Predictive Analysis & affected areas
- Needs assessment
- Safety, security and protection
- Coordination & Relief programming
- Logistics operations planning
- Monitoring and evaluation
- Advocacy and donor relations

Baseline Data

MAP ACTION St Vincent and the Grenadines: La Soufrière volcano
Multi-hazard risks of Barrouallie, Saint Vincent (as at 4 May 2021)

Map showing possible impacts of a modelled volcanic hazards (specifically landslides and possible routes for lahars) and hydrological hazard (specifically flash flood). The modelled data were created before the eruptions of 2021 and the April 29, 2021 rainfall. However, the reports on impacts of the rainfall may coincide with the modelled data.

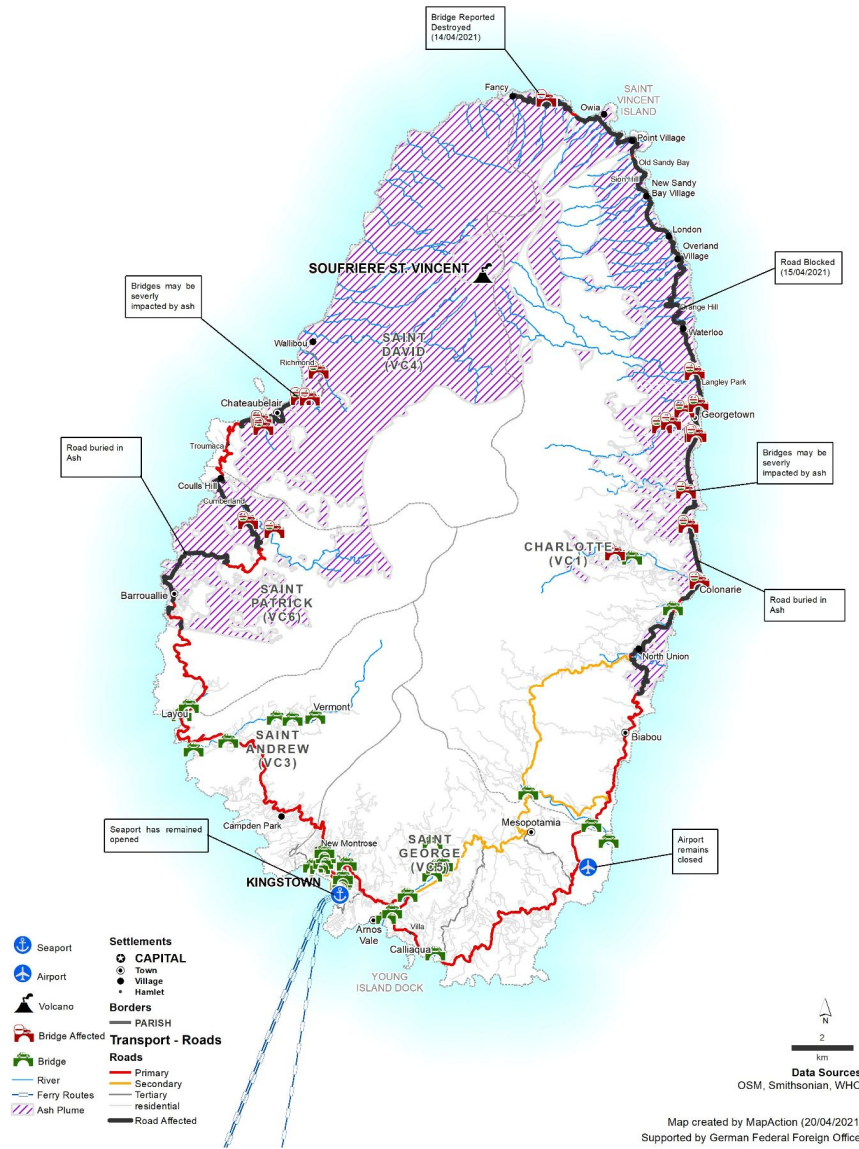
- Volcano
 - Observations**
 - Ash fall
 - Lava dome
 - Potential pyroclastic flow
 - Pyroclastic flow and surge
 - Modelled events**
 - Route for potential lahars
 - Flashflood
 - Landslide**
 - Debris flow
 - Debris slide
 - Deep seated rockslide
 - Rockslide
 - Shallow landslide
 - Stream flood debris flow
 - Settlements**
 - CAPITAL**
 - Town
 - Village
 - Hamlet
 - Physical**
 - River
 - Stream
 - Waterbodies**
 - Waterbody
 - Wetland
 - Transport**
 - Airport
 - Bridge
 - Seaport
 - Landuse**
 - Building
 - Built up area
 - Roads**
 - Primary
 - Secondary
 - Tertiary
 - Service
 - Residential
 - Track
- 440 Meters
- Data Sources**
GADM, OpenStreetMap, SRTM, GeoCris, UWISeismic
Map created by MapAction (04/05/2021)



Access and routes status

This map shows the status of roads in Saint Vincent after the volcanic eruption - where ash might be blocking roads or bridges have been damaged.

This can be crucial information early in a disaster as access can be critical to get resources to those most in need, or to evacuate people.



MA008 v1

Affected Population

The Bahamas: Hurricane Dorian

MA092 v3

Needs assessment and analysis - Abaco. Symbols represent the number of people in need following assessments up to 19th September 2019.



Supported by the German Federal Foreign Office and the Ministry of Foreign Affairs of the Netherlands.

Data Sources: GADM, OCHA, BNGIS
Map created by MapAction (25 September 2019)

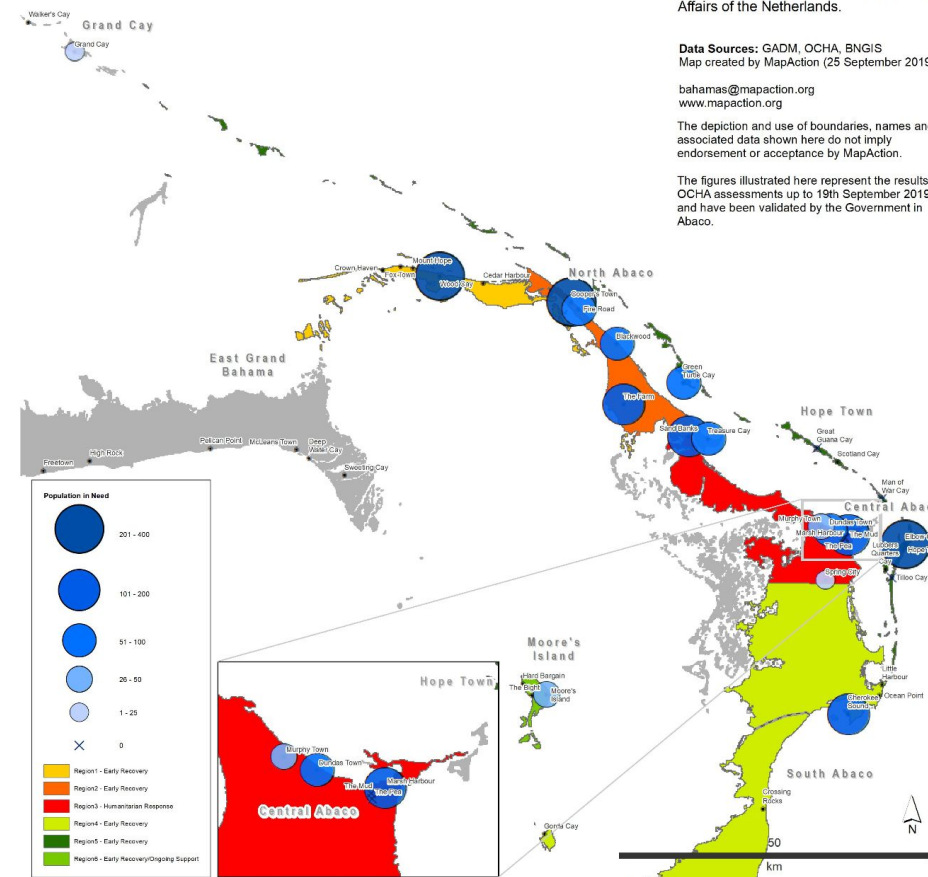
bahamas@mapaction.org
www.mapaction.org

The depiction and use of boundaries, names and associated data shown here do not imply endorsement or acceptance by MapAction.

The figures illustrated here represent the results of OCHA assessments up to 19th September 2019 and have been validated by the Government in Abaco.

Location	Total Popn (2010)	Remaining Popn	Popn in need	Source	Priority needs	Ongoing response
Cedar Harbour, Wood Cay, Mount Hope, Fox Town, Crown Haven	762	700	400	Community member (came from north of bridge), Team Rubicon, Northern Administrator	Early recovery (houses/bridge repair, WASH, fuel, shelter)	Bridge repair, WASH, generator, pump, shelter
Spanish Cay and all of Cooper's Town	676	450	300	Informed Elder, Northern Administrator	WASH, shelter, early recovery	Food, water, shelter, medical clinic repair (EMT - 10 clinicians total)
Hope Town / Elbow Cay	458	650	300	Deputy Counselor/Hope Town Fire & Rescue	Shelter, food, WASH for displaced from other areas	Tarps
The Farm	402	250	200	Team Rubicon, SOS International	Shelter, WASH, food, fuel, early recovery	Food, water, shelter
Sand Banks	333	150	150	OCHA, FAHO	WASH, food, shelter, fuel, early recovery	Food, water, shelter
Charlotte Sound, Little Harbour, Yellow Wood, Casuarina Point	363	200	150		Early recovery, fuel	
Marsh Harbour	1874	150	135	Community members, WFP	WASH, food, shelter, fuel, early recovery	Food, water, shelter
Treasure Cay (without Sand Banks)	854	150	100	Airport manager, Deputy Chairperson, Police inspector, business owner	WASH, food, shelter, fuel, early recovery	Food, water, shelter, health
Grape Tree and all of Blackwood	396	100	100	Community members, WFP, Northern Administrator	Health, WASH, telecom, fuel, food, early recovery	Food, water
Green Turtle Cay	595	306	92	Best rental owner in Treasure Cay, Northern Administrator	Shelter, WASH, food, early recovery	Food, water, shelter
Fire Road	349	245	74	Northern Administrator	WASH, shelter, early recovery	
Dundas Town	2090	75	68	WFP	WASH, food, shelter, fuel, early recovery	Food, water, shelter
Murphy Town	1938	50	45	WFP	WASH, food, shelter, fuel, early recovery	Food, water, shelter
Moore's Island	593	100	30	Medic Corps	Water, food, health, fuel	
Grand Cay	383	250	25	Northern Administrator	Early recovery, fuel, telecomms, power	
Spring Cay	500	42	15	Pastor / local leader	Power, water	Tarps, shingles
The Mudd	1622	0	0	Community members		
The Pie	682	0	0	Community members		
Panama Cays, Lubbers Cay, Tilico Cay, Cornish Cay and Bridges Cay	18	5	0		Early recovery, fuel, telecomms, power	
Man of War Cay	215	65	0		Early recovery, fuel, telecomms, power	
Great Guana Cay and Scotland Cay	127	40	0	Deputy Counselor for Hope Town, Council Member for Guana Cay	Early recovery (repair houses, debris clearance), power	
Totals	8432	3978	2184			

Note: South Abaco locations have been excluded because it is reported they are not in need of humanitarian assistance



Population movements

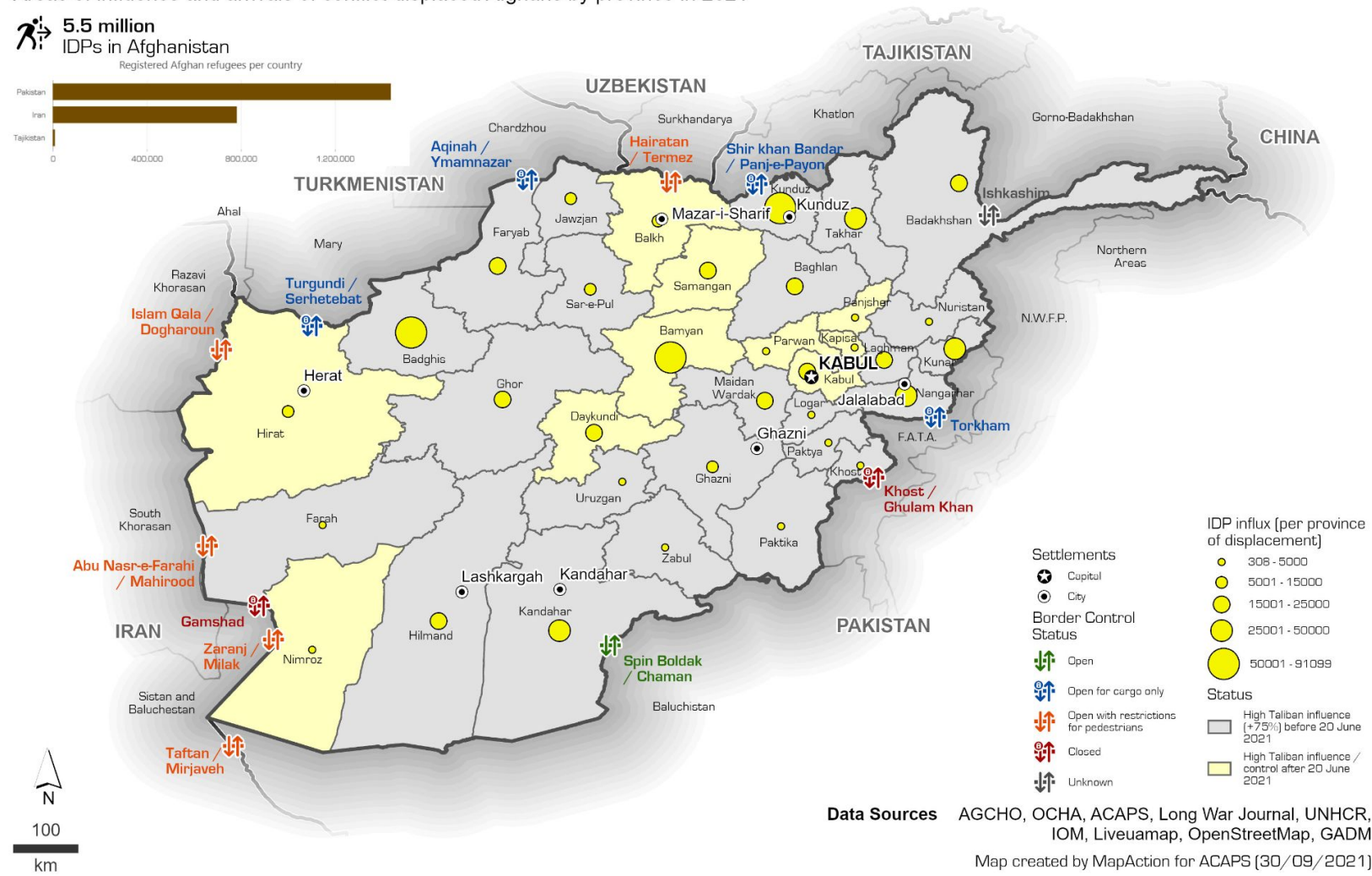
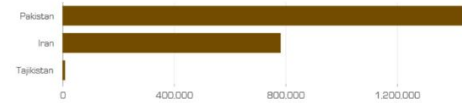
Afghanistan:

Areas of influence and arrivals of conflict-displaced Afghans by province in 2021



5.5 million
IDPs in Afghanistan

Registered Afghan refugees per country



Impact Assessments



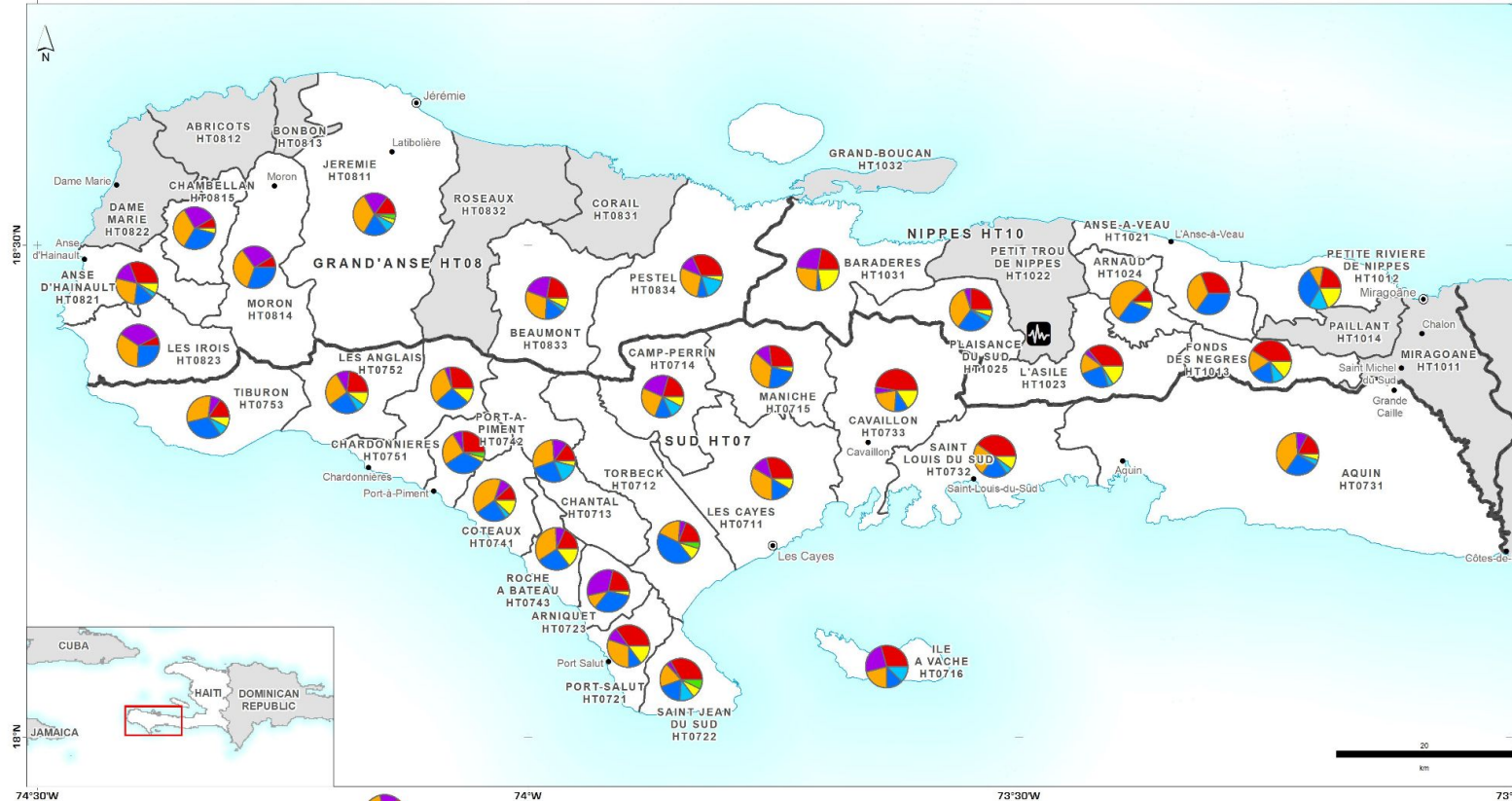
Haiti

Top shelter concerns by Commune, as named by respondents in Tearfund assessment (implemented by RIHPED)



MA025

Scan for latest maps



Summary of responses in Tearfund assessment to question 'What are your top three shelter concerns?'

[Multiple respondents were interviewed in each Commune and charts represent proportion that each item was selected]



- No accommodation
- Accommodation is overcrowded
- Housing too damaged to live in
- Lack of materials to repair or build
- Lack of skills to repair or build
- Lack of basic household items
- Disputes over land possession

- Tearfund assessment coverage
- Commune not covered by assessment results
- Earthquake epicentre
- CAPITAL
- City
- Town
- ADMIN 1 - DÉPARTEMENT
- ADMIN 2 - COMMUNE

Data Sources:
UNDAC/Tearfund/RIHPED - Assessment data
UN OCHA - Admin boundaries
OpenStreetMap and Contributors - Settlements

Created 02-Sep-2021 10:00 EDT
UTC-05:00

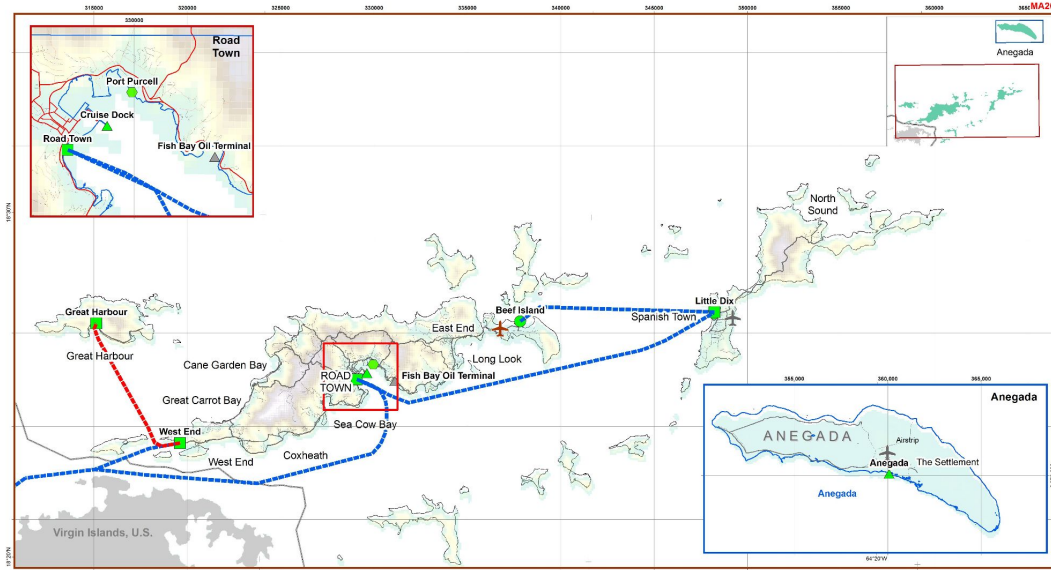
Projection & Datum WGS 1984

GLIDE Number EQ-2021-000116-HTI

Produced by MapAction
<https://mapaction.org>
haiti@mapaction.org

Supported by German Federal Foreign Office

Logistics Planning



MAP ACTION **CDEMA**
GOVERNMENT OF THE VIRGIN ISLANDS
British Virgin Islands: Hurricane Irma - Transport Infrastructure (as of 13 Sep 2017)

Status of marine and air transport as of 13 September 2017. Although facilities at jetties may be damaged, this map shows if the dock itself is able to function. Small and private jetties are not included.

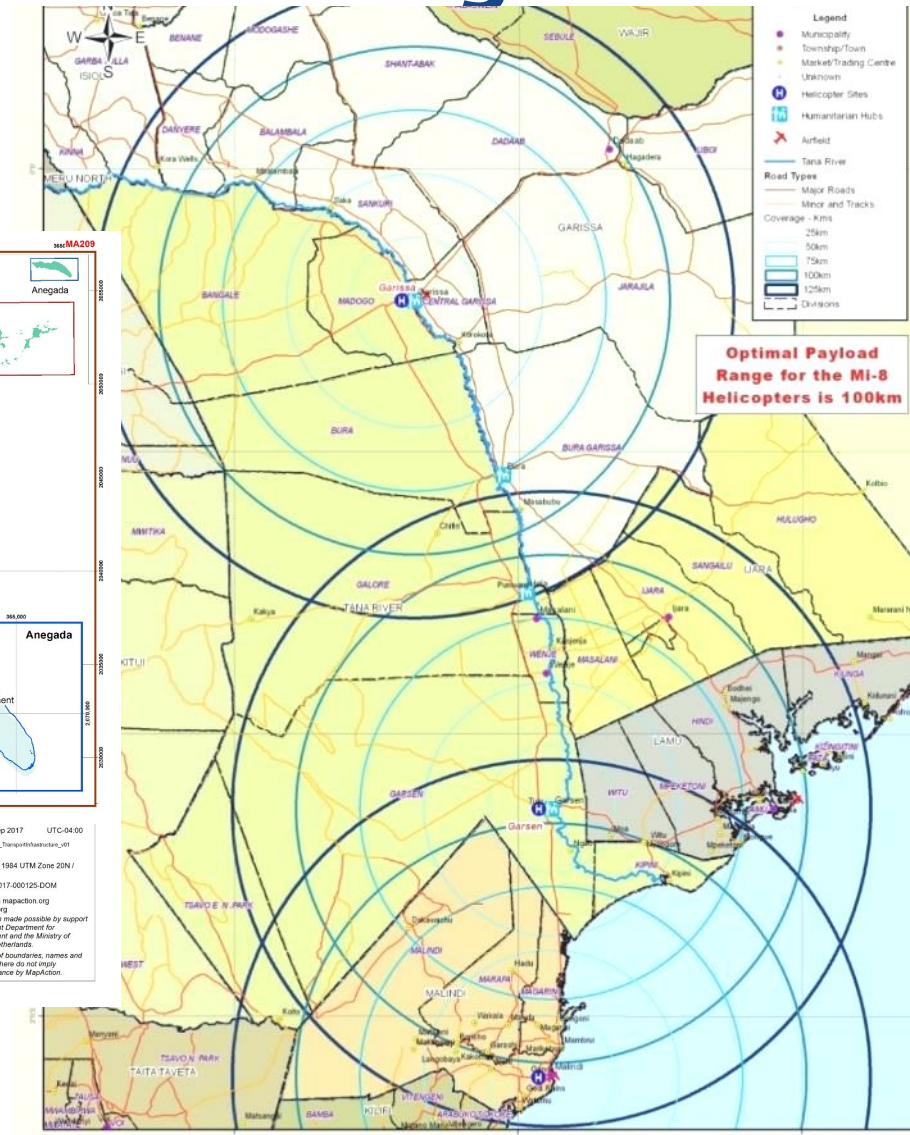
Track of Irma (Actual)

Ports and Docks Status:
 Open to Commercial: Green
 Open to Retail, Medical: Yellow
 Unknown: Grey
 Not Operational: Red
 Closed: Blue

Other Symbols:
 Airports: Green plane
 Conventional Ferry Routes: Red line
 Ferry Dock: Blue circle
 Other Strategic Docks: Black circle
 Port: Black triangle

Data sources: USVI outline: GADM; RNAT Areas: CDEMA; Ports and Ferries: GOVI; Status: UK Hydrographic Office.

Created: 13 Sep 2017 UTC-04:00
Map Document: MA09_TransportInfrastructure_v01
Projection & Datum: WGS 1984 UTM Zone 20N / UTM
Scale: 1:140,000 (AIAS)
Glide Number: TC-2017-000125-00M



MapAction
Flight Coverage - Garissa, Garsen and Malindi

Created: 03 Dec 2006 11:00:00
Map Doc Name: MAP_AKTU_SMA_AKTU_001
Projection: UTM Zone 37 North
Scale: 1:250,000
Kenya Floods Nov/Dec 2006

Needs Assessments

Bahamas:
Hurricane Matthew-
Assessment Survey
Areas
New Providence
8-11 Oct 2016

Location of CDEMA Rapid Assessment Survey Areas, grouped by either South Coast Constituency or General Survey Area. Jointly conducted with Government of Bahamas, UNDAC and MapAction between 8-11 October to sample damage extent, storm surge extent and needs.

— Assessment Routes
 ■ Areas
 ■ South Coast Constituencies and other major Assessment Zones

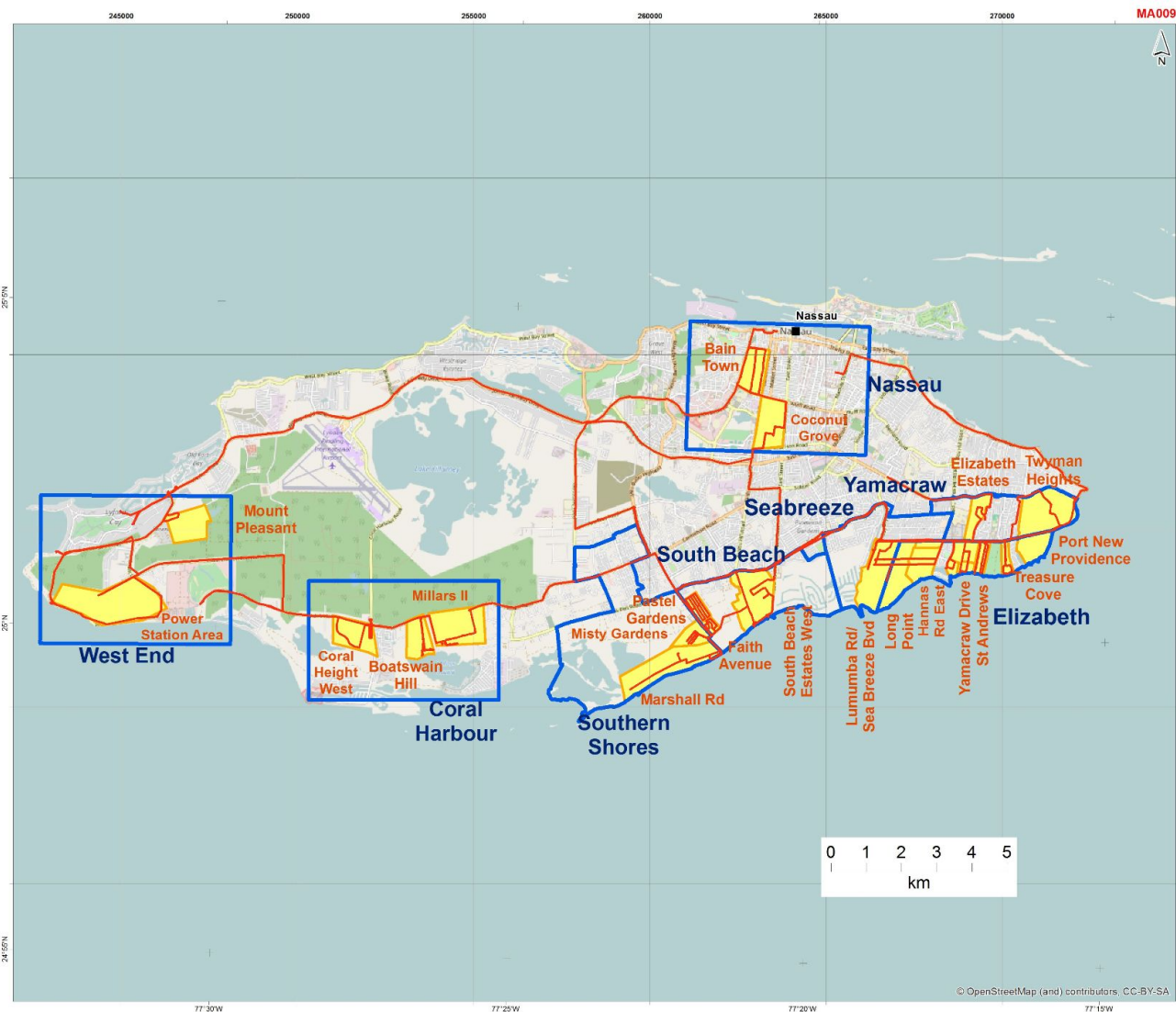
0 1 2 3 4 5 km

1: 100,000 (A1A3)

Data sources
 Assessments routes and points: CDEMA, GoB, UNDAC, MapAction
 Constituencies - MapAction from GoB
 Imagery - Open Street Map

Created 10 Oct 2016 / UTC-04:00
Map Document MA009_AssessmentAreas_NP
Projection & Datum UTM Zone 18N / WGS 1984
Glide Number
 Produced by MapAction www.mapaction.org
bahamas@mapaction.org

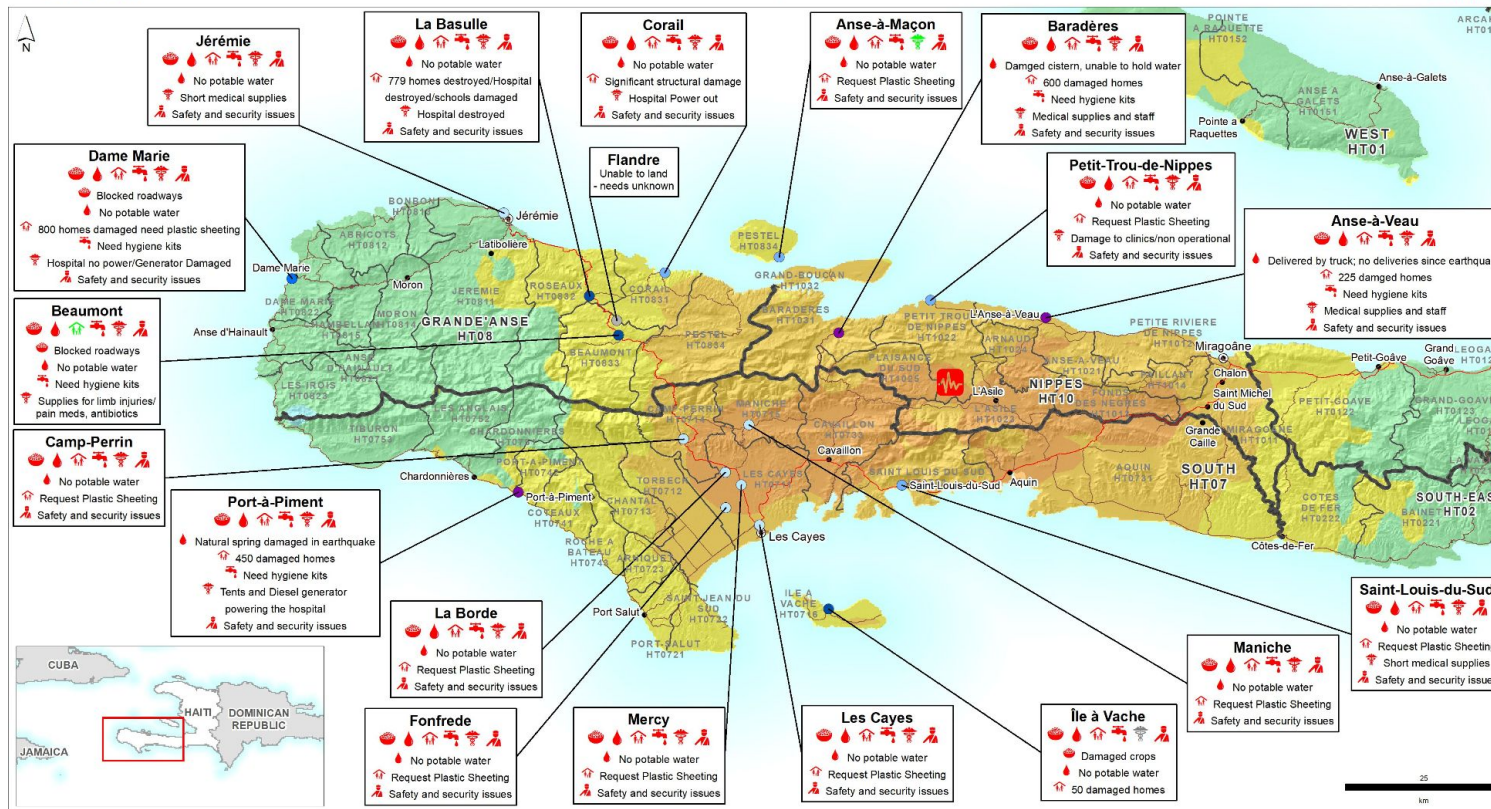
Supported by DFID and the Ministry of Foreign Affairs of the Netherlands
 The depiction and use of boundaries, names and associated data shown here do not imply endorsement or acceptance by MapAction.



Needs Assessments



Haiti USAR Site Assessment Locations and Needs Summary



Map showing the location of USAR assessment sites and information about the needs at each site

Includes all sites visited between 17/08/2021 and 23/08/2021

Who-what-where (3W)

The Bahamas

Who What Where activities / presence at sub-island level as reported to the BHS 3W WhoWhatWhere as of 25th September

To add your presence and activity please go to: <http://bit.ly/BHSUsefullinks> or use the QR code and follow link for BHS (3W WhoWhat Where)



The activities counted here represent only those that have been reported to the link above. Please record your activity there to better represent the scale of the BHS response.

See <https://maps.mapaction.org/event/bhs-2019-09> for updates to this map.

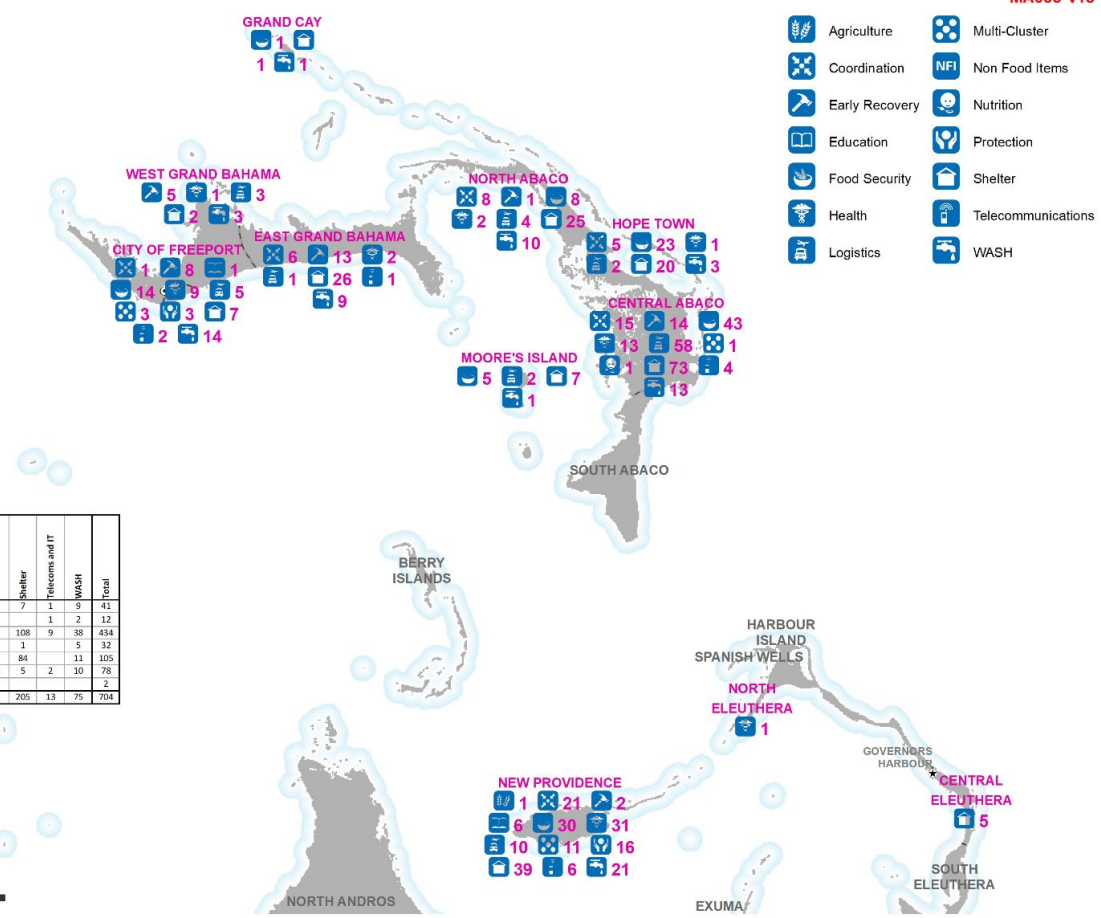
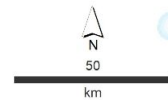
Supported by the German Federal Foreign Office and the Ministry of Foreign Affairs of the Netherlands.



Number of activities by location for each organisation type	Location														Total
	Central Abaco	Central Eleuthera	City of Freeport	East Grand Bahama	Grand Cay	Hope Town	Moore's Island	New Providence	North Abaco	North Eleuthera	South Abaco	West Grand Bahama			
Donor	11	1	1	1	3	2	10	13							41
Government	2														12
International ONG	281	46	34	51	15	50	9	42	1						434
National NGO	2	5			25	62									32
Red Cross and Red Crescent Movement	27	5	22			42									105
United Nations	12	6	1			56	3								78
Private Sector						2									2
Total	235	57	58	54	15	104	58	1							704

Number of activities by sector for each organisation type	Sector														Total
	Agriculture	Coordination	Education	Early Recovery and Infrastructure	Food Security	Health	Logistics	Multi-Cluster	Nutrition	Non Food Items	Protection	Shelter	Telecoms and IT	WASH	
Donor						1	5	5	5						41
Government	1	2	1	4											12
International ONG	34	1	36	96	34	70	3	1		4	108	9	38		434
National NGO		1	1	18	4	2					1		5		32
Red Cross and Red Crescent Movement	6		1	4	15	7	2				14	5	2		105
United Nations	1	13	5	1	4	15	7	2							78
Private Sector					1										2
Total	1	56	7	43	124	60	85	15	1		19	205	13	75	704

Data Sources: GADM, OCHA
Map created by MapAction (25/09/2019)
bahamas@mapaction.org
www.mapaction.org

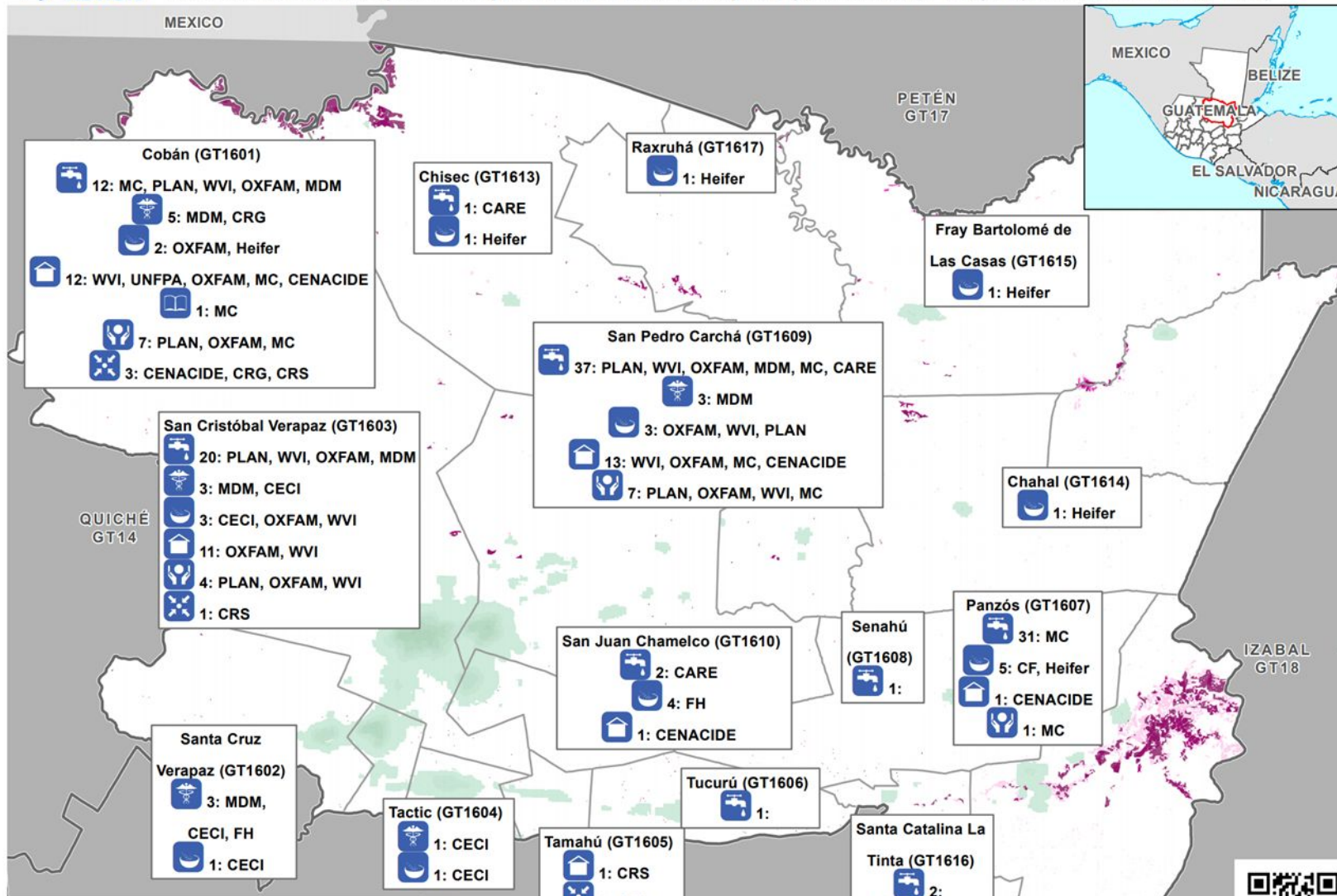


Who-what-where (3W)



Guatemala: Huracán Eta / Iota

Presencia humanitaria: quién hace qué, dónde en cada municipio, departamento: Alta Verapaz (a las 2200 del 29 Nov 2020)



Organizaciones con abreviaturas

Organisation	Acronym
AAD	AAD
ADRI	
CARE	CARE
CECI	CECI
CENACIDE	CENACIDE
CHILD FUND	CF
CRG	CRG
CRS	CRS
FH	FH
GSD	GSD
Gobierno de Guatemala	
Heifer	Heifer
IsraAid	
MDM	MDM
MINSA	
Mercy Corps	MC
OIM	OIM
OXFAM	OXFAM
PLAN	PLAN
TECHO	TECHO
UNFPA	UNFPA
UNICEF	UNICEF
WVI	WVI

Las etiquetas muestran el total número de actividades informadas para cada uno de estos sectores, y quien los entrega:

- Educación
- Protección
- Coordinación
- Logística
- Agua, Saneamiento e Higiene
- Salud
- Seguridad Alimentaria
- Alojamiento de emergencia

Densidad de población

- Alto
- Bajo

Lím. administrativos

- INTERNACIONAL
- DEPARTAMENTO
- MUNICIPIO



Introduction to CDEMA and the Regional Response Mechanism (RRM)



CDEMA: who WE are...

The **Caribbean Disaster Emergency Management Agency (CDEMA)** is a regional **inter-governmental agency** responsible for disaster management in the **Caribbean Community (CARICOM)**. The Agency was **established in 1991** as the **Caribbean Disaster Emergency Response Agency (CDERA)** with the primary responsibility for the coordination of emergency response and relief efforts to Participating States impacted by hazards which exceed their capacity to manage. It **transitioned to CDEMA in 2009** to fully embrace the principles and practice of **Comprehensive Disaster Management (CDM)**.





Agreement Establishing CDEMA

There are 43 articles covering...

Legal Personality

Mandate

Governance:
Organs and
Function

Undertakings of
Participating
States

Facilitation and
Collaboration

Other Areas



Mandate of CDEMA

**Mobilise and coordinate
disaster relief**

**Mitigate consequences of
disasters**

**Provide comprehensive
information on disasters**

**Encourage disaster loss
reduction and cooperative
arrangements and
mechanisms**

**Establish, enhance and
maintain adequate emergency
disaster response capabilities
among the Participating States**



Governance Structure

The CDEMA Council

- Determines the policies of CDEMA
- Comprises the Heads of Gov'ts of the CDEMA PSs

The Management Committee of the Council

- Sub-committee of Council responsible for administrative oversight issues
- Permanent Secretaries responsible for disaster management

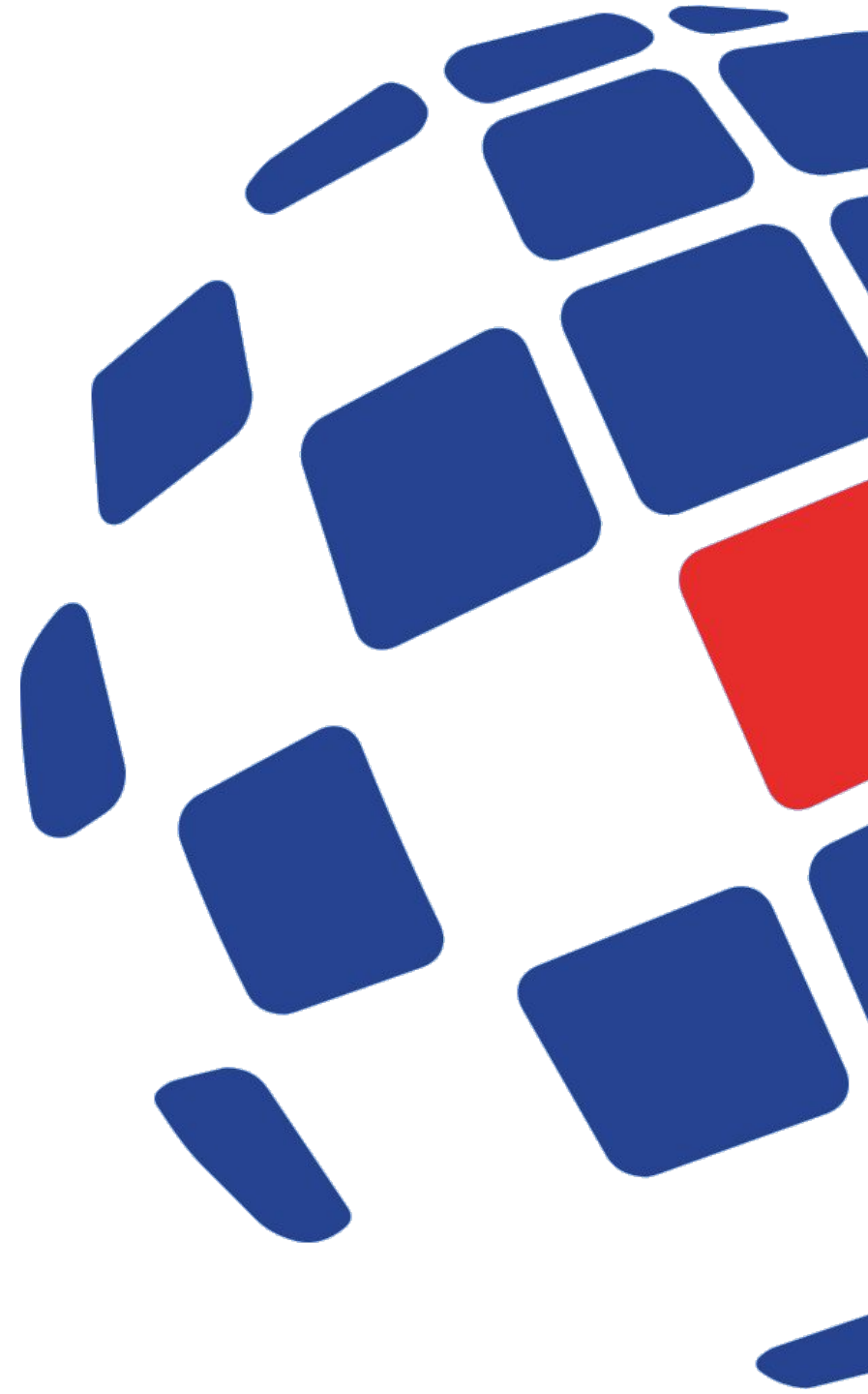
The Technical Advisory Committee

- Technical and programmatic advisory arm
- National Disaster Coordinators and reps of specialized regional organisations

The CDEMA Coordinating Unit

- Education, research and information
- Finance and administration
- Mitigation, preparedness and response

THE REGIONAL RESPONSE MECHANISM (RRM)



What is the RRM?



AIM

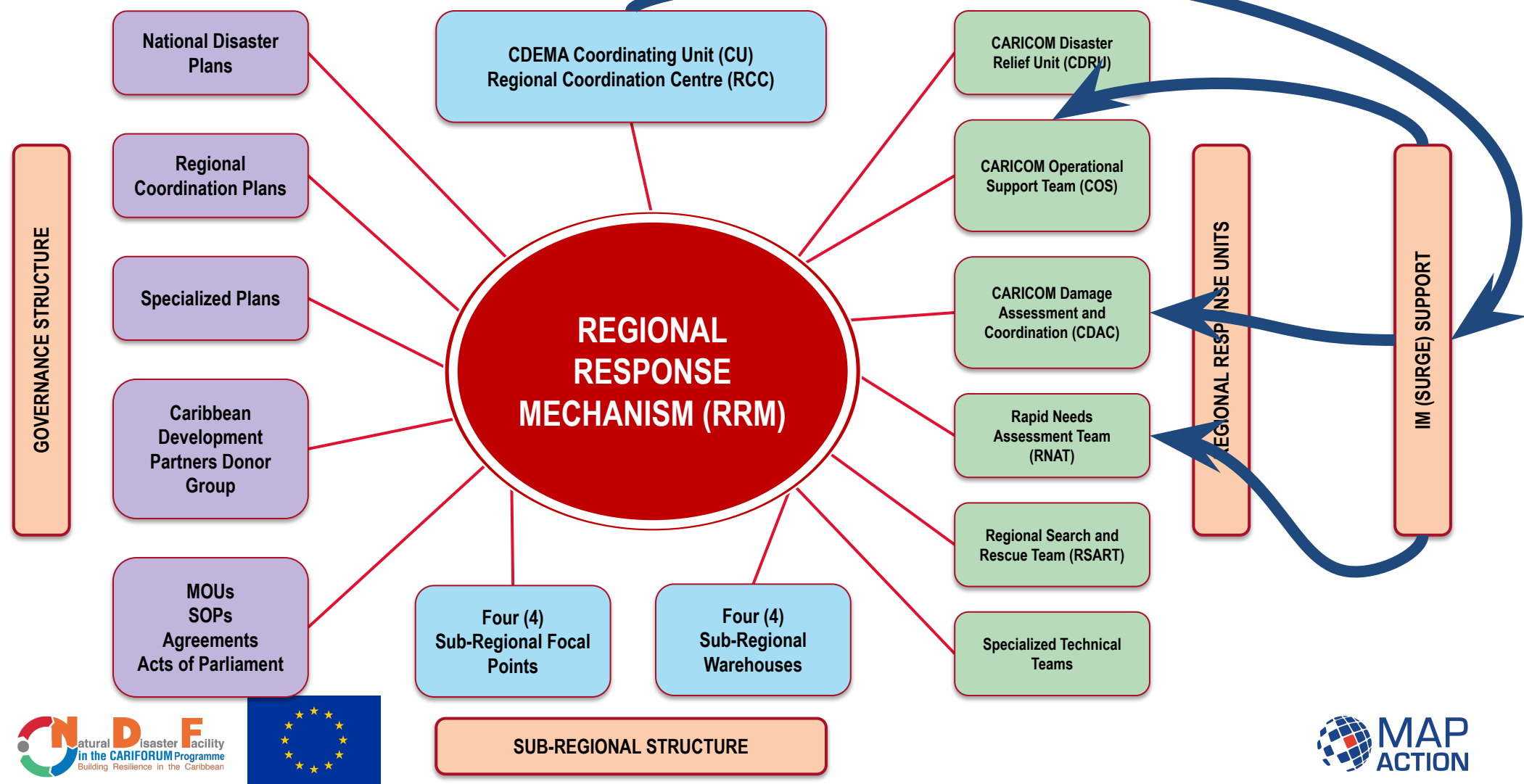
To provide effective and efficient coordinated disaster response support to CDEMA Participating States requiring regional and/or international assistance for their response to the consequences of an event based on regionally agreed Principles, Concept, and Realities.

PRINCIPLES

1. Respect for sovereignty
2. Regional solidarity
3. Compliance with international **Humanitarian Standards**: *Humanity, Impartiality, Neutrality, Independence*
4. Adherence to principles of partnership: *transparency, results-oriented, responsibility, complementarity*



Conceptual Framework for the RRM



CDEMA Operational Elements



Relief Management

- Establish relief mechanism – policy and structure for the event
- Advise the impacted State, and where possible support the development of the needs list
- Head the international and regional coordination for relief



Logistics

- Liaise with suppliers, transport networks, regional military, etc. to move relief supplies and personnel



Situational Overview

- Process data to inform:
 - Needs list,
 - Relief priorities,
 - Relief mechanism,
 - Situation reports
- Prepare information charts and graphs of data for communications cell
- Map the data received using pre-existing charts



Telecomms

- Maintain emergency telecommunication with the impacted PSs and others via HF, Satellite BGANs, etc.



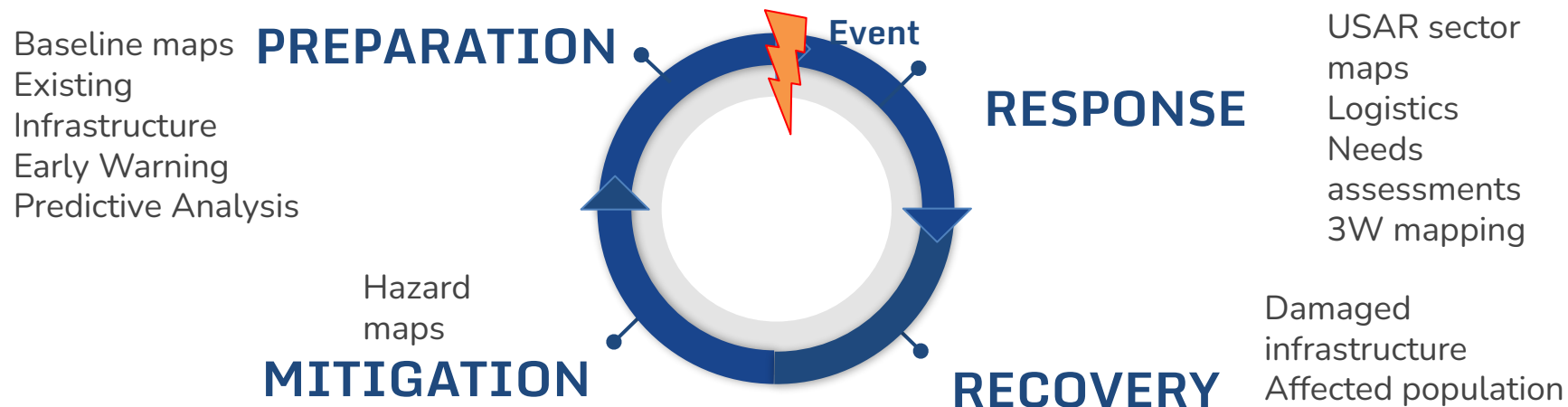
Communications

- Advise impacted PS on the publication of the needs list
- Communicate relief policy and structure for the event to PSs, Donors, Regional and International Institutions, other interests, and the general public

Conclusion: The Full Cycle

Mapping is key to Disaster Management Lifecycle

- Some maps are used throughout in different forms
- Some particular to a section of the life cycle



Q - how does this help you in your own EOC operations?

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