

Logistics Cluster Scenario and Response Planning exercise

Antananarivo, Madagascar – October 2017

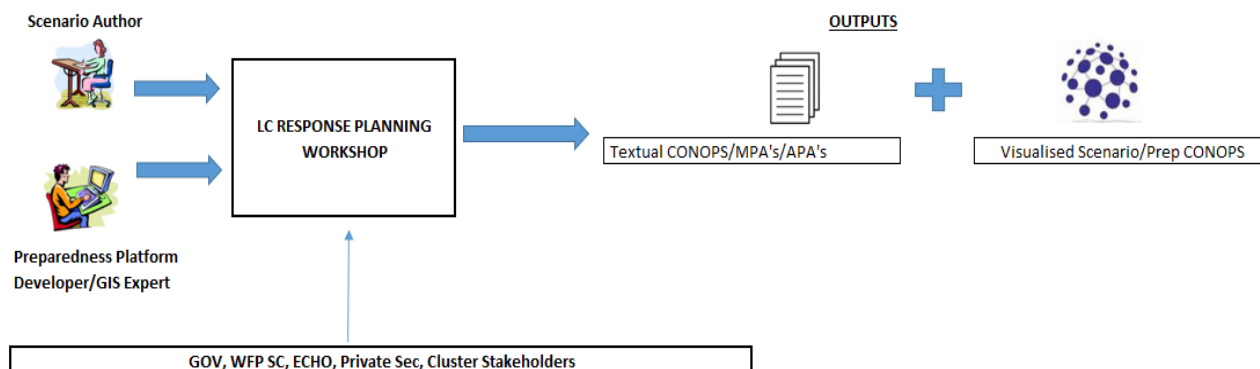
In October 2017, a Logistics Cluster Scenario and Response Planning exercise was conducted with 27 participants in Antananarivo, Madagascar as part of the Logistics Cluster Preparedness project, for which Madagascar was selected as a priority country in May 2017. The Logistics Cluster Preparedness project works to build and support national logistics capacity of identified disaster-prone countries.

As part of this project, partners have asked the Logistics Cluster to:

- 1) MAP capacities and gaps with local stakeholders using new and existing tools/protocols
- 2) DEVELOP scenarios based on risk analysis
- 3) ASSESS disaster impacts on infrastructure and capacities
- 4) SUPPORT governments and stakeholders to address gaps
- 5) IDENTIFY organisations and local actors best placed to address gaps

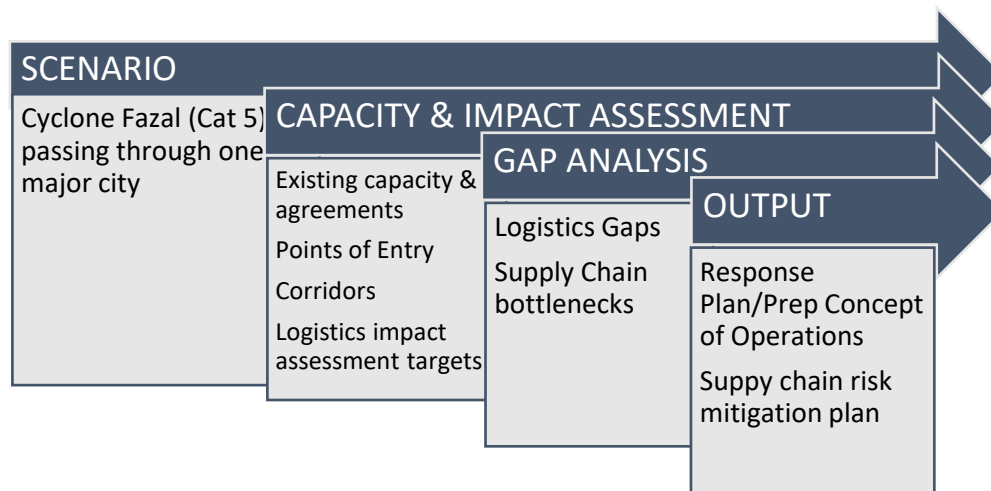
The workshop was designed to undertake activities directly related to these identified goals, introducing participants to innovative tools and methods, asking them to quickly and graphically articulate a response plan for potential missions, and to identify common supply chain risks. The Logistics Cluster Preparedness Platform and ArcGIS tool, developed in collaboration with the World Food Programme (WFP) GIS team, were key in enabling these exercises. Utilising their feature sets, these tools allowed for cross-sectoral discussion, brainstorming (guided conversation) and the building of a shared mental model, leading to the potential identification of supply chain risk that could affect an entire response and drive mitigation solutions in the future.

Represented graphically, the process behind and proposed outcomes of the workshop are shown below:



To expose participants to the practical use of concepts covered in the training and to provide an opportunity for learning in practice, scenarios were chosen to stimulate thought and show the full spectrum of supply chain-related opportunities and threats that can be faced in emergencies. Utilising the visualisation benefits of the Logistics Cluster Preparedness Platform, this exercise demonstrated how it can help in foreseeing risk and managing the future more

effectively. As an execution engine manned by a WFP GIS Expert together with a WFP/Logistics Cluster subject matter expert, the platform's graphic storytelling capabilities assisted in building a joint Preparedness Concept of Operation/Response Plan, with visual results in real-time.



General questions that were asked throughout the process:

- What type of supply chain configuration is required to respond to this event?
- What type of partnerships are required to respond to this event?
- What main supply chain risk would affect all responders?
- What supply chain points of entry would be required in the response?
- What logistics corridors would most likely be used to access beneficiaries?
- What logistics capacities are required and estimated to be available to respond adequately, effectively, and efficiently?
- What immediate assessments are required to gain a better understanding of the network in Madagascar?
- What impact assessments should be conducted and prioritised post-event?

Scenario Planning Resources

The prepared scenario related to Category C.

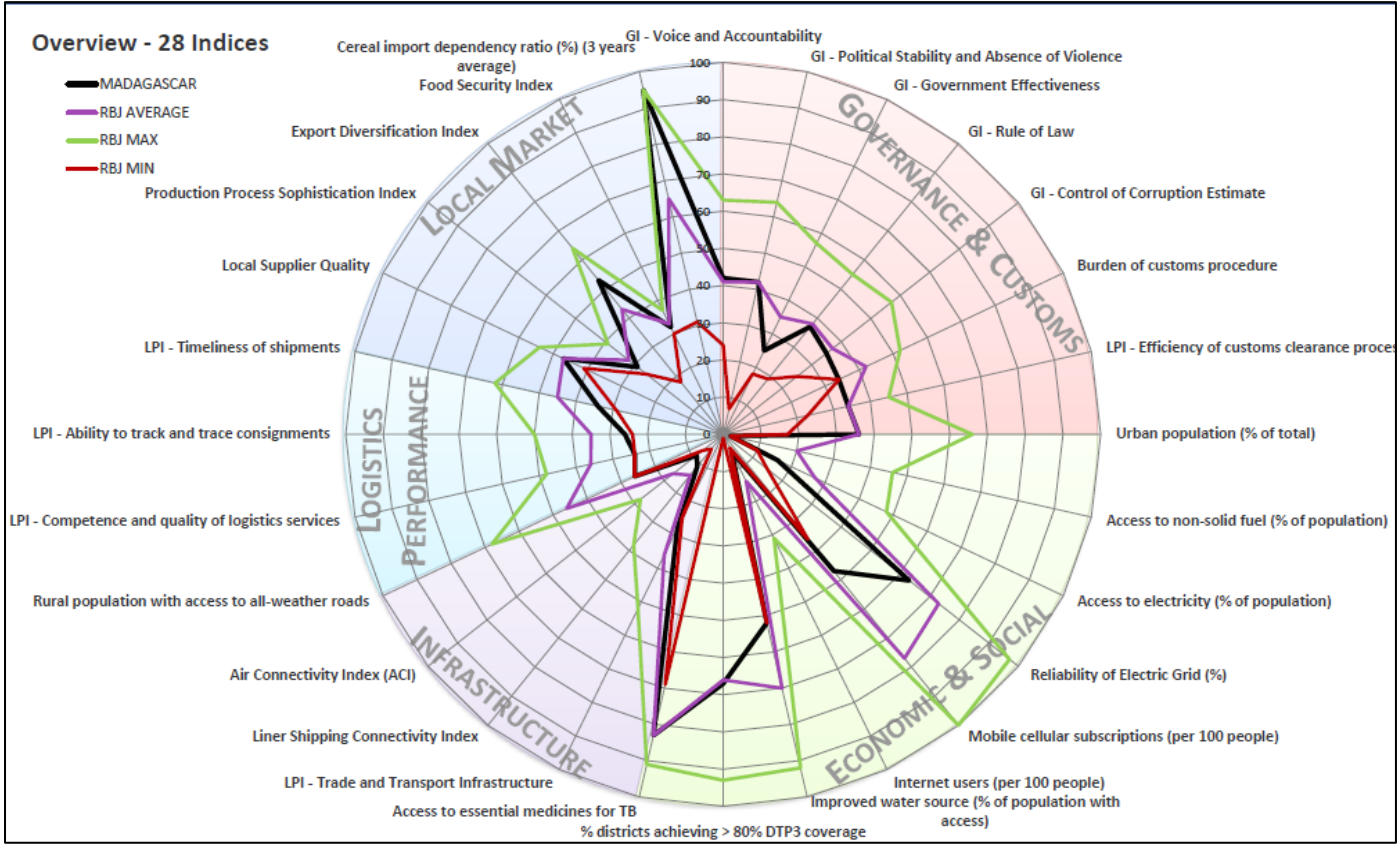
	Category A	Category B	Category C
Key Variables	Minor scale disaster with lower impact. National response and coordination mechanisms are still capable of adequately addressing urgent humanitarian needs.	Medium scale disaster. National response and coordination mechanisms are still functional and responding to needs.	Large-scale disaster where national response and coordination mechanisms have been heavily impacted and/or are temporarily unavailable to adequately address urgent humanitarian needs.
Example Scenarios	Localised flooding, low category storms	Larger flooding and mid-category storms	Mass floods, landslides and high-category storms
Probable coordination mechanisms	National coordination by BNGRC and national clusters (supported by international cluster leads as requested)	Joint coordination including the need to coordinate large scale consular assistance	IASC Cluster coordination, with Civ-Mil elements
Potential international assistance	International assistance by existing actors in country welcomed but not requested (specific targeted assistance may be requested)	Wide variety of international assistance by broad range of actors depending on nature and locations of disaster.	International assistance by wide range of actors resulting in mass influx of cargo and personnel

Madagascar Risk Info

River flood	High
Urban flood	High
Coastal flood	High
Cyclone	High
Wildfire	High
Tsunami	Medium
Volcano	Medium
Extreme heat	Medium
Earthquake	Low
Landslide	Very low
Water scarcity	Very low

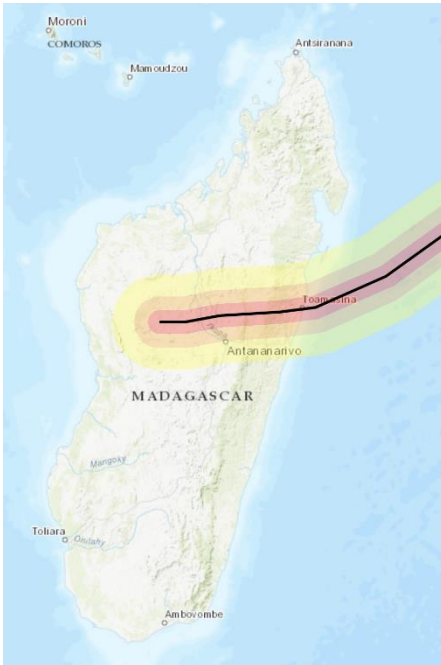
Source: <http://thinkhazard.org/en/report/150-madagascar>

Indices Risk Matrix Model



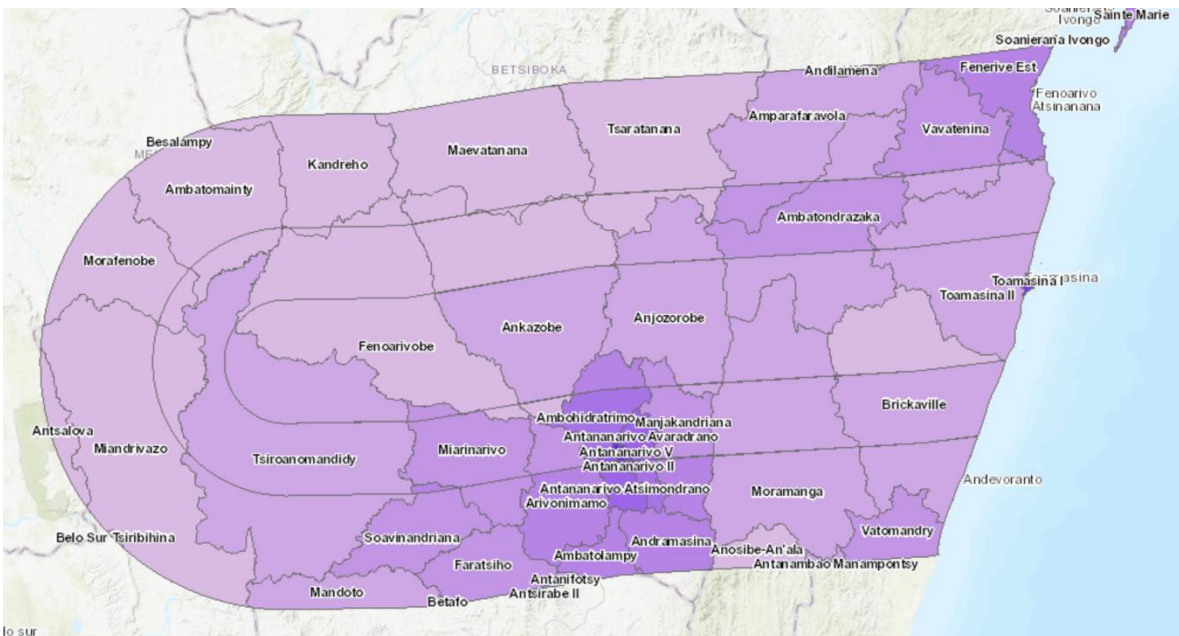
SCENARIO: Tropical Cyclone Fazal

Map of Cyclone Path



Intense **Tropical Cyclone Fazal, Category 5**, made landfall in Toamasina, north-eastern Madagascar on 7 March. It then moved eastward across the northern and central parts of the country, bending southwest from Fenoarivo Be, and then weakening before exiting the country on 10 March close to Ampanihy Quest. A large area has been affected with a severe impact on population and livelihood. The storm has resulted in external assistance being required and a full-scale emergency response in Madagascar has begun with many incoming rescue teams from abroad.

Affected Areas Map



Fazal - Population Exposure Estimation

The population exposure, summarized by Admin 0, 1 and 2, has been calculated using a 1 km resolution LandScan raster (LandScan Database 2015)

Admin boundaries are defined by Gaul 2015 dataset. Windspeed buffers are produced by GDACS (JRC)

This is a preliminary analysis and has not yet been validated in the field.

Analysis performed by ADAM (Automated Disaster Analysis and Mapping) on 25-10-2017 at 06:49 UTC

Contact: hq.gis@wfp.org

			population				
			60km/h	90km/h	120km/h		
admin0	admin1	admin2	Total				
MADAGASCAR	Alaotra Mangoro	Ambatondrazaka	34,852	215,108	103,904	353,864	
		Amparafaravola	219,807	47,781		267,588	
		Andilamena	369			369	
		Anosibe-An'ala	11,157			11,157	
		Moramanga	167,732	63,130	69,414	300,276	
	Alaotra Mangoro - TOT		433,917	326,019	173,318	933,254	
	Analamanga	Ambohidratrimo		357,137	74,398		431,535
		Andramasina	168,249				168,249
		Anjozorobe		60,494	132,141		192,635
		Ankazobe	2,805	57,172	105,352		165,329
		Antananarivo Atsimondrano	573,887	62,398			636,285
		Antananarivo Avaradrano	145,940	266,698			412,638
		Antananarivo I	66,431	139,465			205,896
		Antananarivo II	164,951				164,951
		Antananarivo III	11,154	104,486			115,640
		Antananarivo IV	287,540				287,540
		Antananarivo V	913	325,942			326,855
		Antananarivo VI		299,641			299,641
		Manjakandriana	120,653	89,868	14,112		224,633
		Analamanga - TOT		1,542,523	1,763,301	326,003	3,631,827
		Analanjirifo	Fenerive Est	245,445	1,416		
	Sainte Marie		19,874				19,874
	Soanierana Ivongo		993				993
	Vavatenina		149,687	38,438			188,125
	Analanjirifo - TOT		415,999	39,854			455,853
	Atsinanana	Antanambao Manampontsy	5,348				5,348
		Brickaville	76,626	90,208	37,038		203,872
		Toamasina I			293,610		293,610
		Toamasina II	2,389	99,855	146,398		248,642
		Vatomandry	65,515				65,515
	Atsinanana - TOT		149,878	190,063	477,046		816,987
	Betsiboka	Kandreho	15,637	218			15,855
		Maevatanana	52,913	1,407			54,320
		Tsatanana	45,347	6,984			52,331
	Betsiboka - TOT		113,897	8,609			122,506
	Bongolava	Fenoarivobe	5,066	37,807	99,326		142,199
		Tsiroanomandidy	92,811	168,487	94,630		355,928
	Bongolava - TOT		97,877	206,294	193,956		498,127
	Itasy	Arivonimamo	281,884	49,825			331,709
		Miarinarivo	46,978	194,543	20,495		262,016
		Soavinandriana	194,750	9,495			204,245
	Itasy - TOT		523,612	253,863	20,495		797,970
	Melaky	Ambatomainity	27,880	1,373			29,253
		Antsalova	3,358				3,358
		Besalampy	8				8
		Morafenobe	10,003	174			10,177
	Melaky - TOT		41,249	1,547			42,796
	Menabe	Belo Sur Tsiribihina	41				41
		Miandrivazo	77,217	3,056			80,273
	Menabe - TOT		77,258	3,056			80,314
	Vakinankaratra	Ambatolampy	142,592				142,592
		Antanifotsy	5,354				5,354
		Antsirabe II	1,413				1,413
		Betafo	2,564				2,564
		Faratsiho	183,061				183,061
		Mandoto	43,052				43,052
	Vakinankaratra - TOT		378,036				378,036
	MADAGASCAR - TOT			3,774,246	2,792,606	1,190,818	7,757,670
	TROMELIN ISLAND	---	---				
	TROMELIN ISLAND - TOT						
All - TOT			3,774,246	2,792,606	1,190,818	7,757,670	

Main Assumptions:

- **In need of immediate multi-sectoral assistance for 1 month: 100,000 people**
- **Directly/indirectly affected in need of assistance: 80,000 people**

Logistics:

- Various primary and secondary roads impassable, some damaged (incl. over 80 bridges), others flooded or washed out. Damaged/blocked roads at most entry points to/from affected districts and on most highways connecting districts to sea/river/air ports significantly impede the response
- Extensive debris and fallen trees block small tracks
- Airports and airfields closed for minimum 3-5 days. Structural situation does not permit the landing of aircrafts and sufficient capacity to handle a large influx of international humanitarian cargo. Seaports and river ports flooded and closed for maximum 3 days
- Transportation and storage capacity diminished to below 50% of pre-storm capacity. Private company (asset owners) staff affected therefore capacity shortages prevail for up to 3 weeks.
- Damaged logistics and economic infrastructure (roads, tracks, bridges, ports, electricity, hydro-agri infrastructure etc.)

Infrastructure and General:

- Limited access to basic services (food, water, shelter, schools, health)
- Flooding and silting of agricultural land
- Flooding in large cities (Antananarivo plain) causing several thousand homeless
- 30 isolated communities (500, 000 people)
- Telephone, mobile, electricity networks remain down, for up to 3 days
- Access to fuel has been affected
- Rising security concerns as relief takes longer to reach those in dire need within crowded towns/cities

Health:

- 50 damaged health service infrastructures
- Health services interrupted in most affected areas for up to 2 weeks
- Increase in short-term mortality and morbidity in the days and weeks following the event
- Increased risk of epidemic cholera, measles etc.

Food:

- 40 percent losses in agriculture
- Commercial food options viable for up to 3 days with existing stock, then supply lines run dry for 2 weeks
- Cash facility (Financial Service Providers) non-functional for up to 1 week due to power outages
- Potentially over 3 million people becoming food insecure

WASH:

- Over 300,000 people in need of WASH kits (200,000 in rural locations and 100,000 in urban locations)
- 150,000 people in need of immediate WASH assistance for up to 2 weeks
- 70 percent of water wells and latrines damaged, and drainage channels clogged throughout hit areas

Nutrition:

- Over 500,000 children under 5 years of age are at risk of Severe Acute Malnutrition

Habitat:

- Over 300,000 people displaced with over 50 percent of homes destroyed in certain locations

Protection:

- Increased vulnerability of vulnerable groups (elderly, pregnant, disabled, unaccompanied minors etc.)
- Family dispersion with risk of children separation from parents
- Risk of increased sexual violence towards women and girls

Education:

- Over 2,000 damaged schools
- Some schools occupied as evacuation centres
- Over 500,000 primary students at risk of dropping out due to rising food insecurity

➤ **Maps of Logistics Corridors leading to affected areas:**

What are the road routes leading to the affected areas?

➤ **Road Corridors:**

Antananarivo - Mahajanga (RN4)

Distance: 580km

Time: LV and Heavy truck: 14 – 20 hours

This is the main supply road from the international port of Mahajanga to the capital. It is estimated that if the cyclone passes this corridor, its inland position and mountainous regions (track: East to West) would allow the cyclone to lower intensity. Hence, the national road is expected to remain open.

Antananarivo - Toamasina (RN2)

This is the main supply road of the country, estimated to handle over 80% of the countries import via Toamasina Port. It is a vital transport artery of the country. Under this scenario, it is expected to be heavily affected in various areas. Road rehabilitation capacity would be essential to initially assess and open blockages that could occur. Prepositioning of road rehabilitation equipment at various route locations is advised. Full route assessment as well as Priority 3 for post-storm impact analysis is recommended. Due to the supply chain vulnerability of this main route, an operation would need to plan alternate modalities including air operations.

Antananarivo - Ambatondrajaka (RN44)

For this scenario, the road dissects across a large area that would be affected. Accessibility on this road is essential to reaching affected areas by surface as it links with the capital and the main international port as well. It is also highly strategic to the food security of the country as it's reported to link Ambatondrajaka, the main rice production area of Madagascar, with major markets. This road is reportedly in a bad condition. It is estimated that it would definitely be affected and not passable during the first days of a response. This would necessitate air transport options to be in place, Priority 4 for impact assessment and it is recommended to be part of road equipment (for clearing/rehabilitation) prepositioning.

➤ **River Corridors:**

Barges, boats, airboats – no clear routes identified

➤ **Sea Corridors:**

Mahajana identified as alternate sea point of entry. Assessments of Mahajanga and Toamasina ports to be prioritised for impact analysis including for storage capacity and forwarding capacity.

➤ **Logistics Capacities (All sectors/partners):**

1) Corridor capacities transport

Are truck, boat and air transporters available on all corridors? Do they have adequate logistics asset capacity? Partners expressed that they have various levels of transport readiness (dormant contracts). WFP have mentioned that main corridors identified have adequate capacities available to contract or under transport contracts already. Please refer to the updated Logistics Capacity Assessment for more details.

2) Point of Entry

What are the main points of entry that would be used to access the logistics corridors? What are their capacities to receive large amounts of aid? 3 main points of entry were identified:

- a) Antananarivo International Airport – ANT is expected to remain open however functioning at lower capacity. Alternate air entry point dependent on impact assessment is Toamasina International Airport (and for supply/distributions strategy will be Ambatondrajaka airport)
- b) Toamasina International Airport and Seaport (dependent on impact analysis)
- c) Mahajanga Seaport (in the event that large volume sea cargo is expected and Toamasina Seaport is non-functional)

As a further measure, suitable beach landing areas should be identified in the event of landing craft usage.

3) Corridor capacities storage and handling

What storage capacities are available or required at the points of entry and or on the logistics corridors?

Storage Capacity (Name & Available Service)	
Transit Warehouse	PLEASE REFER TO THE UPDATED LOGISTICS CAPACITY ASSESSMENT
Port Storage	
Airport Storage	
On-site/Distribution	

➤ **Strategic Prepositioning:**

Map of Prepositioned Hubs:

For this scenario, where would the best location for logistics hubs be?

Partners indicated that basic NFI and FI that would be required within the first 48 hours of a potential response and would be ideally prepositioned at capital level. Although the ADAM tool provides a population estimate output, responders would still need to a) attempt to estimate actual people in need for categories or b) take a general percentage estimation of needs and build stock accordingly. Prepositioned logistics items would consist of five main

categories being: 1) mobile storage units (requires ground location identification and securing sites as a preparedness measure); 2) truck assets; 3) boat assets; 4) road clearing equipment and 5) partner cargo.

Location of prepositioning would be based on the ConOps bases indicated. Site assessment and suitability is recommended as a preparedness action.

➤ **Customs:**

What customs regime/protocol is in place to allow free flow of incoming aid?

Partners have agreed that more understanding is needed of customs protocols that would be activated in the event of a large-scale disaster.

➤ **Coordination:**

Coordination will be under BNGRC who has adopted a national cluster approach. Civilian Protection Corp will be deployed under their command.

Where will the National Emergency Operations Centre be?

BNGRC is located in Antananarivo (Capital) and Toamasina. Coordination structures remain under existing national capacities including at province and district levels.

International mechanisms would need to couple with existing mechanisms for smooth information flow and rapid cargo flow.

➤ *How long are emergency conditions likely to last under this scenario?*

It is estimated that emergency conditions would last from 6 – 10 weeks, dependent on scale of destruction and level of Preparedness achieved prior to an emergency.

➤ *What other organisations are likely to respond to the emergency and in which way?*

Bilateral (Government-to-Government Aid), European Union Civil Protection, and Southern African Development Community countries with response capacity.

➤ *What is the Government's capacity to respond to the scenario and where would assistance be needed?*

Government capacity remains with strong coordination at national and sub-national levels. Major assistance would focus on immediate impact assessment capability and logistics capacity augmentation. From a supply chain perspective, this scenario assumes that major aid cargo categories would need to be imported from regional supply bases within the first 2-3 weeks, until local supply chains can resume operations and absorb increased demand. However, local manufacturing capacity for general NFI categories is not fully known but expected to put pressure on import markets.

➤ *Early warning indicators and monitoring mechanisms?*

Various meteorological services exist. These projections will be used for early warning purposes that feed into GoM mechanisms (community announcements etc.) The Madagascan Private Sector Humanitarian Platform has also made early warning message dissemination capabilities available.

Preparedness Actions identified by Participants:

1. Full road assessments for three national routes indicated
2. Hub and warehouse locations assessments indicated in the ConOps
3. Assessment for availability of air transport assets in the country or that could be mobilised rapidly from the region
4. Point of Entry 1, 2 and 3 contingency planning and collaboration with other preparedness initiatives that focus on supply chain nodes.
5. Deeper customs process understanding for large scale responses.

Post-storm impact assessments are prioritised as follows:

1. Toamasina Airport and Seaport
2. Antananarivo International Airport
3. Route Nationale: 2 Antananarivo - Toamasina
4. Route Nationale: 44 Antananarivo - Ambatondrajaka
5. Route Nationale: 4 Antananarivo – Mahajanga
6. Existing storage facilities (within POI and route assessments)
7. Internal district and sub district road networks

NB: Impact assessments in large areas that are remote, would most likely require a mix of helicopters, fixed-wing flyovers, drones and satellite imagery.

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