

### Highlights

- Following FREDDY's first and second landfalls on the east coast of Mozambique, more than 492,000 people were affected, over 48,000 houses damaged and at least 53 deaths reported according to the National Institute for Disaster Management (INGD) of Mozambique.
- The modelled economic losses due to FREDDY in Mozambique are estimated at USD123,009,942 by the ARC TCE. This amount would have exceeded the attachment point if Mozambique had taken the TC insurance policy for the 2022/23 TC season.
- A potential payout of \$4,422,991 would have been due to the Government of Mozambique for losses caused by FREDDY.**

### Overview of the Event

The tropical cyclone FREDDY was a powerful cyclonic event that affected Mozambique. It first developed as a tropical disturbance on February 3, 2023 in the Australian Basin. After crossing Madagascar, FREDDY made its first landfall on the coast of Mozambique (south of Vilankulo district) on February 24 as a severe tropical storm before rapidly weakening. Unexpectedly, the system survived its passage through Mozambique and re-emerged in the Mozambique Channel. Within ten days, FREDDY rapidly intensified and on March 11, it made a second landfall near Quelimane District (Zambezia Province) as a tropical cyclone.

FREDDY is dissipating and became a tropical depression between Zambezia Province and the Mozambique Channel. Although FREDDY has weakened considerably, it continues to generate extreme rainfall that has caused severe flooding and landslides. FREDDY's rainfall exceeds 600 mm in some areas, which is four times the average monthly rainfall during the rainy season<sup>1</sup>.

The latest assessment carried out by the National Institute for Disaster Management (INGD) of Mozambique indicated that FREDDY's second landfall affected 253,466 people across Zambezia, Sofala, Tete, Manica and Niassa<sup>3</sup>. These numbers are in addition to the 239,000 people affected by the first landfall of FREDDY in southern Mozambique. FREDDY has caused damages to 48,134 houses including schools and health centres, 53 deaths reported, and over 191,562 hectares of agricultural crops have been destroyed since the cyclone made its way into Mozambique.

### Monitoring of FREDDY by the ARC TCE

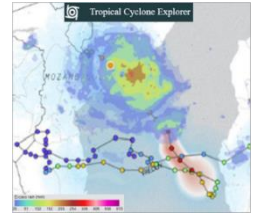
As part of the ARC Parametric Tropical Cyclone Insurance Policy, a post-event report is required for any cyclone event affecting a Member State for windspeeds higher than 63 km/h. The ARC's online Tropical Cyclone Explorer (TCE)<sup>2</sup> software enabled real-time monitoring of the characteristics of the tropical cyclone FREDDY in Mozambique. Wind, storm surge and excess rainfall footprints are among the products generated by TCE, and these indicate the areas affected by FREDDY. TCE estimated that sustained winds ranged from 111 km/h to 37 km/h at FREDDY's entry and exit of Mozambique respectively, while for the second landfall, sustained winds ranged from 167 km/h to 56 km/h. The maximum storm surge was estimated at 2.36 m by TCE.



Malawi. TCE had estimated heavy rainfall exceeding 500 mm in several parts of both countries.

### Economic Losses and Population Exposed

TCE's calculations showed that a total of 6,769,564 people lived in the areas affected by FREDDY (both landfalls), of which about 980,000 were exposed to sustain winds above 118 km/h. The economic losses associated to the cyclone FREDDY were estimated at USD123,009,942 in Mozambique. These losses are direct losses solely due to winds hazard and storm surges, and do not consider damages due to excess rain/flooding, nor indirect economic losses.



Country	Event name	Losses (USD)	Number of population potentially exposed per windspeed categories				
			Category 1 (≥ 63 km/h)	Category 2 (≥ 89 km/h)	Category 3 (≥ 118 km/h)	Category 4 (≥ 166 km/h)	Category 5 (≥ 212 km/h)
Mozambique	FREDDY	123,009,942	4,134,470	1,656,255	978,583	256	0

### Tropical Cyclone Insurance Policy

The payout under the TC parametric insurance policy held by a country depends on the conditions of coverage chosen. A key parameter is the Attachment Point, the minimum severity of the event loss that results in a payout. For Mozambique, the calculation of the payout per the insurance model, in relation to the wind and storm surge risks associated with FREDDY, was carried out using the risk transfer parameters indicated below:

Estimated RTPs	Mozambique - TC Pool 8 Risk Profile Potential payouts due to losses caused by FREDDY		
	RTPs 2021/2022	Projection 1	Projection 2
Attachment/Exhaustion (RP)	5/50	5/50	5/50
Attachment point (\$)	91,258,393	91,258,393	91,258,393
Exhaustion (\$)	502,515,149	502,515,149	306,603,831
Aggregate limit (\$)	18,024,434	12,723,130	30,000,000
Ceding percentage (%)	4.38	3.09	13.93
Premium (\$)	1,700,000	1,200,000	4,000,000
<b>Potential Payout (\$)</b>	<b>1,390,718</b>	<b>981,123</b>	<b>4,422,991</b>

The results of the ARC TC model calculations showed that the losses due to FREDDY would have exceeded the attachment point if Mozambique had taken the TC policy insurance for 2022/23.

**As a result, potential payouts of \$1.39 million, \$0.98 million or \$4.42 million for premiums of \$1.7 million, \$1.2 million or \$4 million respectively, would have been due to the Government of Mozambique under the policy of the parametric insurance against the risks of tropical cyclones.**

The ARC Group expresses its sympathy to the Government and people of Mozambique for the impacts on communities and infrastructures caused by the tropical cyclone FREDDY.

For additional information, contact us at: [info@arc.int](mailto:info@arc.int)

<sup>1</sup> Mozambique: Severe Tropical Storm Freddy - Flash Update No. 10 - Mozambique | ReliefWeb  
<sup>2</sup> <https://tce.arc.int>