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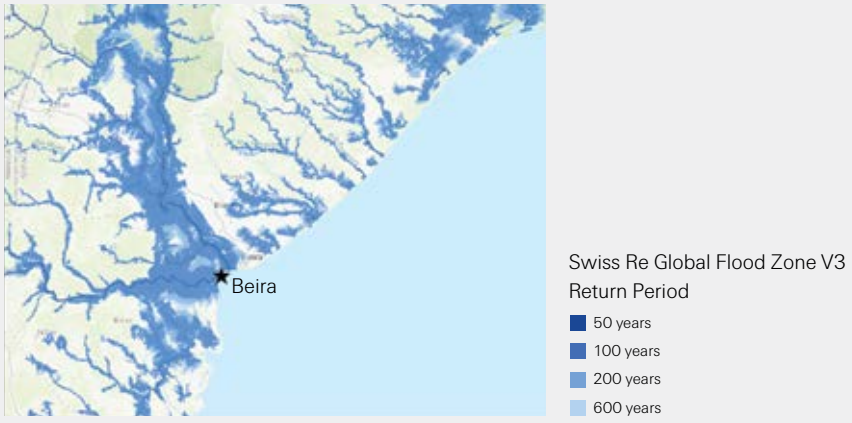
Mozambique: growing flood risk in low-lying areas

Recent research indicates increased tropical cyclone activity in the southwestern Indian Ocean, exposing countries like Mozambique, Malawi, Zimbabwe and South Africa to more extreme cyclone events.[1] This calls for a deeper understanding of the vulnerability of many low-lying areas, and rapidly expanding coastal cities such as Beira, to sea-level rise as climate change disrupts normal weather patterns. Tropical cyclone Idai in 2019 was the costliest weather event ever in Africa, according to *sigma* records. Economic losses were USD 3 billion and insured losses just USD 150 million, indication of a very large protection gap (95%).

Cyclone Idai

Cyclone Idai made landfall during the night of 14–15 March 2019 at Beira City in Mozambique, bringing strong winds and heavy rains across the provinces of Sofala, Manica, Zambesia, Tete and Inhambane. Rivers overflowed, reportedly by 10 metres,[2] and there was a storm surge of up to 4.5 metres in Beira and surrounding regions. Water from rainfall and storm surge pushed into the area of low-lying topography, flooding 90% of the city and 1900 km of central Mozambique, including wide expanses of farm land. Cyclone Idai led to water runoff, as the soils had already been soaked by the rains of tropical storm Desmond at the end of January. Hundreds were killed, and a large portion of Beira's 500 000 inhabitants were displaced. Six weeks later, a stronger cyclone, Cyclone Kenneth, made landfall along the border of Mozambique and Tanzania, leaving up to 2 million homeless.

Figure 1
Flood zone map for area affected by Cyclone Idai



Source: Swiss Re CatNet

[1] J.M. Fitchett, S.W. Grab, "A 66-year tropical cyclone record for sough-east Africa: temporal trends in a global context", *International Journal of Climatology*, vol 34, 2014.
[2] *Mozambique Cyclone Idai Post Disaster Needs Assessment*, United Nations Development Programme, May 2019.

Mozambique is downstream to nine of the 15 major river basins in southern Africa and thus exposed to flood, in addition to precipitation risk. Cyclone Idai shut down the main export outlets in the neighbouring landlocked Zimbabwe and Malawi. In 2000, Cyclone Eline led to catastrophic flooding across the country, similar in magnitude to that inflicted by Cyclone Idai. The exposures in the area have risen dramatically on account of rapid urbanisation. A port city, Beira is a major transport hub for south-central Africa, and is Mozambique's fourth largest city. Its population has increased by 30% since 2000 and is almost triple of what it was in 1980.[3]

There is a large protection gap for households and business owners, including smallholder farmers, in the region. The floods as a result of Cyclone Idai inundated some of Mozambique's most fertile agricultural land just prior to harvest.[4] As the insurance market develops, more homes, business owners and farmers will be able to rebuild faster, creating a positive cycle leading to stability, investment and growth.

However, currently the Mozambique property insurance market is small. In 2018, sector premiums were just USD 34 million (non-life premiums USD 179 million, according to *sigma* data). Risk transfer to global reinsurers could help manage the peak risks which currently cannot be absorbed by the local market. Public-sector solutions such as sovereign risk transfer schemes could also be used as a vehicle to transfer government liabilities to local and the international re/insurance markets.

[3] *Beira, Mozambique Population 1950–2020*, United Nations World Population Prospects.
[4] A. Schroeder, "Rethinking disaster preparedness in Southern Africa after Cyclone Idai", *PreventionWeb.net*, 9 April 2019, www.preventionweb.net/news/view/64745