



## **Royal HaskoningDHV and CelsiusPro partner to improve Mozambique's resilience against tropical cyclones**

Royal HaskoningDHV Southern Africa and CelsiusPro have co-created a catastrophe risk model and parametric index for Mozambique. The index will help to quantify the impacts of tropical cyclones in the country. It will also be used to inform parametric insurance policies, which could improve the region's financial resilience against tropical cyclones.

The catastrophe risk model is an open source, plug-and-play model that shows the hazard, exposure, vulnerability, impact, and parametric index for tropical cyclones in Mozambique. It can rapidly calculate the parametric index following a cyclone event, which can then be used to inform parametric insurance products.

### **A perfect storm**

The coastal areas of Mozambique, where most economic activity happens, are densely populated. Combined with high levels of poverty and a limited fiscus to effectively respond to climate and disaster shocks, the negative effects of extreme weather events in Mozambique are often exacerbated.

In fact, research has found that climate disasters can erase 25% to 30% in per capita food consumption, which increases poverty.<sup>1</sup>

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<sup>1</sup> World Bank (2018) Extreme Weather and Household Well-being: Evidence from Multiple Shocks in Mozambique. Baez et al.

## Understanding the impact of wind and floods

Built on the CLIMADA platform, the catastrophe risk model includes a synthetic tropical cyclone database based on 10,000 years of simulations and historical cyclone tracks. The model includes national exposure datasets of buildings, infrastructure, agriculture, livestock, and populations. For each exposure type, damage relationships have been derived for extreme wind and flood hazards to quantify national impacts of tropical cyclones. The financial impacts calculated by the model were validated against reported damages from tropical cyclone Idai which hit Mozambique in 2019.

Royal HaskoningDHV researched and quantified the short-term economic impacts of tropical cyclones in Mozambique, prepared the exposure datasets, and developed vulnerability relationships for extreme wind and flood.

CelsiusPro developed the catastrophe risk model and the database of historical and synthetic tropical cyclones, and designed parametric indices to calculate the real-time index value following a tropical cyclone event in Mozambique.

## Better prepared

The World Bank appointed Royal HaskoningDHV Southern Africa and CelsiusPro in 2020 to develop the catastrophe risk model, which the Mozambican government will use as a capacity development tool and to quantify the financial impacts of natural disasters.

The risk model seeks to strengthen capacity in the GoM on risk financing, specifically the role of risk transfer / insurance as part of a disaster risk layering approach.

***CelsiusPro***

in partnership with



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