



The first-of-its-kind report maps how natural disasters are derailing economies of African nations by devastating critical infrastructure with climate change exacerbating the damage

SV KRISHNA CHAITANYA @ Chennai

**A**FRICA is losing an estimated \$12.7 billion every year to floods, earthquakes, and other natural disasters, with climate change expected to intensify these losses in the years ahead, according to a new report by the Coalition for Disaster Resilient Infrastructure (CDRI), which warns that the continent's already fragile infrastructure is at a tipping point.

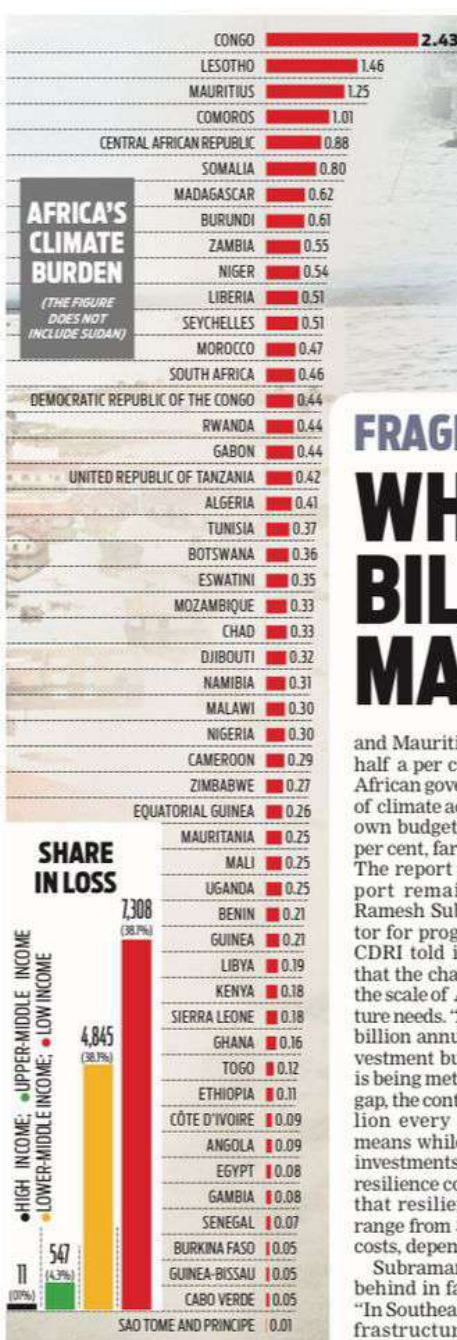
The study, the first of its kind for Africa, also carries urgent lessons for Asia, where booming infrastructure investments face similar vulnerabilities. The report, part of the Global Infrastructure Resilience (GIR) series, is based on the Global Infrastructure Risk Model and Resilience Index (GIRI). This probabilistic model calculates the financial risks from multiple hazards across nine infrastructure sectors and residential and commercial buildings. Its findings show out of the \$12.7 billion in average annual losses, \$1.8 billion comes from infrastructure assets alone, excluding private dwellings and businesses. The rest reflects the damage to buildings that millions rely on for shelter and economic activity.

Floods are the dominant hazard, accounting for nearly 70 per cent of losses, followed by earthquakes at 28 per cent. While quakes are less frequent, they tend to be catastrophic when they strike, as the 2023 Morocco earthquake demonstrated, wiping out billions of dollars in assets and lives in a matter of hours.

The burden is not evenly shared. Eastern Africa records the highest annual losses at \$5.1 billion, or 43 per cent of the total, followed by Northern and Southern Africa at \$2.3 billion each. At a national level, South Africa (\$1.7 billion), Nigeria (\$1.1 billion), and Algeria (\$1 billion) top the table. But the story is far more severe for smaller economies. Lesotho loses the equivalent of 1.5 per cent of GDP every year to disasters, Mauritius 1.25 per cent, and Comoros 1 per cent. "This shows how disasters can derail the economies of small nations even when the absolute losses are modest," the report warns.

The risks are compounded by climate change. Under current warming trajectories, Africa's annual infrastructure losses are projected to rise by 27 per cent, from \$1.8 billion to \$2.4 billion. Floods that once occurred once a century are expected to strike every 10 to 20 years by 2050, and by the end of the century they could occur as often as once every five years. The Global Center on Adaptation estimates that climate change could drain several percentage points of Africa's GDP each year, and in some countries, the figure could reach double digits.

The sectors most exposed are those that anchor daily life. The power sector faces the highest losses, \$844 million annually, or nearly half of all sectoral damages. The next most vulnerable are telecommunications (\$418 million) and roads and railways (\$282 million). Cyclone Anna in 2022



knocked out nearly a quarter of Malawi's electricity supply at a single hydropower plant, which took more than a year to restore. Cyclone Idai in 2019 plunged Mozambique's Beira into darkness for five months. In transport, the Programme for Infrastructure Development in Africa estimates that \$2 billion a year is already spent repairing climate-related road damage, a figure that could balloon to \$7.4 billion annually under high-emission scenarios.

The social consequences are acute. Studies cited in the report show that during floods in cities such as Kampala, Bamako, Kigali and Dar es Salaam, a third of residents lost access to healthcare within the critical 60-minute window for survival. Beyond damaged assets, disasters disrupt essential services, erode livelihoods, and deepen poverty.

Africa's governments are already spending heavily on disaster response. In 2023, 29 countries spent \$2.2 billion on weather-related disasters, according to African Risk Capacity. For some, the costs are extreme, for instance, Burundi spent 10 per cent of GDP that year on recovery, while Libya, Rwanda



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and Mauritius each spent more than half a per cent. Despite this burden, African governments fund 26 per cent of climate adaptation costs from their own budgets and borrow another 54 per cent, far above the global average. The report stresses that global support remains far from adequate. Ramesh Subramaniam, global director for programmes and strategy at CDRI told in an interview to TNIE that the challenge is compounded by the scale of Africa's unmet infrastructure needs. "Africa requires about \$170 billion annually in infrastructure investment but only about half of that is being met. On top of this \$90 billion gap, the continent is also losing \$13 billion every year to disasters. That means while countries look for fresh investments, they must also factor in resilience costs. Globally, we estimate that resilience requirements could range from 5 to 15 per cent of project costs, depending on geography."

Subramaniam said Asia is not far behind in facing similar challenges. "In Southeast Asia, the annual infrastructure requirement is around \$200 billion, with unmet needs of up to 40-45 per cent. While we don't yet have a full-scale GIRI analysis for Asia, the risks are strikingly similar. Floods remain the biggest threat, and the absolute losses could be much higher than Africa because the asset base is larger. A regional risk assessment for Asia is being prepared for release ahead of COP30 in Brazil." Ede Ijjasz-Vásquez, coordinating lead author of the Africa report, said the current estimates are conservative because of gaps in hazard and exposure data and the limitations of climate models. "Models are just representations of reality, and what we see on the ground is usually worse than projected. Preparing for these numbers puts countries on the right path, but the actual risks could be higher. These are underestimations — if anything, reality is more severe," he told TNIE. He added that upcoming biennial reports will incorporate hazards such as heatwaves, wildfires, and cold waves, which will increase the loss estimates. Sea-level rise, too, is already amplifying flood risks. "Even a five centimetre rise makes floods worse, because

ivers and drainage systems have nowhere to release water when the sea is higher. For coastal cities like Chennai, that reality is already clear."

The parallels with Asia are unavoidable. Rapid urbanisation, combined with climate risks, makes cities from Mumbai and Chennai to Manila and Jakarta highly vulnerable. As in Africa, smaller economies and poorer districts bear the heaviest relative costs. "In India, a flood in a poorer district may not look large in absolute rupee terms," Ijjasz-Vásquez said, "but for the local economy, it is devastating. That is why risk assessments must go beyond national averages to capture local vulnerabilities."

The lessons from Africa, the report stresses, are just as applicable to Asia. New infrastructure must be built with resilience in mind, existing assets need regular maintenance, and vulnerable projects must be retrofitted. Innovative financing — from catastrophe bonds to disaster insurance — needs to be scaled up, since insurance penetration for infrastructure projects remains low in most countries. Subramaniam points to success stories such as Odisha in India, which after its devastating 1999 cyclone, has invested heavily in disaster preparedness and is now upgrading its coastal power infrastructure with resilience factored into design. But such examples remain rare. "Africa stands at a pivotal moment, with much of its future infrastructure yet to be built," said Amit Prothi, director general of CDRI. "By integrating resilience now, governments and partners can avoid costly disruptions and protect millions of lives and livelihoods."

The stakes are equally high for Asia. Both regions are investing heavily in infrastructure — Africa spends about \$80 billion a year, Asia several times more — but without resilience, these investments could unravel under the weight of disasters. With climate change amplifying risks, the cost of inaction will only grow. For both Africa and Asia, the future depends on turning risk assessments into resilience strategies, and ensuring financing mechanisms match the scale of the challenge.



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