

# Climate change could cripple Caribbean economy, study says

## A new Tufts University study shows how unimpeded climate change could cripple the Caribbean economy

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The Caribbean ranks as the world region most vulnerable to climate change, and threats from rising sea levels and hotter temperatures could easily spill over to South Florida, prompting economic losses and increased migration to the area.

A study by Tufts University obtained by the *Sun-Sentinel* that will be released this week paints a bleak picture for the region unless global warming is stemmed: A 3-foot rise in sea levels this century would leave many islands underwater and flood large parts of big cities, including San Juan, Puerto Rico. Temperatures nearly 10 degrees hotter would send tourists fleeing. And islands would need new roads, water systems and infrastructure to cope with rising seas and more intense hurricanes spawned in warmer waters.

The price tag for inaction would be high. The Caribbean's losses just from rising seas, stronger hurricanes and slumping tourism would approach \$11 billion in 2025, or about half of what tourists now spend in the islands yearly. Costs would multiply over time.

Florida faces similar threats from global warming on its own shores. Tufts researchers have the state's losses only in tourism, storm damage, real estate values and extra electricity needed at 2 percent of Florida output by 2025 and 5 percent by 2100.

But Florida's losses would be magnified as its key trade partner suffers, the research suggests.

"If you have refugees leaving islands, where are they going to go? Florida is just the obvious place," said Frank Ackerman, a co-author of the 35-page study. "If you have exports now to the Caribbean, those will be harder to maintain. If you have tourism that takes off from Florida, cruise ships and [flights], it's going to look less attractive as the climate gets worse and tourism gets less inviting on the islands."

With a combined 40 million residents, the Caribbean is most vulnerable for several reasons. It's the world's most tourism-dependent region, consisting of small islands, most of which are too poor to build dikes, elevate buildings or otherwise mitigate damage.

Worse yet, the region emits very little of the greenhouse gases that cause global warming.

It can't make a dent in the problem alone.

"The islands are really at the mercy of what the major economies do. If the United States, Europe, China, India and Russia don't get their act together, we're all in a lot of trouble," said Barry N. Heimlich, president of the Hollywood-based Florida Energy Imperative, a nonprofit group seeking alternative energy solutions to global warming.

The United States — and Florida — as Caribbean neighbors have a central role to play, "a moral responsibility," Ackerman said. The United States emits about 20 percent of the world's greenhouse gases, with Florida emitting about 1 percent a year.

Solutions are many: public transport, more fuel-efficient cars and new electric systems that depend less on coal, to name a few.

California offers a model. While the United States spews about 20 tons of carbon dioxide per person yearly, California emits about 12 tons per person yearly, thanks largely to its more efficient electric system, Ackerman said.

Sponsors of the study from the Environmental Defense Fund suggest a cap-and-trade system, where a ceiling is placed on emissions and companies that fail to make their cuts in a given year can buy credits from those who exceeded their requirements.

"It's a market-based system. Money won't come from taxpayer dollars," said Jerry Karnas, the group's Florida climate project director.

The stakes are high, according to authors of "The Caribbean and Climate Change: The Costs of Inaction." They predict temperatures in the islands will rise by about 2 degrees Fahrenheit in 2025 in a business-as-usual scenario, but just 2 degrees by the end of the century with action. Sea levels will rise by almost a foot by 2025 without action, or just 7 inches by 2100 with aggressive measures.

Climate change threatens the region in other ways, too, according to the Caribbean Community Climate Change Centre in Belize. Hotter temperatures can prompt droughts, hurting farming and increasing food imports. Rising seas can spill salt into aquifers, damaging delicate water systems. And a 2 degree Fahrenheit rise in sea temperatures will send fish migrating to cooler waters, reducing commercial catches.

Those losses are sure to reverberate in the almost \$12 billion in goods Florida now trades with the islands yearly and the more than 1.6 million residents of Caribbean descent now living in the tri-county area alone. South Florida as the Caribbean capital will especially feel the economic pain, said Manuel Lasaga, president of Miami-based Strategic Information Analysis.

The costs to act will be substantial, of course. Some studies estimate the United States must spend 1 percent of its economic output annually for decades to slash emissions. That includes rebuilding electric, transport and waste management systems and

sequestering carbon dioxide.

Yet rebuilding offers business opportunities, creating new industries, exports and "green collar" jobs. It's better to spend \$1 billion creating new technologies and jobs rather than see a storm destroy the same amount of property, researchers say.

The costs to fight global warming rise over time, said Ackerman. "Waiting is not an option," he said.

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**potential cost of inaction for the Caribbean region**

in billions of U.S. dollars

	2025	2100
Storms	\$1.1 billion	\$7.9 billion
Tourism	\$1.6 billion	\$6.4 billion
Infrastructure	\$8.0 billion	\$31.9 billion
Total	\$10.7 billion	\$46.2 billion

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