

World should heed lessons from Hurricane Katrina, economist says

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A decade after Hurricane Katrina hammered America's Gulf Coast, measures are being taken there to protect against similar devastation from natural disasters—as well as against long-term, gradual impacts resulting from climate change.

But other coastal regions across the world remain vulnerable to damaging storms, and providing similar protection for the tens of millions of people living in those areas will require international action, says University of Wyoming economist Edward Barbier.

In a featured commentary, titled "Hurricane Katrina's lessons for the world" published today (Wednesday) in the journal *Nature*, Barbier makes the case for coastal protection plans like those adopted by

Louisiana for the world's most at-risk nations.

"For the parts of the world that have extremely vulnerable populations, I think there are lessons that can be learned from the planning strategy that took place in Louisiana after Hurricane Katrina," says Barbier, the John S. Bugas Professor of Economics and Finance in the UW College of Business.

After Katrina caused about \$110 billion in damage, killed more than 1,800 people and displaced 1.2 million others, Louisiana's Coastal Protection Restoration Authority was formed to coordinate local, state and federal efforts to develop a more sustainable coast. Barbier was a member of the science and engineering board that oversaw the scientific analysis for the resulting 2012 Coastal Master Plan.

The plan guides Gulf Coast protection and restoration projects over the next 50 years, with a total budget of \$50 billion. Those projects include creation of new marshlands and building levees.

"What the 2012 Louisiana Coastal Master Plan represents is a new way of thinking about long-term coastal management to make coastlines more resilient to short-term natural hazards such as hurricanes and storm surges, and also to protect and adapt to long-term climate change," Barbier says.

Similar strategies are urgently needed for other parts of the world, he says, noting that coastal areas "are the front lines of climate change." The gradual impacts of sea-level rise, saline intrusion and erosion resulting from a warming climate—added to the potential for extreme damage caused by accompanying increases in storm-caused flooding and surges—should make international action a priority.

Barbier notes that around 38 percent of the global population—2.5

billion people—lives within 100 kilometers (62 miles) of the coast, and more than three-quarters of them are in developing countries. The most vulnerable are the poor, rural populations in developing countries who live in low-elevation coastal zones less than 10 meters above sea level.

Almost all of the world's 60 million poor people living in those low-elevation zones reside in 15 countries: India, Bangladesh, Myanmar, Cambodia, Nigeria, Pakistan, Iraq, Mozambique, Senegal, Brazil, China, Indonesia, the Philippines, Vietnam and Thailand.

"These 15 nations should be the priority for a long-term global planning strategy to protect coasts and populations that are vulnerable to damaging storms," Barbier wrote.

He notes that many of these people depend on agriculture and fishing, industries that are particularly at risk for disruption by storms and climate change. Natural barriers, such as mangroves, provide protection against storms and other coastal hazards, but those barriers are being eroded.

Barbier advocates for policies and investments to drive economic diversification away from fishing and agriculture and toward manufacturing and services in these regions. In addition, restoration of coastal features including salt marshes, coral reefs, mangroves and beaches—along with construction of seawalls, dikes and other structures—is necessary to protect vulnerable populations.

In some cases, people most at risk of harm from storms and gradual sea-level rises "may need to be encouraged to migrate to non-coastal areas," he wrote.

Such efforts to develop long-term coastal planning strategies should be financed through international [climate-change](#) adaptation funds, Barbier

says. They could be done in conjunction with national and local governments in coastal zones on a cost-sharing basis.

Various United Nations programs, such as the United Nation's Green Climate Fund, and the World Bank are appropriate sources of funding to help developing countries in their efforts to enhance and protect coasts and populations vulnerable to damaging storms, he says.

More information: "Policy: Hurricane Katrina's lessons for the world." *Nature* 524, 285–287 (20 August 2015) [DOI: 10.1038/524285a](https://doi.org/10.1038/524285a)

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