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## 10 Years After Katrina, Louisiana Is Becoming A Model For Climate Resilience

"Today is the time to pivot from recovery to building the future city."



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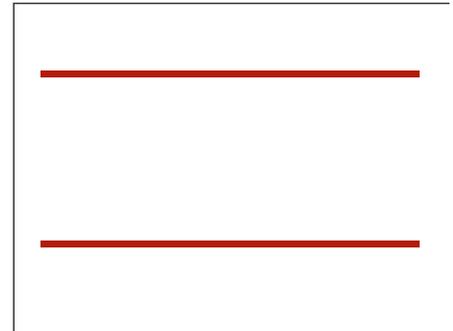


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This Nov. 26, 2012, photo shows a flood wall and floodgate along Lakeshore Drive and Lake Pontchartrain in New Orleans.

A decade after Hurricane Katrina devastated coastal Louisiana, forcing 1.5 million residents to evacuate and causing \$100 billion in damage, the region is becoming a model for climate change adaptation planning -- even if some people in the state still don't want to say the "c" word.

Louisiana's governor, long-shot Republican presidential candidate Bobby Jindal, has been non-committal on climate change. He'll [acknowledge it's happening](#), but says he's uncertain how much humans are to blame. Nevertheless, Louisiana officials have been planning for rising



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temperatures and the cascading impacts climate change will have on the state, from rising seas to potentially more dangerous storms.

"We are leaders in climate change adaptation, we just don't call it that," said Doug Meffert, executive director of Audubon Louisiana.

The Louisiana coast, with an average elevation of just three [feet above sea level](#) and a buffer of rapidly disappearing wetlands, is among the world's most vulnerable regions to climate change. But the state and the city of New Orleans have taken actions in the last 10 years to help make sure recovery from one disastrous storm leads to preparation for challenges the coast will face in the future.

The Louisiana Audubon and a coalition of other environmental groups recently [released a report](#) looking at what's been done to make the region more sustainable, from rebuilding failed levees to developing a statewide plan for the coast, and where there still need to be investments.

### **Overhauling the levees**

The failure of the levee system in and around New Orleans has been largely attributed to [bad design and inadequate construction](#), which allowed water to [flood 80 percent of the city](#) in the aftermath of the storm.

Improving the levees was a top priority, and New Orleans today boasts what [has been called](#) the "best flood control system of any coastal community." Congress authorized more than \$14 billion for rebuilding the levees and other flood protections after Katrina, leading to the construction of a [133-mile feat of civil engineering](#).

Those investments have now protected the city against a [100-year flood](#) -- a term used to describe a flood whose severity has only a 1 percent chance of happening in any one year. Building to that level of protection has been celebrated as a major post-Katrina accomplishment. But some point out that the system was [supposed to be built](#) to at least those specifications before the storm. After Katrina -- [a 150-year storm for New Orleans](#) and a 400-year storm for other parts of the Gulf Coast -- many say the protections should be even stronger.

"Most folks feel like a major city like New Orleans, a major urban center with economic resources, probably should have 400- or 500- standard of protection," said John Lopez, a scientist and the coastal sustainability program director of the Lake Pontchartrain Basin Foundation.

Still, Lopez said, the levee system has "definitely improved since before Katrina."

### **Creation of a central coastal authority**

Before the storm, coastal protection from storms and restoration efforts were handled by separate agencies, with some work falling under the Department of Transportation and other work to the Department of Natural Resources. The state legislature [moved in December 2005](#) to [unify coastal issues](#) under the new Louisiana [Coastal Protection and Restoration Authority, or CPRA](#).

CPRA is required to submit a plan for ecosystem restoration and hurricane protection to the state legislature each year. The plan is supposed to include CPRA's projects, as well as federal, parish and private restoration work.

### **Development of a coastal master plan**

The most important part of that unified response under CPRA has been the creation of a state coastal master plan. The plan, to be updated every five years, is meant to outline the state's approach to "achieving a sustainable coast through the integration of coastal protection and restoration projects and programs based on the best science and engineering available."

The first master plan was finished in 2007. Meffert described it "as a learning model."

But the [most recent master plan](#), released in 2012, is a "masterpiece," Meffert said, based on sound science for what the region can expect as the climate changes and seas rise. "It did what no other master plan or general plan had done before -- drew a map of Louisiana with projects that were impactful and doable, and it really for the first time put on the map what we could save," he said.

The plan includes restoration, structural improvements, and "[nonstructural](#)" [measures](#) -- actions that acknowledge some flooding is likely to happen and that other steps, like raising houses above the flood plain and creating evacuation plans, are also necessary. The 2012 plan includes [109 projects along the coast](#), and would require \$50 billion in investments over 50 years.

The state is currently at work on its 2017 master plan.

## Restoring wetlands

A major part of the master plan involves protecting and restoring coastal wetlands, which provide a natural barrier to storms. "We need levees to protect urban centers, but we need our wetlands to protect our levees," said Lopez

Louisiana has 3 million acres of wetlands, but it's losing them at an astonishing rate -- [a football field-size area every hour](#), according to a 2011 U.S. Geological Survey study.

The coast is besieged by [subsiding land](#) and rising sea levels due to climate change. According to some projections, the Louisiana coast is seeing the [highest rate of relative sea level rise](#) in the world.

The outlook for the wetlands is bleak. But hope has come in an unlikely place: the massive settlement resulting from the 2010 BP disaster, which spilled more than 3 million barrels of oil into the Gulf of Mexico. Last month, the Department of Justice [announced an \\$18.7 billion settlement](#) with BP for damages resulting from the spill. [Up to \\$8.7 billion](#) of that could go to Louisiana's coastal restoration efforts. That gives the state a major investment toward the restoration work in the 2012 master plan.

The state, "appears to be putting every cent they can get from BP into funding those restoration protections," said Cynthia Sarthou, executive director of the Gulf Restoration Network. "Sadly, the way we found some of that money was BP."

While the BP settlement is "a big step," said Lopez, it's not enough money fund all the elements of the state's master plan.

## A home on the Web

The state has created a public website showing coastal risks and protection projects, launched earlier this year. Housed on [Coastal.La.gov](#), the website for the CPRA, it includes interactive mapping that allows residents to pull up their own address and see both the flood projections and the efforts to reduce risks.

The site is helping improve awareness about coastal vulnerabilities, as well as solutions.

"It gives people more of a reality check," said Simone Maloz, executive director of the group Restore or Retreat. "Unfortunately in Louisiana, that's important."

## Beyond restoration and fortification

While the state's various projects are helping make the coastal region more resilient, there is growing recognition they won't always be enough.

"Restoration is not always an option, and neither is protection," said Maloz.

This work includes raising individual houses out of the flood plain and educating the public

about storm safety and response -- work that often falls to parish governments. Maloz said results have been mixed.

One bright spot she points to is [Terrebonne Parish](#), which has won funding through Federal Emergency Management Agency grants and state programs to raise more than 1,000 homes. That parish has a waiting list of people who want to elevate their houses.

"They have been able to cobble together all kinds of resources," said Maloz. But the challenge, she said, is that "One parish might be getting it done, doing it right, and neighboring parish might not be even close."

To really protect residents of the coast, more attention should be given to these measures, said Sarthou. "Restoration may take 10 to 20 years," she said. "Storms can happen any year. There needs to be more of an attempt to help those parishes prepare or mitigate damage or flood losses in those communities as we await the results of coastal restoration."

## A man with a plan

New Orleans has a new point person for handling some of those human challenges: Jeff Hebert. He was appointed chief resilience officer in November. Hebert, who also serves as the executive director of the New Orleans Redevelopment Authority, comes from a background in neighborhood revitalization.

"A lot of work has been done over 10 years, but much has been done in isolation from one another," said Hebert.

Hebert's resilience officer position was created through a program of the Rockefeller Foundation called [100 Resilient Cities](#), which aims to unify resilience work within cities and unite municipalities around the world to solve problems collaboratively.

Hebert said he sees his job as addressing three challenges: First, preparing for climate change, which includes homes, businesses and infrastructure, like water management systems. Second, working to connect city residents with job opportunities, particularly in climate-preparation work like coastal restoration and green infrastructure. Third, working to make it possible for people to stay in New Orleans, including financial literacy, access to health care and affordable housing.

Climate change is a large part of that work, Hebert said. "Resilience" requires a better understanding of what climate change, sea level rise and changing storm patterns will mean for the city, and beginning to prepare for that. "We're starting to understand that the future is going to look very different for us," he said.

Hebert's office plans to release a new strategy on Aug. 25 that will lay out a vision for the city.

"We've been recovering for 10 years," said Hebert. "Today is the time to pivot from recovery to building the future city."

While many are using the 10-year anniversary of Katrina to reflect on what has been done, it's also an important point for reflecting on what still needs to happen.

"We can't confuse recovery with sustainability," said Lopez. "Recovery gives you the opportunity to be more sustainable, but recovery is not sustainable in and of itself. It gives you the opportunity to take the next step."

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