
Houston Eyes Designer Bonds to Pay for $15 Billion Ike Dike.

- **Twist on catastrophe insurance partners with private industry**
- **'Resilience bonds' would help fund 60-mile levee system**

A massive dike to hold back storm-driven floods surging in from the Gulf of Mexico was first proposed after Hurricane Ike devastated the Houston-area coast a decade ago.

Last year's Hurricane Harvey disaster brought fresh enthusiasm for the languishing project – along with a wave of investor interest.

Now city and state officials in Texas are studying a possible partnership with private industry to create a new kind of bond to help pay for a $15 billion system of seawalls and floodgates, as a warming climate piles more storm risk on the nation's fourth-largest city. They're examining the market for catastrophe bonds, in which investors assume the risk for calamities like hurricanes in exchange for above-market returns and portfolio diversification.

"This is why we have financial markets, to come up with this type of solution,'' said Flavio Cunha, an economics professor at Rice University. "People love when markets can come and help construct some of these projects.''

At stake: the welfare of $500 billion in industry, including the nation's largest concentration of oil refineries and chemical plants. The dike could prevent countless homes and lives from being swept away in the 20-foot storm surge that would accompany a direct hit from a major hurricane –- a potentially worse cataclysm than Harvey.

Harvey flooded hundreds of thousands of homes and businesses, wreaking $125 billion in damages, a reminder of how vulnerable one of the nation's most important economic centers remains. After a decade of indecision, officials have rallied around a plan for a seawall almost 60 miles long fitted with massive floodgates at the center to protect Galveston Bay and the industry lining the Houston Ship Channel.

The Dutch proved long ago that it can be done; Much of the Netherlands would be swamped if not for its network of levees and floodgates holding back the sea. Houston's plan is modeled after those engineering marvels.

The Coastal Spine, also known as the Ike Dike, is the largest civil works project under consideration in the U.S., according to the Texas General Land Office. It would be a landmark deal for financial markets, too. If Houston can bring together the public and private sector, the new financing model could be replicated to reinforce communities from Florida to California against Mother Nature's wrath.

Catastrophe Bonds

The U.S. Army Corps of Engineers in July committed $1.9 million for a study, and the state is seeking federal funding for construction. But under Corps rules for such projects, local governments would still need to shoulder 35 percent of the cost -- perhaps $5 billion — plus ongoing maintenance and repairs.

To raise the money, project backers are studying catastrophe bonds, which trade on public markets and have been adopted by companies and cities as a more cost-effective way to supplement or replace conventional insurance.

"Infrastructure finance related to resilience or risk reduction, that is probably the most dynamic area where we are seeing innovation at the moment,'' said Daniel Stander, managing director at Risk Management Solutions, a consultant.

Following Hurricane Sandy in 2012, Amtrak obtained $275 million of natural-disaster protection for its railway from fixed-income investors, and New York's MTA tapped the market twice for a total $325 million for its subway system.

Texas would put its own twist on the concept, pioneering a new instrument called "resilience bonds" that would both insure against flood damage and help fund construction of the Ike Dike, said Marvin Odum, Houston's chief recovery officer and a retired president at Shell Oil Co., a unit of Royal Dutch Shell Plc.

How It Works

Here's how money for the Ike Dike could be raised from the financial markets: Oil companies, chemical makers, railroads and others with assets exposed to flood risk would collectively issue resilience bonds to replace their traditional insurance.

When the storm barrier is complete after perhaps three years, payments to the bond investors would drop to reflect the lower risk of flooding. The companies would continue paying the higher, pre-dike rate, and the difference would go toward paying off the project.

Odum has pegged the value of industry along the Texas coast at $500 billion, giving companies plenty of incentive to help fund the Ike Dike campaign. The cost of paying investors interest on the bonds shouldn't be any greater than the cost of insurance, said Shalini Vajjhala, chief executive officer of re:focus partners, a firm that brokers public-private partnerships for sustainable infrastructure.

A Houston nonprofit has organized a panel to discuss the project on Sept. 12.

Texas Twist

So-called resilience bonds were conceived in 2015 by re:focus in collaboration with Goldman Sachs, Risk Management Solutions, and Swiss Re, but Texas's Ike Dike project would be the first to use them.

The concept relies on local governments collaborating with business and industry, and could be replicated across the country in areas at high risk from natural disaster. Miami could sell resilience bonds to help finance seawalls to protect hotels, condominiums and other pricey real estate lining its coast, Vajjhala said.

"The market is overcapitalized at the moment so there is lots of hungry capital looking for a home,'' RMS's Stander said. "This is a good time to be thinking about innovative risk finance and project finance."

Even so, Houston would be betting big on an untested model, and many obstacles remain before a deal is done, including getting industry on board.

Evolving Project

Companies generally support the idea of a coastal barrier. But even DowDuPont Inc., which operates the largest chemical complex in the western hemisphere on the coast south of Houston, remains noncommittal about pitching in on the financing: "We look forward to actively engaging in discussions about the project as they evolve," said Rachelle Schikorra, a company spokeswoman.

Other experimental financing models could still emerge. One possibility: a hybrid that blends catastrophe and municipal bonds to help finance infrastructure like the Ike Dike while eliminating the city's obligation in the event of a major hurricane, said Rowan Douglas at Willis Towers Watson Plc, a risk management consultant.

"It's a concept that is gaining quite a bit of traction," he said. "There is almost certainly going to be a movement in this direction relatively soon."

The Ike Dike has already spent almost a decade on ice, and even if financing is arranged, an army of environmentalists and Nimbys are likely to line up against the project. Houston is determined to press ahead. Harvey's floods only confirmed that governments need to start preventing disasters instead of just cleaning up after them, said Bob Mitchell, president of the Bay Area Houston Economic Partnership.

Meanwhile, Houston voters on Aug. 24 approved issuing $2.5 billion in debt to pay for hundreds of small flood-control projects, from property buyouts to storm water control. Odum, the Houston recovery chief, said the region may need to spend as much as $30 billion for flood mitigation in the coming decades.

Despite the daunting costs and technical challenges, the coastal spine "is not fiction," Houston Mayor Sylvester Turner said in an interview. "It's a project that should take place."

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