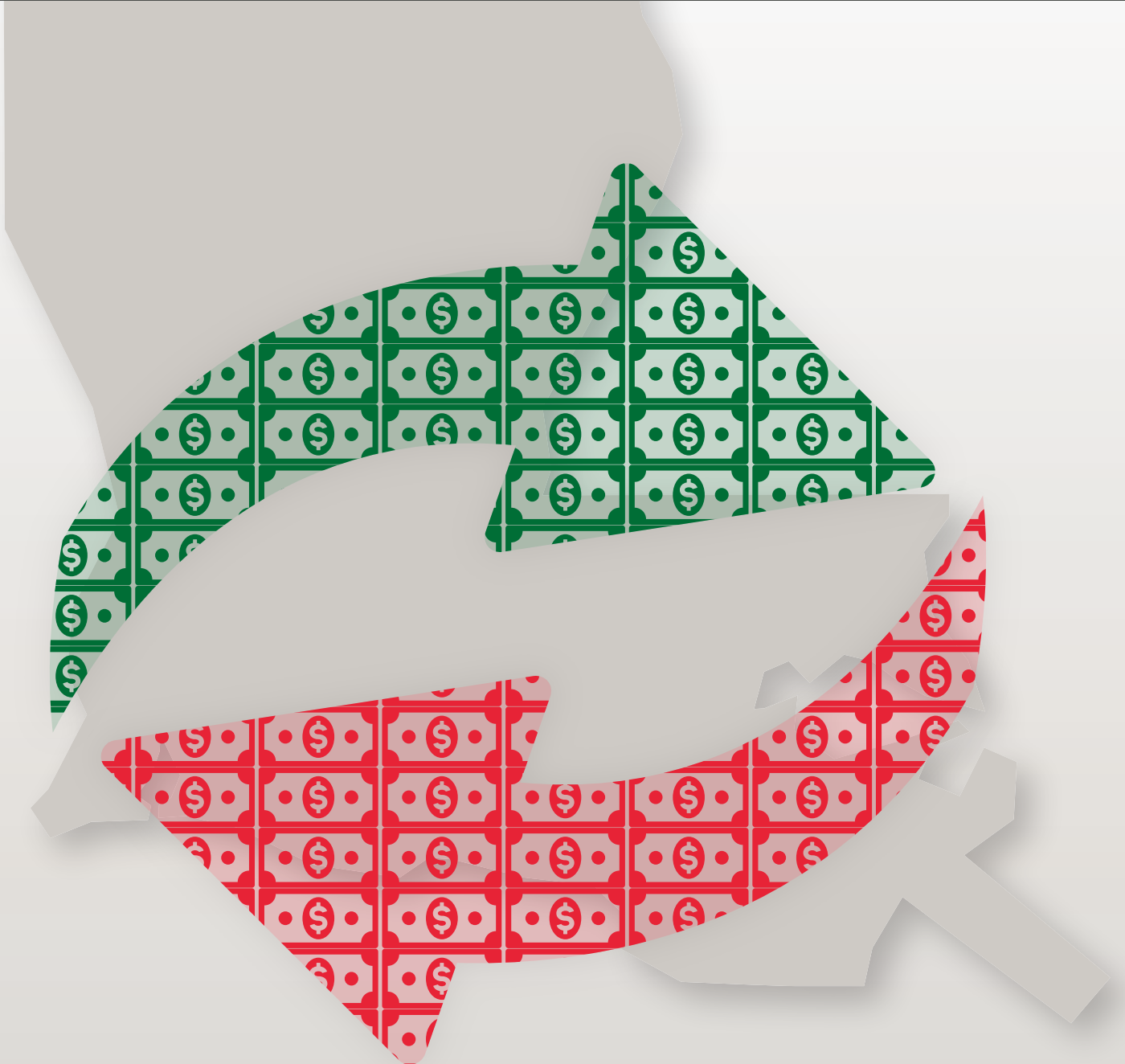


Regional Impacts of Coastal Land Loss and Louisiana's Opportunity for Growth



Executive Summary



E. J. Ourso College of Business
Economics & Policy Research Group

Stephen R. Barnes, PhD
Stephanie Virgets, MA

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Louisiana is facing a coastal land loss crisis – nearly two thousand square miles of land have been lost over the last 100 years, and an equal amount could potentially be lost over the next 50 years. Businesses, homes, infrastructure and whole communities could be lost or suffer severe economic damages in a ‘future without action’ – a term used by state planners that means a future in which no coastal restoration projects or protection are completed. If nothing is done to address Louisiana’s land loss problem, significant economic damage will occur at the national, state and regional levels through flooding and destruction of buildings, roads and railways, as well as having adverse impacts on jobs and disruption of the flow of commerce connected to Louisiana’s coast.

Yet, as coastal restoration and protection projects are already being planned and implemented, there is hope that the state can avoid the worst-case scenario. The state has developed a comprehensive 50-year Coastal Master Plan to restore and protect Louisiana’s coast, which will be boosted by new revenue streams that can help expedite the plan’s implementation. These projects will not only reduce the risk of economic damages but will also provide economic benefits in the form of new jobs and economic growth in coastal areas and beyond. These opportunities will initially be concentrated in design, engineering, and construction jobs associated with restoration projects, but they will also help businesses develop expertise that can be exported to the world and foster continued economic growth.

Methods and modeling for this project build on a 2015 study, *Economic Evaluation of Coastal Land Loss in Louisiana* (Barnes et al. 2015), prepared by Louisiana State University (LSU) and Rand for the state’s Coastal Protection and Restoration Authority (CPRA) that detailed economic impacts at the statewide level.

Part one of this report analyzes the predicted regional economic losses under land loss scenarios developed for the 2012 Coastal Master Plan. The draft 2017 Coastal Master Plan incorporates a range of expectations indicating a greater amount of land loss than the 2012 plan considered. So the discussion in this report focuses on the “less optimistic” scenario from 2012 as the most relevant set of estimates moving forward.¹

Part two analyzes the predicted economic benefits of the state’s continued spending on coastal restoration and protection.

For the first time, this report analyzes economic impacts at the regional level. Specifically, this report investigates how these impacts are distributed across five regions (New Orleans, Baton Rouge, Houma, Lafayette, and Lake Charles). Not surprisingly, the direct impacts of land loss are highest in the areas closest to the coast and closest to the predicted storm paths. Yet there are also sizeable economic risks to areas much further inland than might be expected, reflecting the economic linkages across the coast.

What’s at Risk

The risk of continued land loss is concentrated in coastal Louisiana, but the economic implications will also spread throughout the nation due to the state’s importance in shipping, energy production, chemicals, and other sectors (Barnes et al. 2015).

- ▶ As much as \$3.6 billion in Louisiana business, residential, and infrastructure assets are at risk due to land loss over the next 50 years if no action is taken to protect or restore the state’s coast.
- ▶ These assets support an additional \$7.6 billion in economic activity throughout the nation each year.
- ▶ In addition to the direct impact of land loss, Louisiana would also face increased storm damage further inland as the coastal buffer disappears. Up to \$138 billion in business, residential, and infrastructure assets could be lost, along with an additional \$53 billion in disrupted economic activity from just one storm.

¹ Louisiana law requires that the state Coastal Master Plan be updated every 5 years. The most recently available version at the time of this research was the 2012 Plan. CPRA is now developing its 2017 Plan, which will be released in early 2017. The 2017 Plan will reportedly focus on a higher range of land loss in part because of increasing expectations about future sea level rise, but the detailed 2017 maps were not yet available for modeling at the time of this research.

The five most heavily impacted regions in Louisiana are highlighted in the table below. The lost economic assets are heavily concentrated in the coastal regions facing more significant rates of land loss. The business disruption costs are distributed more evenly across the coast.

	Infrastructure Replacement Costs	Business Disruptions
United States Total	\$3.6 billion	\$7.6 billion
New Orleans	\$1.7 billion	\$1.7 billion
Baton Rouge	\$60 million	\$600 million
Houma	\$1.4 billion	\$1.4 billion
Lafayette	\$140 million	\$390 million
Lake Charles	\$420 million	\$490 million

All figures in 2015 dollars. The US total represents the total damages in both Louisiana and the country from land loss in Louisiana.

Regional Impacts of Increased Storm Damage

Land loss also makes coastal areas more vulnerable to storm damage. We measure the increase in storm damage in a future without action for three storm scenarios to characterize the potential economic risks facing coastal Louisiana. The storms include an eastern-track storm with a path similar to Hurricane Katrina, a western-track storm with a path similar to Hurricane Rita, and a 100-year storm, which indicates the level of flooding across the coast that would be expected only once every 100 years. The highest damages in each region (and the U.S. overall) depend on the type of storm and how it affects each particular region. For example, increases in storm damage in New Orleans would be largest with the eastern track storm 50 years into a future without action because that storm leads to the highest storm surge in the eastern part of the state and greatest pressure on the levee system, which increases the risk of levee failure and widespread flooding inside the levee system. Economic risks for the storm case study showing the greatest risk for each region are summarized below.

	Storm with Greatest Risk	Replacement Costs	Business Disruptions
United States	Eastern	\$138 billion	\$53 billion
New Orleans	Eastern	\$130 billion	\$26 billion
Baton Rouge	Eastern	\$86 million	\$4.6 billion
Houma	100-Year	\$20 billion	\$5.6 billion
Lafayette	Western	\$5.2 billion	\$2.2 billion
Lake Charles	Western	\$8.6 billion	\$2.4 billion

All figures in 2015 dollars. The US total represents the total damages in both Louisiana and the country from one hypothetical storm that hits the eastern part of the state.

Opportunities for Economic Growth

In order to mitigate the risks of coastal land loss and create a more sustainable coast, Louisiana’s CPRA along with local government agencies across the coast will be investing billions of dollars in protection and restoration projects in the coming decades. This spending will directly generate a sizeable economic opportunity for businesses interested in

protection and restoration work, as well as position the state for long-term growth in the decades to come. Thanks in part to dollars from the Deepwater Horizon oil spill, the state will have approximately \$630 – \$840 million per year in revenue for spending on coastal restoration and protection projects for at least the next 10 years, which is the time horizon considered in this report. While the state has already begun investing in the coast, the economic activity and jobs created by coastal protection and restoration spending to date have varied considerably from year to year and activity has fallen off during years of low spending. The availability of spill-related revenues and potential GOMESA funding will help establish a higher, more sustainable flow of funding and spur economic growth.

These dedicated investments will support the state's sizeable and growing restoration and protection economy consisting of:

- ▶ 7,800 to 10,500 jobs each year
- ▶ \$460 to \$620 million in wages each year
- ▶ \$590 to \$785 million value added to the state's economy each year
- ▶ \$1.1 to \$1.5 billion in annual output

Since spending on coastal restoration will still vary somewhat from year to year, the above figures represent average totals per year, which includes both new and existing jobs supported by the coastal restoration and protection economy.

Occupations directly associated with coastal restoration include construction laborers, dredge operators, carpenters, plumbers and pipefitters, drafters, engineers and architects, project managers, computer analysts and programmers, accountants and auditors (Hobor, Plyer, & Horwitz 2014; Louisiana Workforce Commission 2011). This core set of activities also supports a wide array of jobs across the economy through the indirect and induced economic effects included in these estimates.² The average wage for jobs created by coastal restoration spending is \$59,000 per year, much higher than Louisiana's average wage of \$41,000 per year (Bureau of Labor Statistics). These jobs will attract professional and skilled labor from many places as well as provide opportunity for local residents to enter high paying career paths.

While supporting thousands of jobs in the near term, these investments also offer an opportunity for Louisiana to continue developing expertise in coastal protection and restoration that will open new opportunities for economic growth working to help coastal communities around the world design and build solutions to similar land loss challenges.

²Indirect effect refers to the economic activity created when businesses with contracts for coastal protection or restoration work buy what they need from other companies in Louisiana and so forth. Induced effect refers to the economic activity generated by employees of companies with coastal protection or restoration contracts and at companies benefiting from indirect effects spend their wages.