5

The "Katrina Effect" and the Working Coast

Katrina's legacy to Louisiana governance today simply cannot be minimized. The winds and tidal surges of Hurricane Katrina on August 29, 2005, and fellow Category 3 hurricane, Rita, which struck the western side of the state three weeks later, not only deluged the City of New Orleans, but uprooted more than 217 square miles of coastal wetlands in its track. Industrial ports and processing facilities were underwater. Major pipelines were severed. Damage from the hurricanes burnished the state's argument that its infrastructure was both important to the national energy and shipping sectors and vulnerable. The storms disrupted 95 percent of offshore oil and gas production. Natural gas production throughout coastal Louisiana dropped by 50 percent and remained disrupted for months. Plants were damaged. Deliveries of gasoline, diesel, and jet fuel to East Coast buyers were suspended. President George W. Bush ordered the withdrawal of emergency oil supplies from the Strategic Petroleum Reserve within salt dome caverns along the Louisiana and Texas coasts. Floodwaters swamped the low-lying highway to Port Fourchon, whose once-green adjacent wetlands "resembled a vast open bay."[1]

Storm recovery efforts would require a reorganization of water and flood management and a plan to restore the beleaguered marshes. State and city leaders pitched their recovery by framing the region as a national asset with strategic importance. They leveraged Louisiana's five international deepwater ports. They leveraged the state's seafood estuaries. And they leveraged a massive oil and gas pipeline infrastructure. By disrupting the Louisiana coast, the storm had disrupted the US economy, causing fuel price spikes and shipping delays of grain and other goods to world markets.

The cause to rebuild New Orleans and the coast after the storms reenergized the stalled "America's WETLANDS" campaign.[2] "This extreme rate of loss threatens a

range of key national assets and locally important communities," Louisiana governor, Kathleen Blanco, wrote after Katrina. "Pipelines, navigation channels, and fisheries as well as centuries-old human settlements and priceless ecosystems are all at risk."[3] State officials argued that "a sustainable landscape" was a prerequisite for both storm protection and "ecological restoration." They argued that hurricane protection must rely on "multiple lines of defense."[4] The pitch worked. The federal government not only approved the $14.5 billion levee wall around Greater New Orleans—which contains the largest pumping stations in the world—but it accepted the argument that the restoration of the state's coastal marshlands is an essential buffer for storm protection and oil and gas infrastructure.

Hurricanes Katrina and Rita were not only meteorological phenomena; they were also sociological events whose effects not only restructured governance in South Louisiana but also lifted a twenty-five-year ban on new oil drilling on the Outer Continental Shelf. The storms catalyzed an alignment of forces. The oil lobby that had been pushing to lift the drilling moratorium in the Gulf of Mexico found common cause with the Louisiana congressional delegation seeking a higher percentage of royalties on wells in federal waters. These two interest groups came together under the auspices of hurricane relief and a narrative of energy independence. The year 2005 was also a period of rising fuel prices and a quagmire in Iraq. The storms raised the profile and political potency of these preexisting agendas.

The Katrina Effect follows Naomi Klein's provocation of disaster capitalism through public trauma. In her book *Shock Doctrine*, Klein describes how long-held, often controversial agendas are undertaken through post-shock opportunism. The shock doctrine, which she attributes to Milton Friedman and his neoliberal "Chicago Boys" from the University of Chicago, deploys "orchestrated raids on the public sphere in the wake of catastrophic events, combined with the treatment of disasters as exciting market opportunities."[5] Efforts to support Louisiana's "working coast" after Katrina became a siren call to rebuild New Orleans and Louisiana by lifting the drilling moratorium. In the resulting debris and chaos of the storms, state officials found their long-sought federal partnership. In the following months, a multipronged political offensive was launched in the name of national energy security. The Louisiana delegation in Congress renewed efforts to increase the state's share of federal oil royalties with support from Republicans who had long advocated for more drilling in the Gulf and the Arctic National Wildlife Refuge (ANWR). Much like moves to leverage the 2022 Russian invasion of Ukraine to increase liquified natural gas (LNG) terminal permits, the oil lobby jumped at the political lubricant.

On September 5, 2005, a week after Katrina made landfall, the Republican chair of the Senate Energy and Natural Resources Committee, Pete Domenici (R-NM), said he would seek legislation authorizing oil and gas development on portions of the Outer Continental Shelf. "I'm going to go after OCS," Domenici told reporters following a hearing on gasoline.[6] A week later, on September 12, the American

Gas Association (AGA) petitioned Congress to open the eastern portion of the Gulf of Mexico to development through Lease 181. In addition, the energy lobby called for lifting the drilling ban in federally controlled Atlantic and Pacific coastal waters. The petitioners argued that the ban was implemented years ago under an energy scenario entirely different from the one facing them today. A move to drill in the ANWR was pushed into a version of a federal budget bill being debated. Environmentalists charged its supporters with exploiting the temporary energy production crisis caused by Hurricane Katrina.[7] At the same time, Louisiana's two US senators, the Republican David Vitter and the Democrat Mary Landrieu, proposed, as part of a larger hurricane relief package that was backed by Louisiana's state lawmakers, to give Gulf states a 50 percent share of the billions of dollars in federal royalties from energy companies in federal waters—and to open new areas using the same revenue formula. The money would go toward coastal restoration and flood control. The Associated Press noted, "Hurricane Katrina has reopened a national debate on energy policy, generating new congressional support for more stringent automobile fuel economy requirements, and a fresh push by the oil industry for drilling in areas now off-limits."[8] *Forbes* added, "Katrina wasn't all bad for the cause of oil and gas production. For political reasons, it may end up making Alaska and the Outer Continental Shelf more accessible."[9] On December 19, 2005, Alaska's senator Ted Stevens tied efforts to expand OCS drilling to opening the ANWR.[10] A spokesperson with the Sierra Club noted two months later that the threat to open the ANWR and the OCS was "greater than ever" that year.[11]

On September 28, 2006, twelve months after Katrina, Landrieu formally introduced a bill to boost Louisiana's royalty share for expanded OCS drilling, which was taken up by the House of Representatives. By December 2006, with the winds of Katrina at her back, her efforts paid off. Congress passed a bill cosponsored by Landrieu and Domenici, called the Gulf of Mexico Security Act (GOMESA), that increased Gulf states' share of federal royalties and opened 8.3 million acres to new oil and gas exploration in the Gulf of Mexico. Congress overrode a presidential veto by George W. Bush to do it. And Louisiana's long-sought increased revenue-sharing agreement on federal oil royalties was realized.

The move would formally enshrine deepwater oil drilling as the funding mechanism for Louisiana's coastal restoration efforts.[12] The federal government would share 37.5 percent of royalties collected on wells in the OCS with the Gulf states, with Louisiana receiving the lion's share.[13] Meanwhile, the Louisiana Legislature had been working in concert on the state level to create a legal mechanism to tie any future OCS revenue streams to coastal protection. In fall 2005, the legislature, in an extraordinary session, passed a proposed constitutional amendment, Act 69, to dedicate OCS royalties to the Coastal Protection Fund for the sole purposes of "integrated coastal protection." The amendment was ratified by Louisiana voters in November 2006, which reassured a reluctant Congress to pass the GOMESA revenue act that December. Today GOMESA, which provides up to $170 million

annually, is the only major recurring revenue stream funding the state's Master Plan.[14] But its application is so expansive that it also includes improvement of infrastructure directly affected by coastal wetland loss such as elevating Highway 1—the oil highway to Port Fourchon—which was regularly deluged by high tides. The project to elevate the superhighway project to ensure that oil and gas activity will avoid disruption by rising seas was surprisingly supported by the Environmental Defense Fund.[15] But, as mentioned in chapter 4, the EDF was an original partner in joining with the oil industry to promote America's WETLAND.

SOCIAL REFORM

The Katrina Effect was also at work on New Orleans and Louisiana social policy and school reform. It unleashed a series of reforms addressing "pre-existing social problems" that had little to do with hurricane protection.[16] It illustrates how the levers of power can hide behind environmental destruction. Power, after all, is maintained by logics that seem commonsensical and are rarely questioned. "Call it the silver lining," wrote the Aspen Institute's Walter Isaacson, who was appointed by Governor Blanco to help lead state recovery efforts. "Hurricane Katrina washed away what was one of the nation's worst school systems and opened the path for energetic reformers who want to make New Orleans a laboratory of new ideas for urban schools."[17] An assortment of think tanks joined reformers and editorial boards around the country to frame the catastrophe as an exciting opportunity. Republican State Judge Joe Cannizaro called Katrina a "clean sheet" to create a "smaller safer city." Richard Baker, a Baton Rouge–area Republican congressman, noted in a speech to lobbyists, "We finally cleaned up public housing in New Orleans. We couldn't do it, but God did."[18] The school system was taken over by a state board in Baton Rouge and transformed into a complete charter system. All nine of the city's public housing projects were torn down. The city began redeveloping mixed-income housing on the same footprint, offering housing vouchers to nineteen thousand of its poorest households, whose reimbursement rates have remained stagnant as rents increased by 6 to 8 percent per year. According to the New Orleans Redevelopment Authority, most New Orleans renters—nearly three of every five—spend more than 50 percent of their income on housing, which far exceeds the national average. Four of five low-income, "cost-burdened renters" in New Orleans are African American households.[19] That was even before the pandemic and 2022 inflation levels took hold.

If anything, Hurricane Katrina provided a visual narrative of historical geographic and racial inequality in New Orleans. An examination of flood maps shows that Katrina rendered the heaviest damage to lower-lying African American neighborhoods.[20] Of course, it wasn't God that flooded them but the legacy of racial, economic, and geographic inequality through drainage politics and segregation. The Crescent City, so named for the wide crescent-like bend in the Missis-

sippi River, had been transformed into a fortified bowl surrounded by water. Its edges were ringed by levees. Internal ridges that were built by old river meander paths prior to the levees—like Esplanade and Metairie ridges—sat a bit higher near sea level and were home to affluent neighborhoods. The city's working-class neighborhoods, most of them African American, sat at the lowest elevation—in essence at the bottom of the bowl—and regularly flood in heavy rain.[21]

By the end of the morning of August 29, 2005, there were fifty separate breaches in the regional levee system. The worst-hit neighborhoods lay in New Orleans East, flooded via the 76-mile Mississippi River Gulf Outlet (MRGO), which was dug by the Army Corps of Engineers through wetlands so that smaller vessels could avoid the yawning turns of the Mississippi. But MR-GO required regular dredging and was long criticized by environmentalists for the aggressive erosion it caused. Katrina floodwaters surged through MRGO through the backdoor of New Orleans and T-boned into the Industrial Canal at the levee of the Lower Ninth Ward, a working-class African American neighborhood where incomes averaged $16,000 a year.[22]

In fall 2005, Governor Blanco created the bipartisan Louisiana Recovery Authority (LRA) to direct post-storm recovery efforts, which more than doubled congressional appropriations for Louisiana to $28 billion.[23] Governor Blanco and LRA representatives traveled numerous times to Capitol Hill to argue for recovery funds and generate sympathetic news coverage. The *Washington Post* said in an editorial, "Louisiana is the nation's energy hub, ranking first in crude oil production and second in natural gas production. The Port of New Orleans is a major import-export route, with global merchandise exports totaling $23.5 billion in 2006. The state shouldn't have to keep begging Washington to help it rise from the most damaging natural disaster in U.S. history."[24]

Storm recovery led to a complete reorganization of water management as well. Louisiana's byzantine levee board system was consolidated into regional districts appointed by the governor, with a percentage of members required to have expertise in flood protection.[25] And in November 2005, the state legislature passed Act 8, which established the Coastal Protection and Restoration Authority (CPRA) to oversee hurricane protection and ecosystem restoration under the single mission of sustaining the land and economy of Louisiana. Act 8 stated that the loss of the state's coastal wetlands threatened its "natural, cultural, and economic resources."[26] The law articulated the economic benefits of coastal wetlands that "support recreational and commercial interests."[27] In addition, Act 8 pointed to coastal wetlands "as the first line of defense for coastal communities, including New Orleans, in the face of hurricanes and tropical storm surges." The act advocates for protection of oil and gas pipelines "through which much of our nation's energy supply flows" and gestures to the diverse coastal cultures "that have called the wetlands home for many generations." The CPRA was given oversight of all coastal activities, which had previously been located in various departments and agencies.

Act 8 elevated the CPRA as a critical player in securing federal funds in housing, environmental support, transportation, and marine and flood protection.[28] The CPRA was to implement a new "multiple lines of defense" strategy to prioritize restoration methods and projects that likewise provided flood protection. "Coastal restoration is targeted where it can provide flood protection benefit."[29] It operationalized wetland restoration to benefit certain prioritized goals. The CPRA was then tasked to produce a comprehensive master plan, which would be updated every five years. The next spring, in April 2007, a newly minted master plan was sent to the legislature. It was described as a working document with an "adaptive management framework." In her introductory letter, Governor Blanco explicitly tied the often-paradoxical effort of providing flood protection with restoring wetland ecology as a response to Hurricanes Katrina and Rita: "The death and devastation caused by hurricanes Rita and Katrina has strengthened our resolve to establish a lasting legacy of coastal protection and restoration for south Louisiana. The passage of this Master Plan is the first step in making that legacy a reality for our coastal communities today."[30]

The plan established five mission priorities. At the top was maintaining Louisiana's oil and gas industry: "Louisiana's working coast, America's Wetland, supports vital ecosystems, national energy security, a unique culture, and thousands of jobs. However, the region is changing before our eyes, threatening benefits we have relied upon for decades."[31]

THE MASTER PLAN AND THE WORKING COAST

The "2007 Comprehensive Master Plan" increased the total bill from $14 billion estimated by "Coast 2050" in 1998 to $50 billion, which is today considered an underestimate. The plan rehashed many of the arguments that state officials had been making about the value of shipping lanes, fisheries, energy infrastructure, and the seafood industry. It listed the "host of benefits" of Louisiana's coastal landscape, including protection from incoming storms by cypress swamps, barrier islands, and healthy marshes by "slowing down and reducing incoming surges of water." And it laid out the national pipeline assets at risk from coastal erosion and storm surge, which included Henry Hub, which is the pricing point for natural gas throughout North America, and Port Fourchon, which supplies hundreds of offshore drilling rigs in the Gulf. It squarely quantified the assets of the wetlands in economic terms.[32] It also plugged the coast's ecological "services" such as the North American flyway over South Louisiana, which was home to more than five million migratory waterfowl that winter in Louisiana marshes and seventeen endangered or threatened species, including the bald eagle, gulf sturgeon, Louisiana black bear, and several sea turtle species. All of this provides recreational opportunities and jobs associated with birding, hunting, fishing, and ecotourism.[33]

These lines emphasize the anthropogenic utility of protecting human settlement and economic resources.

The working coast rationalizes industrial and commercial practices that harm the fragile ecology of the area—a phenomenon akin to what the political ecologist Erik Swyngedouw calls the metabolism of an environment to extract surplus value from it.[34] The concept of the working coast that emerged just before Hurricane Katrina became the organizing rationale for the state's Master Plan for coastal restoration after Katrina to reenergize efforts to enroll federal support. As a concept, the working coast frames the state's fragile marshlands through metrics that can only be realized by continued extraction, which limits the types of interventions coastal planners consider.

The Master Plan was passed in late 2006, just over a year after the storms. It is the full embodiment of the Katrina Effect, folding Louisiana's eighty-year problem of coastal disappearance into an emergent strategy of hurricane protection. Restoration involves a multipronged approach: pumping dredged mud and sediment into marshes and onto barrier islands, securing shorelines with shoal barriers, heightening seawalls and ring levees around populated areas, and elevating homes. But its most ambitious proposal applies diversion spillways along the Mississippi River to "pulse" sediment back into the adjacent marshes. The first of ten such projects had been approved by Louisiana's CPRA by the time of this writing for an estimated $3 billion.[35] The diversions would provide a dedicated source of mud to the delta by its original progenitor, which is captured in discourses by scientists, coastal planners, and some environmentalists of returning the Mighty Mississippi to its "natural" role of land building.[36] Authors of the Master Plan say they are using "the best available science and engineering to prioritize and sequence projects for implementation."[37] But in adjudicating decisions about where and how to divvy up a limited supply of sediment, money, and other resources to protect populated areas and what authors call "critical infrastructures," the Master Plan is also deeply political.

Supporters frame it as the protector of Louisiana's working coast as well as an instrument for economic diversification for struggling coastal communities. These "political rationalities" appeal to a broad cross section of stakeholders, who may otherwise be in opposition.[38] The plan also traffics in Extractive Thinking. It establishes a future for the state's people and economy through the conditions created by the practices it supports.

The plan articulates the incumbent contradiction of living on the spectrum of survival and annihilation. "This function, combined with man-made levees and other flood control measures, have allowed Louisiana's working coast to thrive in a flood-prone area. Whether or not these citizens are able to maintain their connection to the region depends on how quickly the state can find ways to rebuild wetlands and provide adequate storm protection."[39] Therein lies the ongoing dilemma. The practices of building man-made levees

"and other flood control measures" have allowed for a working coast. And this working coast is part and parcel not only of the resources that are extracted from it but also of the measures that are taken to protect it and generate it.[40]

Through Act 8 and now the Master Plan, coastal planning officials have justified saving coastal Louisiana by maintaining its industrial and economic activity that give it value around two rationales: first, by positioning the Louisiana coast as a national asset that supports national industries; and second, by raw return on direct investment in the form of economic development.[41] The CPRA argues the Master Plan will create jobs and economic spin-off effects, "to foster our state's employment capacity and contribute to the growth of Louisiana's future economy."[42] These two rationales bring the wide tableau of various interests and rationalities under a single strategy.

Five years after Katrina, despite assurances by the GOMESA supporters about better, safer drilling technology, BP's Deepwater Horizon oil well exploded, killing eleven workers and causing the world's largest oil spill over eighty-seven days. An estimated 500,000 cubic meters of crude oil gushed into the Gulf of Mexico.[43] A legal settlement against BP and its partners provided Louisiana and local coastal parishes with $6.5 billion over fifteen years. The money, which is dubbed the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act, or the RESTORE Act, includes multiple civil, criminal, and punitive judgments. It is dedicated by the Natural Resource Damage Act to coastal restoration projects. The state was awarded another $2.2 billion in civil and criminal penalties,[44] which Mark Davis, director of Tulane's Institute on Water Resources Law and Policy, called analogous to "paying for a gym membership by winning pie-eating contests."[45]

By 2017, coastal plan authors had also updated a much more pessimistic estimation of sea level rise, which had flipped the 2012 Master Plan's worst-case scenario into the 2017 Master Plan's best-case scenario. Geologic surveys suggest that the rate of sea level rise is twice that estimated in the 2012 Master Plan update and may overtake the ability of the planned diversions to rebuild land.[46] State officials conceded that the subsidence of the coast could no longer be arrested but merely slowed.

Policy makers also began discussing "nonstructural" efforts for communities such as buyouts for relocation. Traveling around the coastal communities, CPRA representatives also began working with stakeholder groups to discuss several controversial ideas to encourage relocation. They include prohibiting any residential construction outside of planned levees and floodwalls, creating a buyout program for high-risk areas, phasing out the homestead exemption for property taxes in high-risk areas, requiring new commercial developments to have bonding for demolition costs at the end of their useful life or long-term vacancy, and requiring certain communities to participate in a program that lowers flood insurance rates for using flood-resistant construction. In response to the proposals, the president

of Plaquemines Parish downriver from New Orleans, Amos Cormier, called it effectively condemning homes: "It's patently clear to anyone who lives here that all these proposals are against the residents' interests. Just put yourself in that position. It's the same as your home being condemned."[47]

There are also expensive updates to the federal flood insurance program, which will more than triple premiums for Louisiana rate payers, who make up 10 percent of all program participants.[48] Repeated disasters have left the state in a vulnerable position as it readies itself for active hurricane seasons, which begins each year on June 1. As the 2022 season was getting under way, FEMA recipients were still living in trailers after Hurricane Ida strafed the coastal parishes in 2021, and victims of Hurricane Laura, which struck Lake Charles in the southwestern part of the state in 2020, were still petitioning for federal help.[49] In spring 2023, lawmakers in special session passed a $45 million grant program to reward insurers for writing policies for people clinging to the state-run insurer of last resort, Louisiana Citizens, which had ballooned to over 173,000 policy holders.[50]

CONDITIONS OF POSSIBILITY

On the front wall of the large CPRA-funded river model housed at the Water Campus near downtown Baton Rouge is a quote attributed to Albert Einstein: "We cannot solve our problems with the same thinking we used when we created them." But instead of moving away from Extractive Thinking, the Master Plan allows for the continued historical practices that led to the conditions it was created under—*and* guarantees its future necessity. The plan to sustain Louisiana's working coast is inextricably tied to its extractive industries through the plan's funding mechanisms, to political rationalities that organize its logic, and to the political ecologies that render the region more vulnerable.

While tying oil royalties to mitigate damage caused to the coast may seem natural on its surface, the inverse of that logic is also true: it turns the restoration authority into an advocate for an industry that has shredded the state's wetlands and increased the danger of sea level rise. For example, in October 2017, coastal officials announced that restoration projects would have to be scaled back due to falling global petroleum prices that reduced the state's royalty check from the federal government. In response, the governor's coastal adviser, Chip Kline (later chair of the CPRA), said there was reason to be hopeful because President Donald Trump's Department of the Interior secretary, Ryan Zinke, was about to announce the largest offshore oil and gas lease sale in history: 77 million acres in the Gulf of Mexico. He said, "Zinke was here in Louisiana a couple of weeks ago, and he promised to help us move some of our much-needed coastal projects forward. He gets it."[51] More drilling places more pressure on pipeline routes through the marsh, increases the chance of accidents and leaks, and adds carbon dioxide to the atmosphere. Today we see an extension of this same logic, positioning Louisiana

as a "natural fit" for storing industrial carbon below ground, thereby rationalizing the construction of new fossil fuel–powered plants.

The Master Plan, which was updated for 2023, creates the conditions for its own possibility through effects on the local ecology. It funds ring levees that protect coastal communities from flooding in the short term but whose presence disrupts the hydrological "sheeting" of sedimentation that maintains healthy estuaries. Levees not only entrap water after storms, but they encourage development in floodplains. Communities surrounded by levees are dependent on drainage pumps to remove floodwaters. Ultimately this cycle of water removal causes land within levee systems to sink. In coastal Louisiana, communities protected by levees have dipped as much as 10 feet below sea level, which leaves them more vulnerable and imminently harmed by catastrophic flooding.[52] Ecologically speaking, the vulnerability of these social geographies is reinforced by their protection, which requires subsequent intervention.

Technically, the Master Plan's multiple lines of defense strategy represents a contradiction of approaches. Roughly half of the resources in the plan are earmarked for coastal erosion and half for flood control and river dredging. And sometimes the projects to dredge the river for navigation—which exacerbates coastal erosion by disrupting the natural sedimentation hydrology of the river system—are rationalized by using the mud for wetland restoration. These are contradictory moves that undermine each other, but they are directed toward a common goal of supporting the working coast of Louisiana.

Supporters of the plan also tout its ancillary economic benefits in the form of a "water jobs cluster" that can be exported to other areas afflicted by sea level rise and environmental decline. The plan becomes its own asset: "The unprecedented investment in coastal restoration and risk reduction in the last 10 years has put Louisiana at the forefront of using science and innovation to plan a sustainable future for our coastal communities and our valuable ecosystem."[53]

The plan has become the organizing site for researchers and practitioners, scientists and design engineers, agencies, and academics focusing on moving projects "from concept to construction." The authors frame this as "a significant workforce opportunity in coastal Louisiana with employment in the water management sector projected to increase 23 percent over the next 10 years."[54]

The 2017 Master Plan cites various studies that promote positive returns on workforce investment into a water management cluster, including a Louisiana Workforce Commission report on coastal restoration spending in Louisiana that found that coastal restoration expenditures in 2010 directly created 4,880 jobs and indirectly created 4,020 jobs. Future spending estimates reported a range of total employment impact from 5,510 to 10,320 jobs annually. Total economic output of employment, including wages and "value added," ranged from $700 million to $1.3 billion. "There are two main job sectors in Louisiana that will see an increase in available job opportunities in the near future: water management and energy,"

according to the report. In the New Orleans region, an estimated 24,000 "job opportunities" will be created in these two job sectors by 2025, including 13,632 in water management over the next ten years, ranging from civil engineers and operations managers to analysts and construction laborers. "The 2015 Coastal Index published by the Data Center noted that within the New Orleans region, more than 9,500 water management jobs were gained from 2010 to 2014." A $25 billion investment would create 57,697 jobs over ten years and 77,453 over fifty years.[55]

Windfalls of federal and state money have changed the institutional landscape. The State of Louisiana in January 2018 opened a water campus in Baton Rouge to house the CPRA and research arm, the Water Institute of the Gulf, which issues calls for proposals and carries out its own environmental studies for CPRA projects. The sleek 35-acre Water Campus includes other tenants carrying out CPRA design, such as the LSU Center for River Studies, which operates a 90-foot-by-130-foot Mississippi River model—the largest "movable bed" model in the world—to run sediment delivery experiments. The Water Campus held a public grand opening with the media, touting that its presence has bolstered a blighted area adjacent to downtown Baton Rouge and helped elevate the city's business climate.[56] The campus is promoted in glossy brochures highlighting shared workspaces overlooking the Mississippi River.

Louisiana economic development officials tout the positive impacts that the BP legal settlement money from the Deepwater Horizon catastrophe has had on state contracts and workforce investment. "We foresee Louisiana as not only addressing its own water management issues but also developing scientific, engineering, and construction expertise in the field that can be exported worldwide," said Steve Grissom, secretary of the state's Department of Economic Development. He also emphasized the "crossover" skills from shipbuilding, maritime, and other oil and gas–related jobs. "So, the slowdown in the oil patch adds to the potential labor pool."[57] On February 21, 2018, the CPRA announced its first six winners of the local parish matching program under the RESTORE Act, which will set aside $100 million in local project funding over fifteen years. A spokesman from an industry advocacy group, Restore or Retreat, said a water management sector could help diversify the local economy from its reliance on the oil and gas industry while aiding the fight against coastal erosion: "It's been a nice silver lining to this problem that we're facing now is that this could be workforce development, it could be diversity, and it could be an economic driver for our area."[58]

Political rationality brings together disparate interests under a governing form of reason that, once it takes hold, promotes the interests of that logic. As Wendy Brown writes, "Political rationality is not an instrument of governmental practice, but rather the condition of possibility and legitimacy of its instruments, the field of normative reason from which governing is forged."[59] The Master Plan has become the normative form of reason for the benefits and opportunities it provides. It helps explain how seemingly incompatible schemes and players such

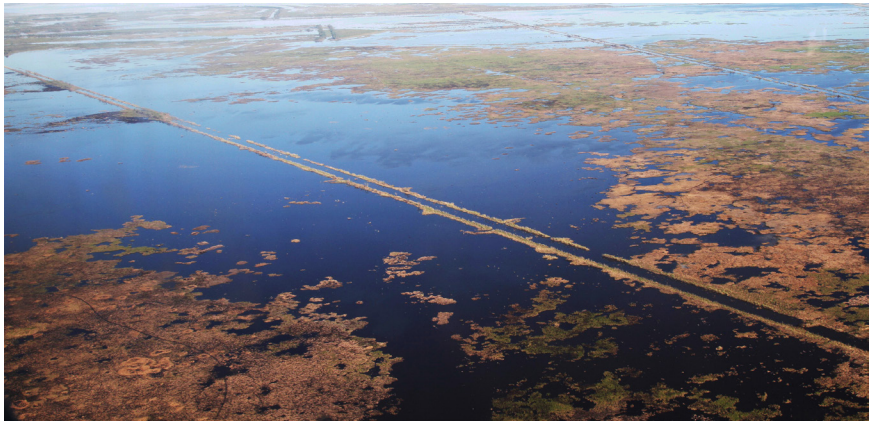

FIGURE 8. Pipeline Canal. Hurricane Ida in 2021 accelerated erosion around this pipeline canal in Lafourche Parish. The estimated 14,000 miles of canals in coastal marsh are major contributors to coastal erosion and subsidence in Louisiana. Photo courtesy of Healthy Gulf c/o Southwings.org.

as the Environmental Defense Fund and Shell Oil can join forces and serve to provide legitimacy to its logic.[60] For example, the Master Plan also enjoys the support of the powerful shipping lobby because it discursively and materially maintains the "Mighty Mississippi River" as a principal engine of commerce.[61] It rationalizes dredging the Mississippi River channel in order to pump "mud slurry" into endangered marshes.

One could think of the Master Plan as a kind of demonstration document with the wetlands as a laboratory to test speculative ideas and the rise of the water cluster sector as an industry that could be exported to other communities in an age of global warming and rising sea levels—both of which are expected to hit New Orleans particularly hard. State officials admit the publicly funded interventions will not restore the "boot" of Louisiana or many of the vulnerable communities along the coast. One might wonder, then, what the Master Plan is sustaining? Through a kind of *governmentality*, it appears that the plan is at the very least sustaining the industrial activity and assets that make the coast a viable site of investment for continued intervention. It is sustaining a rationale for intervention.

The governing logic of the Master Plan and the working coast reproduces an extractive mind-set that promotes practices that diminish the landscape to support one's livelihood. But the oil and gas industry is not the only livelihood in Louisiana. If the wetland estuaries continue to transform into open water, the state's robust seafood industry will collapse. One could argue that oil and gas development and other heavy industry is actively transforming a landscape into one that can *solely* support fossil fuel extraction. As an instrument of restoration,

the Master Plan could be thought of as an *extraction machine*. It fails to call for reduction in oil and gas production, which has left thousands of miles of canals open to saltwater intrusion and "ponding" effects associated with a third of all wetland losses.[62] It contains no projects to backfill oil and gas canals, which have been identified as a low-tech solution embraced by previous restoration plans.[63] Leaving canals untouched satisfies oil interests as well as a few powerful private landowners whose access canals and wells either produce steady royalty checks or may do so again in the future with newer drilling technology or increased market prices.[64]

An estimated 80 percent of coastal land in Louisiana is privately held, most of it by a handful of large landowners residing outside of Louisiana. Conoco, for example, owns 700,000 acres.[65] Randy Moertle, who represents a consortium of six South Louisiana landowners that collectively own 185,000 acres and sit on several stakeholder coalition boards, including America's WETLAND and Ducks Unlimited, said that backfilling canals is extremely unpopular among his cohort. Moertle's consortium typically lease their mineral rights to oil and gas companies and use their surface rights for alligator hatchlings, ranchland pasturing, duck hunting, fishing, and other revenue-producing outdoor activities. What irks them, according to Moertle, is when a scientist will propose a marsh restoration project on their property without collaborating with the landowner. "They might say, 'let's put a marsh here,' but that's on top of my alligator hatchlings. That's not going to happen." For all intents and purposes, without the landowner's consent, any effort to backfill canals would require eminent domain and a legal "taking" by the state and end up in court litigation, which will take time and resources away from the unfolding catastrophe of coastal erosion.[66] Backfilling is also unpopular with fisherman, said Jim Tripp of the EDF, who characterized backfilling canals as "buying Peter to pay Paul" because the sediment would have to come from somewhere. The lack of sediment is an ongoing constraint cited by coastal planners. Even river sediment—if directed into the marsh—contains about half the volume it once did because of urban hardscape development during the twentieth century throughout the Mississippi River basin.

Backfilling canals is too individualized to be considered part of the large-scale, system-wide approach that the Master Plan takes, according to Denise Reed, former science director of the Water Institute.[67] Creating a backfill program would require a large mobilization effort to directly siphon mud and small amounts of material to different places, she said. Meanwhile, one of the early coastal restoration advocates, Mark Davis, says that the longer backfilling is neglected, the less sediment is available for it. When the state first considered backfilling in the 1980s, the spoil bank ridges of mud cuttings along the sides of canals could have been pushed back into the water channel and prevented subsequent saltwater intrusion while providing platforms for vegetative growth. Those solutions were actively fought by the oil and gas lobby and screened out of the Master Plan. Today many of the banks themselves have compacted into the eroding conditions they helped

cause through hydrological disruption.[68] Their neglect has been productive for the political interests that have long resisted them.

As an extraction machine, the Master Plan also fails to build on findings by USGS surveys on subsidence hotspots in the marsh. These spots correlate to periods of rapid removal of crude oil that may have been caused by either depressurized well cavities beneath the surface or deep well brine that may have triggered subterranean fault activity.[69] There is no public discussion by coastal planners to repressurize old wells with fluid to halt subsidence as is required in California and other places.[70] Instead, the Master Plan focuses on implementing system-wide projects like diversions, which have been met with resistance by many coastal communities whose residents rely on the brackish estuaries for seafood harvesting, oyster farming, and fishing.

TECHNICAL DISAGREEMENTS

Opponents of diversions argue that they are unpredictable, slow, and expensive. Two pilot diversion projects created in the 1990s by the Coastal Wetlands Conservation Grant Program, or Breaux Act, have produced mixed results.[71] Public forums held by the CPRA in coastal communities are often punctuated with heated discussions and acrimony. Social scientists generally have argued that the social effects of the Master Plan and diversions need to be considered with the same priority as the technical efficacy of land restoration. Good science is essential, but because environmental management is fundamentally a human activity, effective predictions of human impacts demand, at the very least, paying equal attention to the social, political, cultural, and economic systems in which environmental management takes place.[72]

In addition to the technical challenges, the projects are controversial due to expected impacts on downstream communities and commercial fisheries. They are opposed by an assortment of interests, including residents who may be forced to relocate, commercial fishing captains, oystermen, and other stakeholders in the commercial seafood industry worried about river infusions in the saltwater ecology. The state's lieutenant governor, Billy Nungesser, launched a political offensive in 2021 around southern Louisiana as he spoke against diversions. There are also environmental concerns: mortality rates of dolphins, Kemp's ridley sea turtles, and other wildlife that tend to suffer when the Army Corps of Engineers opens the Bonnet Carré Spillway into Lake Pontchartrain during flood stages of the river. In addition, questions persist about the resilience of shallow Louisiana marshes to pollutants in the Mississippi River that currently pour into the Gulf of Mexico, such as pesticide runoff from midwestern farms and plastic litter.

The state's powerful oyster lobby is also against the diversions, which they fear will "over-fresh" their leases. As recently as January 2023, the chair of the Louisiana Oyster Task Force said the $3 billion Mid-Barataria Sediment Diversion would

FIGURE 9. Shrimp boats along Bayou Terrebonne at the Indigenous community of Point-au-Chien. Louisiana shrimp catches have dropped by more than half, to 74 million pounds from 2000 to 2021. Local shrimpers blame cheaper imports. Many shrimpers also work offshore on oil rigs. Photo courtesy of Kerry Maloney.

devastate the seafood industry and put the oystermen out of business permanently. "Oysters will become extinct due to this Mid-Barataria Sediment Diversion, and it said that in the [Corps] economic impact statement as well," said Mitch Jurisich.[73] In 1994, the plaintiffs representing the state's fifteen hundred oyster leases won a federal class action lawsuit over damages from the Caernarvon freshwater diversion, which was built in 1990. They wanted one hundred years of revenue from the leases and were initially awarded a $1 billion jury settlement. However, on appeal the Louisiana Supreme Court reversed the decision and found that the state was not liable because of a "hold harmless" clause in the contract.[74] The presiding judge reduced their harm to three years of revenue with a fair relocation fee.

However, the Caernarvon diversion led to the state's oyster lease moratorium in 2002. By then, more than 400,000 acres of state-owned water bottoms had been leased for oyster production, which raised more than $1.2 million in annual revenues. In 2016, legislation established a framework to lift the moratorium.[75] State officials are sensitive to the various positions and pots of funding sources related to projects, particularly the proposed sediment diversions. In a 2018 guest newspaper column, CPRA director, John Bradberry, took pains to specify that the two sediment diversion projects that are advancing through federal permitting, the Mid-Barataria and Mid-Breton Sediment Diversions, are being funded by "money

available from the criminal settlement of the 2010 Deepwater Horizon oil spill—not your tax dollars."[76] An outspoken fishing boat captain, George Ricks, who represents one such group, Save Our Coast, questions why the state is embarking on unproven projects that cost billions of dollars when they could more quickly pump dredged slurry into marshes, which would have an immediate effect, versus waiting years for the marsh to recover if at all. "We need land now," says Ricks, who runs charters out of St. Bernard Parish downriver of New Orleans. "The only way we can do that is by dredging." At a meeting one afternoon at a family-owned diner in St. Bernard Parish, the fishing captain said that it's obvious to him why the state favors big diversion projects over small, targeted efforts. "Look at all the money behind this," he said. Tanned and with a blackened mustache, Ricks repeats a familiar argument of many others dependent on the seafood industry. But he is more concerned about saltwater catches being replaced by bass and other freshwater fish. "What makes Louisiana so unique," he said, "is the saltwater fish in the marshes."[77] In the meantime the marshes themselves are getting saltier as the estuaries erode. The sighting of bottlenose dolphins just a stone's throw from the Pointe Aux Chenes Marina at the water's edge in Terrebonne Parish would have been quite a spectacle a generation ago. Today they are common. Yet Ricks and others feel that the displacement effects of the old pilot diversion at Caernarvon, which operates at 8,000 cubic feet per second (cfs), will be dwarfed by the much larger sediment diversions the state is planning.

When the Bonnet Carré Spillway gates were opened for a record forty-three days in 2019, the freshwater caused large marine die-offs and algae blooms in brackish Lake Pontchartrain and the Gulf Coast. The Institute for Marine Mammal Studies in Gulfport, Mississippi, reported that twenty-five dead Kemp's ridley sea turtles, which are endangered, and ninety-three dead dolphins washed ashore in the first six months of the year, triple the average number of strandings. Mississippi's Department of Environmental Quality closed all twenty-one state beaches in response to toxic algae blooms. Louisiana seafood harvests also suffered. Louisiana governor John Bel Edwards requested a disaster declaration on shrimp, oysters, and other fisheries from the US Department of Commerce.[78] The impact served as a harbinger for worried fishermen. "What we're seeing is a preview of what's going to happen," Ricks told the board of the CPRA at a meeting in June 2019. "Is this what we want to do?"[79]

Others are concerned about pollutants from the Mississippi River. While there is evidence supporting the efficacy of marshes to filter municipal effluence, it is not at all clear if Louisiana's degraded marshes can filter what's flowing down the Mississippi River.[80] Currently, farm pesticides and nutrient runoff at the river's mouth generates a hypoxia dead zone of algae whose plume rivals the size of Vermont and consumes enough oxygen to suffocate marine life.[81] The openings of the Bonnet Carré Spillway in 2019 to relieve flood levels from the Mississippi River into Lake Pontchartrain and the Gulf of Mexico contributed to the single

largest hypoxia dead zone in the Gulf of Mexico. In an example of resistance, the local government of Plaquemines Parish tried to withhold permission in 2018 for the state to take soil samples for its multibillion-dollar diversion structure that could send as much as 75,000 cubic feet per second of sediment-laden freshwater from the Mississippi into brackish Barataria Bay. In response, the state threatened to withhold other restoration projects until the local government complied with its requests.[82]

Beyond that, some communities in the path of diversions will be forced to move because of increased water levels.[83] Located 25 miles south of New Orleans, the town of Jean Lafitte discovered that in the 2012 version of the Master Plan, it was not on the list to be included in the new "Morganza-to-the-Gulf" levee system. It was also in the path of the proposed Mid-Barataria Diversion. The town's leadership set out to increase the community's strategic value by securing so much public infrastructure that it would become too valuable to abandon. As profiled in the *New York Times*, the town's longtime mayor, Tim Kerner, had successfully secured a suite of state projects, including a 1,300-seat auditorium, a library, a wetlands museum, a civic center, and a baseball park. "Jean Lafitte did not have a stop light, but it had a senior center, a medical clinic, an art gallery, a boxing club, a nature trail, and a visitor center where animatronic puppets acted out the story of its privateer namesake." It mattered less how much the facilities had been used but that they existed. "Do we lose that investment, or do we protect it? I hope people will see that, hey, not only are we fighting hard to exist, but, you know, maybe this place is worth saving," Kerner said.[84] He was able to convince state planners to establish limited levee protection in the 2017 Master Plan update.

On my drive through Jean Lafitte in 2019, I saw dozens and dozens of brick ranch houses now standing atop 20-foot pilings. Hurricane Ida punished the area in 2021, leaving a layer of thick black mud over most of Lafitte's streets and yards. The smell of stagnant swamp hung in the air. The National Guard had to install a temporary bridge to carry cars across Bayou Barataria. Mayor Kerner was lobbying again for heightened federal levee protection on social media, arguing that it's costing more money to rebuild than to protect.

Jean Lafitte may have simply taken a page from New Orleans. Rather than retreat after Katrina, city leaders doubled down. The city's airport authority opened a $1.3 billion airport just before the COVID-19 shutdown. The state's congressional delegation has been deploying the same argument for the value of the coast ever since it failed to win passage of the Conservation and Reinvestment Act, discussed in chapter 4. The state's way forward is through ambition for a future, and, it seems, the working coast gives them an effective strategy.

Meanwhile, a contingent of researchers argues that building sediment diversions without addressing the thousands of miles of oil and gas pipeline canals throughout the coast may increase subsidence.[85] Some ecologists and other marine researchers also criticize the diversions as being the wrong tool for marsh restoration.

The ecologist Eugene Turner argues that the thick, gnarly cord grass is needed to keep the dirt together. It's not just mud, but organic plant matter that is needed to create marsh that is sturdier than the marsh created by the Caernarvon pilot diversion site. The Caernarvon marsh is "floating mat," says Turner. It was pushed up like an accordion during Hurricane Katrina because it is infused with water loaded with nitrates and other fertilizers that are harmful to marshlands when overloaded. "Flooding them with Mississippi water is the worst thing you can do. The state built a geology model when this is living organic marsh, a biological system."[86] The rebuilt marsh by Caernarvon has shallow roots. All you have to do is reach down and grab a tuft. "They come out in your hand," observed Ricks.[87] His concerns echo the results of a 2011 paper, "Freshwater River Diversions for Marsh Restoration in Louisiana." It analyzed satellite images of the areas of three freshwater diversions and found that, through 2009, marsh area had not grown significantly at the diversion sites. The research also found that the diversion regions suffered more damage during Hurricane Katrina than other areas, apparently due to freshwater plants being more fragile than brackish-water plants.[88] The authors concluded that the scientific basis for river diversions needs to be more convincing before embarking on a strategy that may result in marshes less able to survive hurricanes. Supporters of the diversions outlined in the Master Plan note that its diversions are modeled to direct sediment into marshes, unlike the Caernarvon freshwater diversion.

THE GREENWASHING EFFECT

As an individual case, Louisiana reflects the larger social and environmental impact of twenty-first-century energy policy. It has fostered a plan that deploys science for coastal restoration efforts that ends up rationalizing the state's petroeconomy. The common sense that it relies on reflects a global logic reproduced through international oil and gas production networks where oil companies either extract without hindrance or buy what Toby Miller describes as "social licenses to operate."[89] By purchasing other goodwill offsets, oil companies produce a "greenwashing effect," which is particularly insidious in Louisiana, which is both one of the nation's largest producers of fossil fuels and singularly vulnerable to sea level rise.[90] Louisiana's coast constitutes 40 percent of the US coastal marshes and 80 percent of its losses.[91] Greenwashing allows corporations to act as good stewards even though their primary concern is extracting profit for shareholders at minimal costs. In greenwashing campaigns, corporations routinely describe themselves as citizens while principally pursuing economic interests. As Miller writes in *Greenwashing Culture*, "Their restless quest for profit unfettered by regulation is twinned with a desire for moral legitimacy and free advertising—based on 'doing right' in a very public way, while growing rich in a very private one."[92]

I once attended a meeting of the America's WETLAND coalition composed of high-profile environmentalists, landowners, and restoration planners at Nicholls State University, 50 miles southeast of New Orleans at the steps of Terrebonne Parish's receding coast. The meeting was sponsored by the international mining and petroleum company, BHP (formerly BHP Billiton). A spokeswoman for the Australian-based multinational said it intended to operate in the Gulf of Mexico for decades to come: "Part of who we are is sustainability and partnering. We want to make sure that we are part of a stewardship to leave things in a better position than when we arrived."[93] BHP in February 2017 invested $2.2 billion in the new Thunder Horse water injection platform owned by BP, which marked BP's first project in the Gulf of Mexico since its 2010 Deepwater Horizon oil disaster (still the world's worst environmental disaster on record).[94] At the WETLAND meeting, Rachel Archer, who is BHP's general manager for Gulf of Mexico operations, stressed their commitment to social responsibility: "We need to be able to demonstrate we are responsible, be good stewards."[95] She pointed to the company's international presence as a point of its stewardship, saying, "We are global mining and petroleum—beneficiaries of these resources all over world. That comes with a social responsibility." The comments were remarkable for a company in the midst of settling a $51 billion compensation claim for the massive mining dam collapse in 2015—called the worst environmental disaster in Brazil's history—that killed nineteen people, destroyed three towns, and contaminated 280 miles of river with iron waste.[96] In June 2018, the company issued a report that five of its mining dams in Brazil and Australia "are at extreme risk of collapse," which would cause damage and loss of life.[97] BHP was also fined $25 million by the US Securities and Exchange Commission (SEC) in 2015 related to its "hospitality program" at the 2008 Summer Olympics in Beijing that provided officials of 176 government- and state-owned enterprises an all-expenses-paid package to attend the Games. The SEC found the company violated the Foreign Corrupt Practices Act by inviting officials from at least four countries where BHP had interests in influencing the officials' decisions.

It is challenging to be a good local steward when the profit centers and headquarters of companies are thousands of miles away, says Mark Davis, which adds to the conundrum in Louisiana, which is full of "middle managers."[98] Under the current legal architecture, oil-producing landowners are simply incentivized to turn areas into what Julie Maldonado calls "energy sacrifice zones." In sacrifice zones, human lives are valued less than the natural resources extracted from a place.[99] Such extraction activity generates shareholder profits and state tax revenues. Rapid resource extraction that denudes the surrounding area makes those within the sacrifice zone increasingly vulnerable and marginalized, causing further economic or physical displacement. To understand environmental degradation and displacement as what Maldonado calls "tacit persecution," we must understand how such conditions are created.

In Louisiana, sustainability signifies sustaining a healthy business environment at the expense of other ecologies of social and environmental health. Discourses of *sustainability* flow throughout the state's Master Plan and discussions of the working coast.[100] Active measures to intervene and reverse coastal erosion are undertaken to continue extraction. So, ultimately, the cycle continues. It is part of a continuum of Louisiana's political economy of extracting and exhausting its natural resources—from old growth timber and muskrat fur to fisheries to oil and gas. Extracting resources from the land is part of the state's identity, which provides the cultural cover of continued extraction. Through an effective greenwashing campaign, the industrial polluters and oil companies that have operated for years in the Louisiana wetlands and the Gulf of Mexico joined forces with environmentalists in the early 2000s to successfully underwrite a national campaign that framed the oil industry not as the cause of land loss but as one of its victims. We can link the deployment of the working coast precisely to this campaign, which was developed after efforts failed in 2000 to win federal support for the state's first comprehensive restoration plan, "Coast 2050." This argument for national relevancy of the coast's industries ties the preservation of the coast to the very practices causing coastal erosion. It cements the uneasy mixture of oil and water that is part of the ontological dilemma of Louisiana that I explore in the introduction.

As groundbreaking as "Coast 2050" was in terms of its strategic and regional approach, coastal planners were unable to attract a federal partner without a financial calculus that dollars invested in coastal restoration would be justified by financial return. They had to quantify the value of the wetlands through its industrial productivity, which continues to limit imagined futures for the land. Today, as part of any restoration argument, coastal advocates and industrial interests highlight the industrial productivity of the coast to justify financial returns on investment. The moniker "working coast" as the state's linchpin issue provided talking points for saving the coast while underplaying the problematic strategy of protecting an industry from the destruction it causes. This action tacitly shifts the financial burden of restoration onto the federal government and US taxpayers.

While the plan traffics in discourses of "resilience" on behalf of some communities, it brackets off expectations of sacrifices by capital interests. Without curtailing drilling, the state leveraged the devastation wrought by Katrina and Rita to successfully renegotiate the state/federal royalty share through GOMESA, something they had failed to accomplish in 2000. They were able to build on a legacy of Extractive Thinking by using Katrina and coastal erosion as a vehicle to intensify oil and gas drilling—which would presumably fund a master plan to mitigate damages from oil and gas drilling. This required some admission of the industry's historical destruction in the state's wetlands, which they could ostensibly mitigate by further energy production. They aimed their ire instead at the Army Corps of Engineers' leveeing of the Mississippi River, which is only one of several causes of coastal erosion and subsidence. As a result, they produced a plan that I argue

rationalizes further activity and reproduces a need for itself and future mitigation measures. In this way, the plan reproduces the conditions for its own possibility. It bolsters an economy that requires further interventions in the landscape, whose disappearance exposes more people and pipelines to escalating storms.

All of this begs a fundamental question of whether Louisiana can be separated from the economic rationalities that set the crisis in motion and continue to justify an unending continuum of intervention. Simply, can Louisiana and New Orleans exist without a working coast that appears to be both sinking it and rationalizing a plan to maintain it? Can we envision the existence of New Orleans or Louisiana without its accompanying dependence on extraction, that includes not only deep-draft shipping along the Mississippi River and a robust oil, gas, and petrochemical industry but also measures to mitigate its damage funded by the extraction itself? Or is Louisiana simply fated to become the nation's *disaster laboratory*, either a cautionary tale or a model of resiliency for other governments in the crosshairs of the approaching onslaught caused by global climate change?