



A SENSE OF PLACE AT RISK

PERSPECTIVES OF RESIDENTS OF COASTAL LOUISIANA
ON NONSTRUCTURAL RISK REDUCTION STRATEGIES

A sense of place at risk

Perspectives of residents of
coastal Louisiana on
nonstructural risk reduction
strategies

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PREFACE

Author information and acknowledgments

Pamela Jenkins is a former Research Professor of Sociology and faculty in the Women's Studies Program at the University of New Orleans (UNO). She is a founding faculty member of UNO's Center for Hazards Assessment, Response & Technology (CHART). Before Katrina, her research interests were diverse, focused on how communities respond to a variety of problems. After Katrina, she became part of a national research team on evacuees of the hurricane.

She has published on first responders, faith-based communities' response to the storm, and the experiences of the elderly during and after Katrina. Throughout her career, she has evaluated national and local efforts focused on community sustainability. She is also involved in several projects that work directly with best practices for violence prevention, on domestic and community levels.

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EXECUTIVE SUMMARY

A SENSE OF PLACE AT RISK: PERSPECTIVES OF RESIDENTS OF COASTAL LOUISIANA ON NONSTRUCTURAL RISK REDUCTION STRATEGIES

“You cannot separate care of the environment from care of the people who are poorest and more vulnerable. It is all a matter of social justice.”

—Local resident

In the aftermath of Hurricanes Katrina and Rita in 2005, a lens was turned on the Gulf Coast of Louisiana. After 2005, the conditions in the Gulf Coast worsened. Cascading storms and the 2010 Deepwater Horizon oil spill created ongoing conditions of vulnerability. These events brought the spotlight to an area that had over the years experienced acute and chronic weather events.

The purpose of this study is to document and present the views of people in the parishes most at risk—views that have rarely been captured, including their views on current policy proposals. With nonstructural issues identified as a major focus of the 2017 version of the Coastal Master Plan, there is an opportunity to further delineate these issues and recommend policy changes over the next two years. Three parishes (Terrebonne, Lafourche, and Plaquemines) are at the epicenter of coastal land loss and other critical changes in the environment. How residents understand and respond to the challenges of sea level rise and climate change will provide possible strategies and recommendations for local and state policy choices.

How residents understand and respond to the challenges of sea level rise and climate change will provide possible strategies and recommendations for local and state policy choices.

Flooding and land loss in southern Louisiana, which accounts for 90 percent of total wetlands land loss in the lower 48 states, threaten not only livelihoods, but the physical existence of some communities.¹ Rising seas, disappearing land, and lost livelihoods are forcing many families to migrate away from the coast, and leaving others to take measures to keep their homes safe. Coastal restoration is viewed not only as essential to retaining land, and even reversing some land loss, but also as the basis for a new sector in the regional economy, with the potential to generate tens of thousands of new jobs.

This study focuses on nonstructural mitigation measures, instead of the more commonly discussed and researched structural flood control measures. Coastal restoration investments often address these flood control measures, primarily levee building and restoring coastal marshland. Many communities—particularly

those that will not be adequately protected by structural measures—will rely on nonstructural measures. *Louisiana's Comprehensive Master Plan for a Sustainable Coast* recognizes three types of physical nonstructural measures: flood-proofing, elevation, and, in some cases, acquisition of property that cannot be protected. Programmatic nonstructural strategies include building codes, land use planning, regulation, hazard mitigation planning, and public education. Some of these mitigation efforts occur through public programs in a concerted manner, and others occur on an individual level with private resources.

The research design is a case study involving residents in three Louisiana coastal parishes. A case study involves multi-methods; in this case study, a series of semi-structured interviews were conducted using the contacts of Oxfam personnel, their current and former grantees, and the researcher.² There were 17 interviews, including people from all of the organizations and their contacts. Further, this report includes accounts from a retired local police chief; an organizer of a local, small tribe in Plaquemines Parish; a local long-standing employee of the Federal Emergency Management Agency (FEMA); the owner of a small grocery store; retired community workers; and three directors of small nongovernmental organizations (NGOs).



1 Residents of the coastal parishes in Louisiana, who live with water as a constant presence, make frequent adjustments to their homes and belongings to mitigate impacts of water and wind. Photo: Mary Babic / Oxfam America

Some of those interviewed live in raised homes. All of those interviewed are lifelong residents of the area. They represent Cajun, African American, Native American, and other Anglo residents. The report also includes notes from observations of three community meetings in Plaquemines Parish and recommendations that came out of an Oxfam partner meeting on policy options. And finally, the report includes residents' comments on nonstructural policy proposals contained in the report *The View from the Coast*, from the Center for Planning Excellence (CPEX).

FINDINGS AND DISCUSSION

The residents' views of nonstructural risk reduction efforts include an important link to *place*. This sense of place and place attachment are the subtext to the participants' views of nonstructural risk reduction. These findings capture the larger issues that emerged in the interviews.

Loss and change

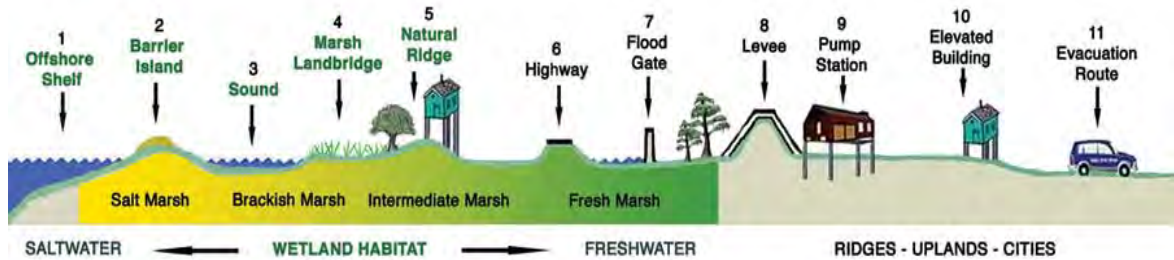
Many of the residents describe how the landscape has changed. Several accounts stated that parts of their communities are no longer recognizable. Gentrification along the coast is part of the changing landscape as well. It occurs as non-permanent residents build structures (camps) that are much larger, often higher, and more expensive than the homes of the permanent residents. "Camps" is a local term for structures that are used for fishing, hunting, and other activities. While some camps are very simple, others are expensive homes.

Issues of Science and Mitigation

Recommendation 1: The solutions to land loss and sea level rise should be connected to best practices in physical, engineering, and social sciences, and separate from either local or state politics.

This recommendation is tied to the residents' concern about proposed solutions to sea level rise and coastal land loss. While each participant had varying amounts of information about nonstructural issues, most returned to the importance of coastal land loss and sea level rise. The effects of climate change and subsequent sea level rise are part of their everyday life. Several participants spoke about the need for multiple lines of defense including diversions, sediment building, and the creation of buffers to the land. The link of hurricane and flood protection to physical science was a major topic. Some of the participants thought that politics gets in the way of science and solutions to the structural issues of the coast.

The Multiple Lines of Defense Strategy



Lopez, John A., 2006, *The Multiple Lines of Defense Strategy to Sustain Coastal Louisiana*, Lake Pontchartrain Basin Foundation, Metairie, LA January 2006

For further discussion of this model, please see Appendix A. Diagram: <http://mlods.org/>

The Sense of Abandonment

Recommendation 2: Local and state officials should make a concerted effort to connect with the residents of the lower coastal parishes.

This recommendation focuses on how the residents viewed their interactions with local and state officials. Some participants reported that communities along the coast feel a sense of abandonment by every level of government and their response to land loss. This was not a universal sentiment in the interviews, but did appear frequently. This sense of abandonment arises from the history of economic development, the persistent social problems, and the current effects of the ongoing environmental crisis.

Nonstructural risk reduction strategies

Nonstructural strategies are diverse and numerous. Structural efforts are often large engineering projects, while nonstructural efforts are less defined (for example, land use policies or public education). Combined with the confusion about funding, nonstructural programs and projects are often not the priority for any agency.

Elevation

Recommendation 3: Federal and state programs need to both simplify and expand the elevation process.

This recommendation encompasses the wide-ranging issues that define the process of elevating houses in vulnerable areas. Residents report that the funding is difficult. Further, they report that finding qualified contractors continues to be a problem. And, there are long-term concerns about the feasibility of elevated houses. The discussion below outlines all of these issues.

Elevation is a popular alternative in coastal Louisiana.³ As simple as this statement is, the implementation of the mitigation strategy is far more complex,⁴ including differences in funding, design, construction, and community transformation. Much of the current literature involves technological information about how and where to elevate.⁵

The bureaucracy involved in applying for and qualifying for elevation monies may be a major obstacle. Several residents spoke of the difficulties of the process of elevating their homes. For example, there may be no clear title to a home, which makes it problematic for the owner to receive funding. Others discussed how long the process was to qualify for elevation funding. Finally, elevation, like many other programs after major disasters, applies mostly to homeowners. Those who rent often live in non-elevated structures.

Design and contracting issues also should be considered in new elevation policies and implementation. Local community organizations report that there are few contractors in Louisiana who are able to perform the work. And even if they can, the quality of the elevation varies. Raised homes also need specific accommodations for aging in place. For example, many elevated homes need functioning elevators that are safe and easily repairable.



2 Raised homes need accommodations for aging in place, such as elevators. Photo: Mary Babic / Oxfam America

Elevation funding should be a continuous mitigation effort, not tied to disaster funding. Further, policies about elevation should not happen post-disaster, but be part of the planning process pre-disaster. In other words, parish and city plans might include a long-term elevation program for vulnerable areas. However, the difficulty now is that funds for elevation are often linked to disaster events. At the same time, some residents stated that elevation should not be the only focus. It is not feasible to elevate all the homes, so nonstructural elements should not be limited to just the discussion of elevation. With planning, elevation can be included as part of a plan for multiple lines of defense.

Public education

Recommendation 4: Public education should be designed to be a dialogue between community residents and officials—encouraging an exchange of knowledge and information, and recognizing residents’ expertise and concerns.

For this study, the programmatic area of public education is one of the most debated of all the topics. The debate is not about the need for public education; all agreed that there was a consistent, ongoing need. The debate surrounds the purpose, design, and implementation of public education.

Relocation

Recommendation 5: Any plans around possible relocation should consider the needs of and impacts on communities, and should significantly engage those communities in the planning process.

This recommendation emphasizes the unique attachment to place for residents of coastal Louisiana. Residents have such a strong sense of place that relocation represents a loss of their way of life, not just a place to live. Relocation is certainly the most difficult of all the nonstructural measures. Relocation, as with elevation, takes many forms. There is relocation which is voluntary with government support (voluntary acquisition), involuntary relocation as a result of eminent domain, and voluntary relocation with no government support. On the coast of Louisiana, there is a slow voluntary movement of individuals and families away from the coast.⁶

Without exception, the discussion on relocation with each of the residents was the most sensitive and difficult. First, there is a reluctance to have the discussion at all. Residents think that just talking about relocation makes it a viable alternative to fixing the coast. Also, there are fears about how relocation will occur, and how people will be affected. There is a consensus now that people are already moving north. In the literature, this is referred to as voluntary relocation. However, participants noted that this is *not* voluntary, but brought on

by a number of factors that residents cannot control.⁷ As with the recommendations for elevation, the participants in this study discussed relocation on a community or neighborhood level, rather than an individual level. There is a fear in these parishes that areas will be emptied bit by bit, without attention to culture, community, or family. As well, there is a concern for the communities and the parishes that voluntary relocation has already altered the area. Voluntary relocation is intertwined with the earlier sense of abandonment—that parts of the parishes are withering away.

Recommendation 6: The 2017 version of the Coastal Master Plan should further develop nonstructural implementation in an equitable process.

The study documented the views of people living in vulnerable coastal parishes. Throughout these interviews, the breadth of knowledge that these residents have about their land and their lives is apparent. The study's focus on nonstructural mitigation efforts revealed a complex understanding of the value of and need for nonstructural measures along with proposed structural measures. For example, residents may not use the term "multiple lines of defense," but they understand that there cannot be just one solution, and that all the solutions must work in coordination with each other. They support structural measures that ameliorate coastal land loss and mitigate sea level rise. Of the nonstructural measures discussed, they support elevation and new retrofitting alternatives. For all of these solutions, however, they would like to engage in public dialogue with those officials in charge of these efforts, in addition to experts in each field.

Conclusion

Several major areas emerged for further investigation: elevation design and implementation, public engagement on all issues, and design and implementation of a program to discuss resettlement.

The urgency for action, however, is a constant in the lives of the residents. The rate of land loss and sea level rise increases every day and necessitates the need for immediate solutions.

Table 1: Residents' recommendations

| | |
|-------------------------|--|
| General | <p>The solutions to land loss and sea level rise should be connected to best practices in physical, engineering, and social sciences, and separate from either local or state politics.</p> <p>Local and state officials should make a concerted effort to connect with the residents of the lower coastal parishes.</p> |
| Elevation | <p>Federal and state programs need to both simplify and expand the elevation process. Areas to be addressed include contractors, rental property, and quality of elevation.</p> |
| Public education | <p>Public education should be designed to be a dialogue between community residents and officials—encouraging an exchange of knowledge and information, and recognizing residents' expertise and concerns.</p> |
| Relocation | <p>Any plans around possible relocation should consider the needs of and impacts on communities, and should significantly engage those communities in the planning process.</p> |
| Conclusion | <p>The 2017 version of the Coastal Master Plan should further develop nonstructural implementation in an equitable process.</p> |

A SENSE OF PLACE AT RISK

“You cannot separate care of the environment from care of the people who are poorest and more vulnerable. It is all a matter of social justice.”

“Protect the most vulnerable.”

“Salvation from inundation is elevation.”

“Coastal restoration and the effect of climate change on the people that are the poorest and most vulnerable is our priority. We have an obligation to adaptation. Adaptation is a moral obligation.”

—Various interviewees of this study

INTRODUCTION

In the aftermath of Hurricanes Katrina and Rita in 2005, a lens was turned on the Gulf Coast of Louisiana. There had been a number of studies about the land and its people previously, but the storms captured the attention of organizations, researchers, and funders. After 2005, the conditions in the Gulf Coast worsened. Cascading storms and the 2010 Deepwater Horizon oil spill created ongoing conditions of vulnerability. These events brought a spotlight to an area that had over the years experienced acute and chronic weather events.

The events and the response of the last ten years produced a new understanding of both the importance and the vulnerability of coastal Louisiana. *Louisiana’s Comprehensive Master Plan for a Sustainable Coast* was created to develop both structural and nonstructural responses to sea level rise and subsequent land loss. A number of organizations and groups (national, international, state, and local) have begun to work in this area.

The strength of the residents comes through in the interviews, but also the sense of weariness in their day-to-day lives, their uncertainty about the future, and in some cases, a sense of abandonment.

Central to this area are the people who have been in coastal Louisiana for generations. These residents learned to adapt to the changing conditions of their environment. This is their story—or rather, their stories. In reference to the residents of coastal Louisiana, we hear how resilient they are, or how determined they are to keep their way of life. At the same time, residents of coastal Louisiana are described as vulnerable. Both of these things are true.

However, the individuals in this study require a more nuanced characterization. The strength of the residents comes through in the interviews, but also the sense of weariness in their day-to-day lives, their uncertainty about the future, and in some cases, a sense of abandonment. The role of nonstructural risk reduction strategies in their everyday lives provides the subtext to a larger, broader discussion of coastal policy.

The purpose of this study is to document and present the views of community people in the parishes most at risk—views that are rarely been captured, including their views on current policy proposals. With nonstructural issues identified as a major focus of the 2017 version of the Coastal Master Plan, there is an opportunity to further delineate these issues and recommend policy changes over the next two years. Further, the study documents how residents understand the nonstructural mitigation efforts and adaptive solutions to the physical vulnerability of their landscape.

BACKGROUND

Residents of coastal communities of Louisiana have traditionally been excluded from their fair share of the wealth that the Gulf Coast region has generated. Louisiana is the top producer of shrimp, crawfish, alligator, and oysters in the nation, and the number two producer of fish and blue crab;⁸ the state is also a leading producer of crude oil and natural gas, and enjoys billions in revenue from tourism (\$11.2 billion in 2014).⁹ Yet, the state's coastal communities rank among the poorest in the nation. People of color—African Americans, Native Americans, Vietnamese Americans, and a growing Latino population—are disproportionately poorer, more frequently unemployed and underemployed, and have fewer job skills than their white counterparts.¹⁰

Families in these communities who depend on the natural habitat for their livelihoods—particularly oystermen, shrimpers, and fishers—were disproportionately impacted by the Deepwater Horizon oil spill. They had already experienced depressed prices and limited catches by the pressures of globalization, large commercial operations, and decades of environmental degradation.

Flooding and land loss in southern Louisiana, which accounts for 90 percent of total wetlands land loss in the lower 48 states, threaten not only livelihoods, but the physical existence of some communities.¹¹ Rising seas, disappearing land, and lost livelihoods are forcing many families to migrate away from the coast, and leaving others to take measures to keep their homes safe. Coastal restoration is viewed not only as essential to retaining land, and even reversing some land loss, but also as the basis for a new sector in the regional economy, with the potential to generate tens of thousands of new jobs.



3 Families in coastal communities who depend on the natural habitat for their livelihoods—particularly oystermen, shrimpers, and fishermen—were disproportionately impacted by the Deepwater Horizon oil spill and the several hurricanes of the past decade. Photo: Mary Babic / Oxfam America

Nonstructural measures

This study focuses on nonstructural mitigation measures, instead of the more commonly discussed and researched structural flood control measures. Coastal restoration investments often address these structural flood control measures, primarily levee building and restoring coastal marshland. Many communities, particularly those that will not be adequately protected by structural measures, will rely on nonstructural measures.

The Coastal Master Plan recognizes three types of physical nonstructural measures: flood-proofing, elevation, and, in some cases, acquisition of property that cannot be protected. Programmatic nonstructural strategies include building codes, land use planning, regulation, hazard mitigation planning, and public education. Some of these mitigation efforts occur through public programs in a concerted manner, and others occur on an individual level with private resources. Communities most heavily reliant on nonstructural measures include socially vulnerable communities along the coast. As with hurricane and oil spill recovery issues, the interests of these communities could easily be overlooked, yet with nonstructural issues identified as a major focus of the 2017 version of the Coastal Master Plan, there is an opportunity to further delineate these issues and recommend policy changes over the next two years.

THE STUDY AREA

This research project is a study of people living in three Louisiana coastal parishes, and how the residents of these parishes frame their adaptation to sea level rise and other consequences of climate change. Terrebonne, Lafourche, and Plaquemines parishes are at the epicenter of coastal land loss and other critical changes in the environment. How residents understand and respond to the challenges of sea level rise and climate change will provide possible strategies and recommendations for local and state policy choices.

The three parishes are part of the diverse southern coastal area of Louisiana. Historically, coastal Louisiana was settled by Native Americans first, and then by French, Spanish, African, German, and Acadian settlers.¹² Yugoslavs, Haitians, Italians, Irish, Chinese, Filipinos, Croatians, and Vietnamese also settled the area.¹³ This diverse population was unified by resource extraction, as the local cultures are tied to an environment that is saturated with water.¹⁴ The economy is dominated by three industries: fishing, oil and gas, and tourism. As Gramling and Hagelman point out, the region's unique combination of industry, geography, and human expertise is linked to food and energy production for the country.¹⁵

Terrebonne, Lafourche, and Plaquemines parishes are at the epicenter of coastal land loss and other critical changes in the environment.

Lafourche Parish was one of the original 12 parishes when Louisiana became a territory, and it was one of the original parishes when Louisiana became a state in 1812.¹⁶ The parish encompasses approximately 1,473 square miles, 1,085 of which is land area, and 388 of which is water.¹⁷ Census Bureau statistics reported a population of 96,318 in 2010, including white, black or African American, Hispanic or Latino, Asian, and American Indian populations.¹⁸ Lafourche Parish has a strong agricultural economy, is a major producer of seafood and citrus, and plays a major role in Louisiana's oil economy.¹⁹ Lafourche is currently updating its Hazard Mitigation Plan "to identify and prioritize future efforts to reduce risks of damage from natural hazards."²⁰ The plan identifies vulnerability to natural hazards and efforts to minimize losses in the future. According to the parish, the update will allow it and participating municipalities to seek grant funding from FEMA. Lafourche has also adopted a Comprehensive Resiliency Plan to strengthen resiliency to natural disasters, in addition to guiding economic development, transportation, and land use investments.²¹

Plaquemines Parish was founded on March 31, 1807, and was one of the original 19 parishes when the territory of New Orleans was subdivided.²² The land area of the parish is 845 square miles as compared to 1,584 square miles of water area.²³ The parish boundary encompasses the last leg of the Mississippi River, and the mouth of the Mississippi at the Gulf of Mexico.²⁴ Census Bureau

statistics reported a population of 23,042 in 2010, and an estimated population of 23,447 in 2014, including white, black or African American, Hispanic or Latino, Asian, and American Indian populations.²⁵

Plaquemines Parish is a major producer of oil in Louisiana.²⁶ The parish also produces an abundance of citrus fruit, and hosts the Orange Festival every year at Fort Jackson in Buras, Louisiana.²⁷ It has numerous fishing and hunting grounds, and is a major contributor to Louisiana's seafood economy. The parish updated its Hazard Mitigation Plan in 2015 to comply with the FEMA requirement to update plans every five years in order to qualify for hazard mitigation assistance funding.²⁸ The plan is designed to reduce or eliminate disaster losses.



4 "Living with water" is a common theme in the three parishes in this study. Photo: Tara Lambeth

Terrebonne Parish is located in South Louisiana, and was founded in 1822. The parish comprises 2,080 square miles, 1,255 of which is land area, and 825 of which is water.²⁹ Terrebonne is the second largest parish in land area in Louisiana, and has abundant oil and gas, seafood, and agricultural resources.³⁰ The parish population was 111,584 in 2010, including white, black or African American, Hispanic or Latino, Asian, and American Indian populations.³¹ The Terrebonne Parish Planning and Zoning Department is responsible for recovery assistance and mitigation planning, among other things.³² This effort focuses on reducing or avoiding future flood losses through retrofitting or otherwise protecting structures, as well as developing and adopting initiatives to build a safer and more resilient community.

All three parishes are experiencing changes in population and economic development, especially since Katrina hit in 2005. In Plaquemines Parish, 72 percent of all workers commute from outside the parish, up from 69 percent in 2004. The percent of workers commuting into Lafourche Parish has grown from 41 percent to 51 percent. In Terrebonne Parish, the percent of workers commuting from outside has risen from 42 percent in 2004 to 48 percent in 2011.³³ There has been a gradual retreat from the coastline as the land has receded. "Between July 2005 and January 2014, coastal ZIP codes in Terrebonne, Lafourche, and Plaquemines Parishes lost households while ZIP codes inland within the same parishes grew."³⁴

This brief description of the three parishes shows that living with water emerges as a unifying theme. Residents in the parishes have a long history with extractive industries, from fishing to employment in the oil and gas industries.

A NOTE ON METHODS

The research design is a bounded case study involving residents in three Louisiana coastal parishes. A case study involves multi-methods; in this case study, a series of semi-structured interviews were conducted using the contacts of Oxfam personnel, their grantees, and the researcher. There were 17 interviews, including people from all of the organizations and their contacts. Further, this report includes accounts from a retired local police chief; an organizer of a local, small tribe in Plaquemines Parish; a local long-standing FEMA employee; a small grocery store owner; retired community workers; and three other small NGO directors. Some of those interviewed live in raised homes. All of those interviewed are lifelong residents of the area. They represent Cajun, African American, Native American, and other Anglo residents. The report also includes notes from observations of three community meetings in Plaquemines Parish, and recommendations that came out of an Oxfam partner meeting on policy options. And finally, the report includes residents' comments on nonstructural policy proposals contained in the report *The View from the Coast*, from the Center for Planning Excellence (CPEX).



5 Residents along the coast flocked to a community meeting about Louisiana's Coastal Master Plan. Photo: Sharon Gauthe / BISCO

In consultation with Oxfam, an initial six people were included in the purposeful sample. “This means that the inquirer selects individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon in the study.”³⁵ The purposeful sample included contacts of Oxfam staff, Oxfam partners (grantees), and the researcher’s contacts. These six residents led to 11 additional individuals who had, to some degree, connections to the partner groups listed below. Semi-structured interviews were conducted with these 17 people. Other studies show that a single case study should have between 15 and 20 interviewees.³⁶ In addition, the researcher received input from two community meetings in Plaquemines Parish.

Finally, to review the findings of this study and begin to delineate nonstructural mitigation policy goals, Oxfam convened a meeting in Avondale with its partners, the researcher, and the Center for Progressive Reform (CPR), which had conducted a related research project; input from that meeting was incorporated in this report as well. Below are descriptions of five partner organizations that are currently or were previously funded by Oxfam who were contacted to provide participants. These organizations are described in some detail because their points of view are represented in the findings.

Bayou Grace Community Services was formed in the aftermath of Hurricanes Katrina and Rita, and focused primarily on rebuilding the five rural bayou communities south of Houma. After the Deepwater Horizon oil spill, they

engaged their community to raise awareness about environmental and social justice issues and advocate for state and federal legislation to bring benefits to affected communities. Its main focus now is environmental outreach to educate local and national communities on coastal land loss, restoration, and protection.

Bayou Interfaith Shared Community Organizing (BISCO) was formed in 1994 in response to recovery issues posed by Hurricane Andrew.³⁷ Specifically, the recovery “exposed longstanding issues of racial inequity and poverty in southeastern coastal Louisiana.” The organization seeks to bring together residents through faith-based organizations for developing a “network of relationships, capacity-building programs, and trainings focused on addressing issues of communities from a grassroots level.” BISCO serves residents primarily in Terrebonne and Lafourche Parishes, and has reached out to residents of Assumption, Jefferson, St. Mary, St. James, and St. John the Baptist as well.

Gulf Organized Fisheries in Solidarity and Hope (GO FISH) was formed in 2012 in response to the Deepwater Horizon oil spill.³⁸ This coalition of grassroots organizations advocates for the rights of fishermen to restore fisheries, and to preserve fishing community culture. Founding member organizations include the Association of Family Fishermen, Louisiana Bayoukeeper, Louisiana Oystermen Association, Louisiana Shrimp Association, Pointe-Au-Chien Indian Tribe, United Commercial Fishermen’s Association, and United Louisiana Vietnamese American Fisherfolks.

Terrebonne Readiness and Assistance Coalition (TRAC) was formed in 1992 after Hurricane Andrew to address long-term disaster recovery, disaster preparedness education, and residential mitigation and individual support services which include case management, client advocacy, and appellate services. TRAC assists individuals and families unable to recover on their own in Terrebonne, Lafourche, and St. Mary Parishes, and Grand Isle. Their efforts resulted in \$66.5 million in recovery aid, and \$20.2 million of in-kind construction services. They have contributed to preserving and replacing the housing stock in these bayou communities by: rebuilding 43 homes, restoring 2,500 homes, replacing 35 mobile homes, elevating 161 homes, installing 250 elevators, replacing 127 sewer treatment plants, and constructing 75 handicap ramps. TRAC also provides construction supervision services: volunteer worksite supervision, volunteer coordination and housing, construction management, and sustainable rural/coastal housing development. TRAC has received national recognition for its innovations, achievements, and practices in disaster recovery operations, disaster preparedness education programs, and sustainable housing design and development for the coastal communities.

Zion Travelers Cooperative Center (ZTCC) is based in unincorporated Phoenix, Plaquemines Parish, Louisiana, and works with community members to help them rebuild their lives and community, and improve the quality of life for

their children. The center was established in the wake of Hurricane Katrina to assist community members by providing rebuilding supplies, lending equipment such as saws and generators, and distributing small grants for lumber purchases.³⁹ ZTCC established the Affordable Home program, which provides volunteer contractors who supply foundation and building materials to construct new homes for displaced residents. ZTCC also established a technology center providing computer access and educating the community about general computer skills. Finally, ZTCC established a Fitness and Nutrition Center focusing on health education and providing practical ways to stay healthy, a Youth Entrepreneurship Program for developing business and social skills, and a Reading Room for enhancing academic performance.⁴⁰

COMMUNITY PERSPECTIVES

The residents' views of nonstructural risk reduction efforts show an important link to place. The sense of place literature explains the complexity of the residents' experience in their setting. Human experiences include place: a geographic location that is made up of the people, objects, practices, and meanings of that area.⁴¹ Sense of place, and the meaning given to it, results in *place attachment*.⁴² Lived experiences of place are defined by work, families, and relationship to the natural environment.

When an environment changes (either abruptly or over time), the view of the landscape and the view of social conditions change. To the residents, their heritage, their identity, and their concerns are deeply tied to the natural environment. It is not just that they are attached to the land, but that they are attached to a way of life centuries old, connected by family and community.

A sense of place is based on lived experiences, defined by work, families, and relationship to the natural environment.

This **sense of place and place attachment** are the subtext to the participants' views of nonstructural risk reduction. These findings capture the larger issues that emerged in the interviews; the second set of findings relates to some nonstructural issues; and the third set compares the findings and recommendations from Center for Planning Excellence (CPEX) to this study. CPEX is a non-profit organization that coordinates urban, rural, and regional planning efforts in Louisiana.

Loss and change

Many of the residents describe how the landscape has changed, and several accounts state that parts of their land are not recognizable. One resident reports how she drives through her hometown and cannot find her grandparents' home.

“The landmarks are not familiar anymore.” She thinks a minute and continues, “It is an adjustment.”

Gentrification of the coast is part of the changing landscape as well. Gentrification along the coast occurs as non-permanent residents build structures that are much larger, often higher, and more expensive than the homes of the permanent residents. After Hurricanes Katrina, Rita, Ike, Gustav, and Isaac, the development of high-end recreational camps continued. “Camps” is a local term for structures that are used for fishing, hunting, and other activities. While some camps are simple structures, others are expensive homes. As one person stated, “We don’t care for the encroachment. There should be a limit to how many recreational camps are allowed to come into the area. It is almost like *carte blanche* attitude toward building camps.”

One resident captures the sense of a community that has gone from being tight-knit and special to being nearly abandoned and lonely:

Plaquemines Parish in 1976 [had] very tight-knit communities. You could not buy a piece of property. If you wouldn’t marry into a family, you wouldn’t get a piece of property... At first, I thought it was so isolated. I don’t want to go anywhere else. This is beautiful...Now, all these people are gone...empty spaces. A lot of land that went up for sale.



6 Many fisherfolk report that catches are down in the wake of the BP oil spill, and rising sea levels are encroaching on their homes and property. Photo: Mary Babic / Oxfam America

Corrosive and therapeutic communities

The concepts of corrosive and therapeutic communities help to explain the mixed beliefs about mitigation efforts. The development of a corrosive community can be an unintended consequence of nonstructural risk reduction efforts. Picou, Marshall, and Gill (2004) discuss how, after a disaster, communities have elements that are therapeutic, where communities come to each other's aid. As well, there are elements of a corrosive community where people pull away from each other.

The communities in this study have historically been therapeutic, in that they have often pulled together in a time of crisis. The literature states that elements of a therapeutic community often occur after a natural disaster, while a corrosive community may emerge after a man-made or environmental disaster. The communities in this study have experienced both types of disaster in a short period of time.

The participants experienced some of the corrosive elements from the elevation program. "There is a lot of envy about elevation and other funds from the storm, and also from the Deepwater Horizon oil spill....One neighbor will feel that so and so cheated, or one neighbor got more than another. We see it even with emergency supplies."

Another participant who lives in an elevated home reports that she has little relationship with her neighbors. Her neighbors wanted to buy her land after Hurricane Katrina, but she refused. The neighbors and others in her community are jealous of her and continually refer to her rebuilding funds as if she still has some left. From her point of view, people took their rebuilding funds and did little with them. This participant thinks that she is thrifty and saves her money, but others do not. These are examples of how the trauma of the event and the recovery can change community dynamics.

Any kind of aid after a natural disaster can create a feeling of inequality. Another resident put it is this way: "Whenever you have limited funds, you always have questions. Why are others more deserving than me?" Another participant spoke about how the dynamics in this atmosphere had changed. "Before it was everyone was in it together. Now, that changes as some are jealous."

It is no surprise that in an area that has had a number of disastrous events, elements of a corrosive community would emerge. The greatest strength in these communities is their history and care with each other, and yet some of their cohesiveness may erode as current policies are questioned.

The greatest strength in these communities is their history and care with each other, and yet some of their cohesiveness may erode as current policies are questioned.



7 As the ecosystem along the Gulf Coast struggles to recover from the many blows, boats sit idle in marinas along the bayou. Photo: Mary Babic / Oxfam America

This brief description of loss and change sets the stage for how the participants view their lived experiences and, eventually, the development of policy. Throughout the discussion, but especially in the accounts of loss, there is a sense of urgency, of the need for immediate action.

Issues of Science and Mitigation

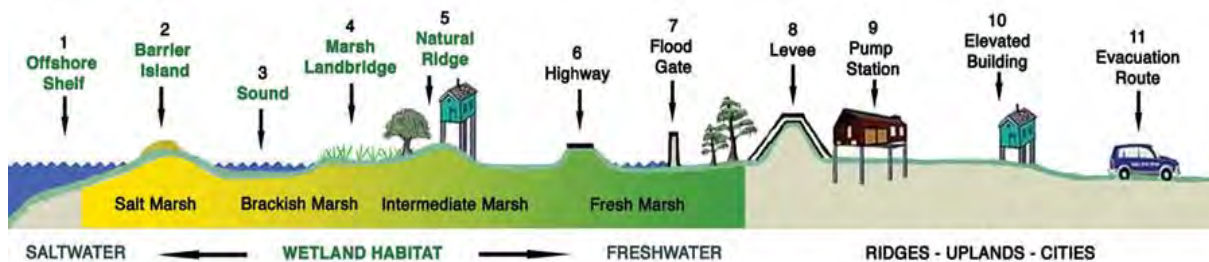
Recommendation 1: The solutions to land loss and sea level rise should be connected to best practices in physical, engineering, and social sciences, and separate from either local or state politics.

This recommendation is tied to the residents' concern about proposed solutions to sea level rise and coastal land loss. While each participant had varying amounts of information about the need for nonstructural measures, most returned to the importance of coastal land loss and sea level rise and the impact of acute and everyday weather events. The effects of climate change and subsequent sea level rise are part of their everyday life.

Several participants spoke about the need for multiple lines of defense. They all spoke of diversions, sediment building, and the creation of buffers to the land. The link of hurricane and flood protection to physical science was a major topic. "We got to clean up our land. It is possible to do that. We can manage those diversions. We will create vegetation." One resident takes this conversation further: "We need to be part of the multiple lines of defense." These community

residents understand how structural and nonstructural measures are connected, from building up the land to evacuating for a storm.

The following illustrates the multiple lines of defense:



Lopez, John A., 2006, *The Multiple Lines of Defense Strategy to Sustain Coastal Louisiana*, Lake Pontchartrain Basin Foundation, Metairie, LA January 2006

For further discussion of this model, please see Appendix A. Diagram: <http://mlods.org/>

In addition, throughout the interviews, the use of physical science and solutions to the structural elements were part of the discussion. Some of the participants thought that politics gets in the way of science and solutions to the structural and nonstructural issues of the coast. There is a faith in science to work with communities to ameliorate the coastal land loss based on climate change. “The recovery of the oyster industry,” to a participant, is dependent on an objective use of scientific knowledge without the politics. “Policy and science. We need that bad.”

The sense of abandonment

Recommendation 2: Local and state officials should make a concerted effort to connect with the residents of the lower coastal parishes.

This recommendation focuses on how the residents viewed their interactions with local and state officials. Some participants reported that the communities along the coast feel a sense of abandonment by every level of government and their response to land loss. This was not a universal sentiment in the interviews, but did appear frequently. This sense of abandonment arises from the history of economic development in the area, the persistent social problems in the area, and the effects of the ongoing environmental crisis.

The sense of abandonment is linked to the past and present politics of development. For most of the interviewees, the development of extraction industries exacerbated land loss and changes in the fishing and other traditional occupations linked to the land. As one fisherman stated, “They just don’t do it by stealing [speaking of the fishing industry and politics], they steal legal by laws.” Another speaks to this issue as well: “They [oil and gas] took everything from the

bayous. They came in and said, 'I'll put an oil field on the land,' without any real payoff for the residents."



8 One person said, "Six hurricanes and an oil spill have made people desperate and tired." Photo: Valerie Downes / Oxfam America

There was not universal agreement about the dynamics and perception of abandonment. One person had a different take on the sense of abandonment. "To be abandoned, you would have to be considered. We know that we have never been part of a community. We have always relied on taking care of ourselves as we have so for centuries and we continue to this day. We are not abandoned; we have always been overlooked and underserved."

Part of this sense of abandonment stems from the fact that these communities have other needs that are overwhelming and urgent. It was hard for some to separate needs for health care, education, jobs, and other environmental issues from the need to save the coast. All the residents

interviewed spoke of social problems that appear broader than nonstructural issues. There is concern that the lack of schools, availability of health care, pollution, and unemployment will also make the coast more vulnerable. For example, inadequate sewage treatment affects the ecosystem, which affects the quality of water and seafood. One resident pointed out, "No one wants to drink the water or eat the seafood [because] all these camps have sewage treatment plants that don't work."

This sense of "being on your own" becomes more apparent as the acute events increase. One person said, "Six hurricanes and an oil spill have made people desperate and tired. It just seems to repeat itself over and over. People are overwhelmed." He concludes, "People are so tired that they don't know what to ask for."

Residents also report that some people may be afraid to speak out about issues that are very controversial, such as resettlement or relocation. There is a great reluctance, on the part of both residents and officials, to acknowledge that parts of these parishes will not be habitable one day. In public meetings, especially, there is little concerted effort to discuss this nonstructural alternative.

Other respondents were more hopeful. Some stated that through all of the mitigation strategies of the last ten years they were receiving more attention and programming. Funders, policy and decision makers, and government officials might find an awareness of this perception of abandonment useful.

The following discussion of nonstructural issues outlines more specific findings and recommendations.

“To be abandoned, you would have to be considered. We know that we have never been part of a community. We have always relied on taking care of ourselves as we have so for centuries and we continue to this day.”

NONSTRUCTURAL RISK REDUCTION STRATEGIES

Nonstructural efforts are diverse and numerous. As one participant stated, “Nonstructural efforts are a quagmire. Funding comes from a variety of sources and as such, no one agency is responsible.” Another participant stated that there is a bias in funding, because most nonstructural mitigation is programmatic rather than a large project. Structural efforts are often large engineering projects, while nonstructural efforts are less defined (for example, land use policies or public education). Combined with the confusion about funding, nonstructural programs and projects are often not the priority for any agency. In this section, we discuss some of the findings for a variety of nonstructural efforts.

Elevation

Recommendation 3: Federal and state programs need to both simplify and expand the elevation process.

Residents have a variety of conflicting opinions about elevation. While some welcome the opportunity to elevate houses, they want the process to be simpler and more affordable. Others report that the elevated houses may not make sense in the long run, and that elevation affects social relations and impedes accessibility for the elderly and disabled.

This recommendation encompasses the wide-ranging issues that define the process of elevating houses in vulnerable areas. The discussion below outlines all of these issues.

Elevation is a popular alternative in coastal Louisiana.⁴³ As simple as this statement is, the implementation of elevation is far more complex.⁴⁴ The complexity of elevation is multi-dimensional, and can include differences in funding, design, construction, and community transformation. Much of the current literature involves technological information about how and where to elevate.⁴⁵

Funding for elevation is usually found in some combination of federal, state, parish, and household funding. For example, the federal Hazard Mitigation Grant Program (HMGP) provides funds to homeowners to elevate their homes after a disaster declaration.⁴⁶ Other federal, state, and parish programs also provide monies for elevation. FEMA administers the HMGP; the other major source of federal funds is the US Department of Housing and Urban Development's Community Development Block Grant.

The average elevation cost is \$74.00 per square foot, with some federal programs requiring a match of up to 25 percent.⁴⁷ For local parish officials and homeowners, the match and other related costs are often a barrier for elevation. Local officials remarked that there are many more homeowners who want to be elevated than there are funds to elevate.⁴⁸



9 In some cases, the cost of elevating a home may be higher than the value of the home itself. Photo: Mary Babic / Oxfam America

There are generally three major designs that can be found when elevating in coastal areas of Louisiana: stilts, mounds, and a combination of the two. However, within each design category there is great variation. Individual designs vary by height, size of the home, space, materials, and type of dwelling. For example, elevating a brick structure is different than elevating a mobile home. Using mounds can cause problems, including runoff, if the structure is higher

than surrounding homes. Also, many designs approved by the federal government do not “fit” into the surrounding culture. For example, in many of these small villages, the most important living area is outside, on a porch or another area. With some success, community organizations have aided homeowners in altering the design for porches connecting to the raised home.

The residents whose homes are elevated provide mixed evaluations. For several of the residents, it is positive. One participant stated, “I love it. There isn’t nothing wrong with it. I have a light underneath my house. I am comfortable. I have protection in case somebody breaks into my house.” This resident is disabled and finds herself able to negotiate living 11 feet in the air. Neither the rain nor the wind bothers her. Even though she is disabled and an ambulance has had to get her from her elevated home several times, she reports no problems. Another resident who is elevated 14 feet said, “It is a new experience. I love that the windows are screened. I can catch the breezes off the coast. I am not dependent upon air conditioning. I get the crosswinds at this elevation. My view is excellent.”

Some accounts reveal a more mixed review. Another interviewee remarked, “Your everyday life is a little bit different. Elevation does change the community some. But, people have created the spaces underneath the elevation for communal space.” Another participant stated, “It has changed the way we visit. Some of the elders, they haven’t been able to visit. We have to go to them, rather than them coming to us.”

Residents offer a wide variety of opinions and cautions about elevation:

The bureaucracy involved in applying for and qualifying for elevation monies can be a major obstacle. Several residents spoke of the difficulties of the process of elevating their homes. For example, there may be no clear title to a home, which makes it problematic for the owner to receive funding. Others discussed how long the process was to qualify for elevation. “The paperwork was the biggest problem with elevation...it took too long. They had to put in their own money. These were elderly people who gave up their savings...and haven’t gotten it back.” Finally, elevation, like many of other programs after the major disasters, applies mostly to homeowners. Those who rent often live in non-elevated structures; owners of rental property may choose not to participate in elevation programs.

Design and contracting issues also should be considered in new elevation policies and implementation. Local community organizations report that there are few contractors in Louisiana who are able to perform the work. And even if they can, the quality of the elevation varies. Raised homes also need specific requirements for aging in place. For example, many elevated homes need functioning elevators that are safe and easily repairable. There are others in this report who view elevation with more skepticism. A woman who lives in an elevated home states, “What I don’t like about elevating the houses is that the

pilings are going to rot. They are not going to last forever. We are going to end up in the bayou with houses that are no good.” As with others, “Some of the houses should not have been raised. It was ridiculous to raise the houses, it cost more to raise the house than the value of the house.”



10 It takes special skills to elevate houses successfully. Photo: Mary Babic / Oxfam America

Participants call for an elevation policy that will allow more people to elevate their homes and increase the funding. One resident specifically stated, “If instead of individuals, elevation programs would look at communities, so an entire area might be made safe. I would like people to have safe homes to come back to.” Further, she states: “I am not an engineer, but I would like us to address how to make homes livable, structurally sound, and as safe as they can be.” Several participants stated that the elevation program needs to be community driven. “They need to go neighborhood by neighborhood and assess each owner. I have seen camps...people’s camps that have been elevated for free and now for sale for \$200,000, \$300,000. This elevation should go to families who live and work in the community.”

Elevation funding should be a continuous mitigation effort, not tied to disaster funding. Further, policies about elevation should not happen post-disaster, but be part of the planning process pre-disaster. In other words, parish and city plans might include a long-term elevation program for vulnerable areas. However, the difficulty now is that funds for elevation are often linked to disaster events. Therefore, the elevation funds are not consistent and cannot be planned during non-disaster times. At the same time, some residents stated that elevation

should not be the only focus. It is not feasible to elevate all the homes, so nonstructural elements should not be limited to just the discussion of elevation. With planning, elevation can be included as part of a plan for multiple lines of defense, an inclusive process.

From the Oxfam meeting, there were two additional recommendations focusing on elevation. The first specifically addresses the issues of contractors suggesting that **there should be stronger legislation to protect against contractor fraud.** Additionally, there was a focus on elevation design and process. The group recommended that **“elevation should be framed as a community-level solution to avoid uneven recovery;** offer incentives [more funds] if a higher percentage of residents in a neighborhood agree to elevate.”

Public education

Recommendation 4: Public education should be designed to be a dialogue between community residents and officials—encouraging an exchange of knowledge and information, and recognizing residents’ expertise and concerns.

For this study, the programmatic area of public education is one of the most important of all the topics. The concern is not about the need for public education; all agreed that there was a consistent, ongoing need. The debate surrounds the purpose, design, and implementation of public education. The following discussion illustrates the complexity of providing education and information to the public.

Community education should be carefully planned with all the stakeholders at the table. Some residents thought that the term public education did not describe the process. Instead, they thought that there should be a public dialogue where the knowledge of the community equals the technical and scientific knowledge of the experts. As part of this view, the residents thought that the decision makers, not just their representatives, should be at the table with members of communities. As well, there is a distrust of outsiders who might bring information to the community. Some of the information is viewed as politically motivated. One resident stated, “We need a dialogue and local officials who don’t have an agenda.” Also, there is distrust that those experts or representatives of the state have an agenda that does not include members of the community. Some participants identified other entities that are only fulfilling a requirement by holding community meetings, regardless of the turnout or what the residents had to say.

Public engagement should be designed in ways to reach the widest possible audience. Several participants thought that some of the material was just too complicated for the level of education of the community. They spoke of the low level of education of residents they worked with, and how difficult it was

to absorb the technical information. For example, in these meetings, the presenters would reference a website without understanding that some in the community may not have access to the internet. Further, others reported that because of the difficulty in living in these vulnerable areas, residents did not have time to participate in public education events.

On the other hand, several thought that communities are well informed about the risk that they face. One person stated, “It cannot be information flowing one way, it has to be shared. Community members, in this day and age, we are informed. Not only do we have TEK [Traditional Ecological Knowledge] for centuries, we also have access to the web. We have educated ourselves. People need to be aware of that.”

Community suppers were one of the most effective of the public education strategies. Several different community organizers remarked how, after each of the six hurricanes and the oil spill, bringing community members together for a meal brought people out and changed the dynamics of how the information was delivered. However, one participant told a story of a state representative visiting a small community on the bayou. The representative stated, “We know as a matter of fact, that some communities cannot be saved.” The community member said, “Look me in the eye and please tell me if this is one of those communities.”

“It cannot be information flowing one way, it has to be shared. Community members, in this day and age, we are informed. Not only do we have TEK [Traditional Ecological Knowledge] for centuries, we also have access to the web.”

Several of the residents stated that they learned with groups from other parts of the nation and the world. The events of the last ten years allowed several groups to connect to organizations outside of their traditional communities. One participant stated, “We learn from them how they are living with the changing environment. People from Japan, Denmark, and Ecuador have come to visit. We are looking at what other people are doing. We are looking at what practices we can adopt and adapt.”

There are certainly risks to engaging in communication with a diverse public. One resident stated that some of those in the northern part of the parishes didn’t understand what some of the agencies were trying to do. She described a meeting where some experts came from a university to show what would happen if a particular storm hit their parish. There was such a negative reaction to this scenario that the outside experts were reluctant to speak again.

Most of the participants interviewed want to engage in a public process where they are equal participants. The reframing of *public education* as *public engagement* allows for this process to be ongoing, not just in terms of a disaster. Participants believe there is an opportunity here to do things differently: public engagement would provide an opportunity for a dialogue across perspectives and positions.

The community policy meeting raised several other areas that need to be explored. There is some concern that the policy agenda of the scientific community does not necessarily support community interests. In addition, there is more work to be done so that communities understand the science used by CPRA (Coastal Protection and Restoration Authority) and how it impacts vulnerable communities. From the Oxfam community meeting, the discussion on public education focused on newly elected officials and the need to educate them about all the structural and nonstructural efforts.



11 BISCO convened meetings in parishes along the Louisiana coast after the BP oil spill in 2010. Photo: Sharon Gauthe / BISCO

Relocation

Recommendation 5: Any plans around possible relocation should consider the needs of and impacts on communities, and should significantly engage those communities in the planning process.

With no exception, the discussion on relocation with each of the residents was the most sensitive. Initially, there is a reluctance to have the discussion at all. Many residents think that just talking about relocation makes it a viable and dominant alternative to fixing the coast. Also, there are fears about how relocation will occur, and how people will be affected. However, as one resident stated, “People are one disaster from leaving.”

There are several examples of involuntary and voluntary relocation in the United States. Communities have been involuntarily relocated from national parks and conservation areas,⁴⁹ and involuntary moves have been made to make way for new development, and from areas that have suffered from increased

environmental problems. Furthermore, the United States has relocated communities involuntarily due to urban renewal and other public housing development projects.⁵⁰ In addition, FEMA and other agencies have relocated families based on repetitive flood areas. Because relocation and resettlement are so controversial, research and policy to date have not shown a clear path.

This recommendation emphasizes the unique attachment to place for residents of coastal Louisiana. Residents have such a strong sense of place that relocation represents a loss of their way of life. It is not simply moving from one home to another; it is a social, cultural, and economic upheaval. As one interviewee stated, “We are asking people to change their way of life.” The significant attachment of place of these residents is an important consideration for the future of relocation (certainly the most complex of all the nonstructural measures).



12 While people who can move away are leaving, those left behind are often the most vulnerable. Photo: Mary Babic / Oxfam America

On the coast of Louisiana, there is a slow voluntary movement of individuals and families away from the coast.⁵¹ Terrebonne, Lafourche, and Plaquemines Parishes are, as stated earlier, at the center of this “voluntary” movement. Residents with more resources are able to protect themselves from this crisis⁵² by either moving away or using mitigation measures (such as elevation or other retrofitting strategies).

Residents who have already moved from the area may need economic and social support. There is a consensus now that people are already moving north. This type of move is often referred to as voluntary relocation. However, participants noted that this is not “voluntary,” but brought on by a number of factors that residents cannot control.

We have lost people. Young families have limited resources to reclaim their lives. When they evacuated for an event, they started to live somewhere else, where it was a bit more stable, more predictable. Those very same people [who left] continue to come here and bring their people here. They would love to come back home. It is not voluntary, it is forced; the resources are lacking to reclaim their lives.

As one resident stated, “People are selling their homes, they might move to Bourg. They might move from Cocodrie to Chauvin or further north.” Even before 2005, people were moving north on their own. However, after the events of the last ten years, including the Deepwater Horizon oil spill, more and more people are deciding that they can no longer live in the area. A major consequence of this “voluntary relocation” is that the infrastructure is threatened and the community collapses. When populations dwindle, towns reach a point where they can no longer support schools, grocery stores move north, and medical services become scarce.

One resident reported that many people are moving to Houma (a large town along the coast), but that this relocation has a negative impact on their well-being. They can’t grow their own food in a garden, and they have a harder time connecting to neighbors and friends. “They are not as rich... [It’s just] harder to make ends meet.”

There is a fear in these parishes that areas will be emptied bit by bit, without attention to culture, community or family.

In many ways, the Deepwater Horizon oil spill hastened the process of voluntary relocation. The spill, which continues to interrupt the seafood industry, left many struggling to earn a living. One resident said, “Now you have a community of old people and young kids.” The collapse and slow rebuilding of the fishing industry after the Deepwater Horizon oil spill altered families’ ability to provide for and assure their upward mobility.

While people who can move away are leaving, those left behind are often the most vulnerable. At the same time, recreational camps are built in some of the most vulnerable areas. Some of the camps, which are quite expensive, can dominate the landscape. This complex process of leaving the most vulnerable behind and gentrifying the coast makes programming and policy difficult.

The consequence, as many of the accounts note, is that families and neighbors who once lived all together are separated by miles and geography. One resident said, “Where once, if you got shrimp, you would give some to your neighbor, now

the neighbor lives in Belle Chase [a town to the north] and is buying their shrimp at the grocery store.” The dynamics of the extended family are now separated and fragmented.

Another resident thought that the term “voluntary acquisition” was not the appropriate term. She states, “There was no real community involvement where it makes it to the written page. Voluntary acquisition does not reflect more community interaction or an even playing field. Until there is a meeting of the minds and community voice has equal power, this is not an equal policy. Education, information, and knowledge from the community interacting with policy makers that does reflect the real heart of the community is necessary.”

As with the recommendations for elevation, the participants in this study discussed relocation on a community or neighborhood level, rather than an individual level. There is a fear in these parishes that areas will be emptied bit by bit, without attention to culture, community, or family. Communities that for generations have lived off the land and adapted to the changes will no longer be able to do so. Yet, their houses, if bought out, will hardly provide enough money to buy a home somewhere else, and they will not be able to make the same living in a new location.

Residents state that there are no clear messages about relocation, but individuals and families continue to move north. There is a concern for the communities and the parishes that voluntary relocation has already altered the area. Voluntary relocation is intertwined with the earlier sense of abandonment—that the parishes are letting parts wither away. Some of the residents argue that, in order to have a discussion and begin forming policies, the federal government has to take the lead to work with the communities and the local government.

At the Oxfam meeting, there was further discussion of relocation. Ideally, a community should make the decision to move or not as a group. There are people who are moving because they can no longer stay where they are, but they are moving without support. One way to accomplish this is by offering incentives for residents: if a higher percentage of people in a community relocate, then they could qualify for more funds to do so. Another recommendation is to set aside a small pot of money in the next version of the Coastal Master Plan for community-based approaches for relocations.

Other hazard mitigation efforts

A few other nonstructural risk reduction efforts are available. During the interviews, people did not mention these as often as the ones covered above.

Land use/zoning

The discussions of land use and zoning were not uniform. Several of the participants had worked specifically to oppose certain kinds of development in their areas, such as opposing a proposed plant or other industrial development. Another person stated that low-income residents do not have the time to spend organizing around issues such as drainage, land use, and zoning.

Drainage

Drainage does not usually appear in its own category, but as part of larger discussions. Drainage is both a structural and nonstructural issue as it involves engineering projects as well as land use and zoning laws. In this report, drainage refers to the flow of water in both everyday events and more acute weather events. Depending on the participant, the response to drainage, as an issue, varied. For those living in the more urban areas of the region, they referenced drainage issues most often to new buildings or subdivisions.

Another issue with drainage focuses on dredging, the need for and the lack of dredging, and what happens to the material that is dredged. One resident stated, "The drainage here is really terrible. They need to dredge the major bayous. There is no really good water movement. Water now has taken up some of my backyard." Several respondents mentioned that water backed up from ring levees, becoming a drainage issue as neighborhoods waited for the waters to recede.

Retrofitting

There was little discussion of retrofitting. However, there was some discussion of the newer technologies. Residents' accounts included exploring floating houses. Some participants think that there are newer technologies that can be used both for short- and long-term solutions. Others are looking at house barges, structures that will float and, if they are small, can be towed away. Newer technologies were central to the larger discussion of how information is disseminated.

A DIALOGUE WITH *THE VIEW FROM THE COAST*

As part of an ongoing effort to bring attention to nonstructural efforts, CPEX published a study entitled *The View from the Coast*. This project examined local perspectives related to nonstructural risk reduction from across coastal Louisiana.⁵³ Researchers (including this author) interviewed more than 60 parish elected officials and staff in 21 coastal parishes, and surveyed 800 Louisiana residents through a random telephone poll. The qualitative portion of the study specifically explored how officials and staff view the nonstructural issues discussed in the Coastal Master Plan. The study also developed a set of recommendations focusing on policy for nonstructural issues.

CPEX worked very closely with a group of stakeholders not only to validate the analysis, but also to strengthen the recommendations. While the interviewees in the CPEX study provide one set of local voices across the state of Louisiana, the interviewees were either elected officials or local government employees involved in planning and mitigation efforts. The telephone survey examined broad topics rather than the detailed discussions provided by the qualitative interviews and focus groups. For this study, researchers asked for the residents' view of nonstructural mitigation issues specifically. Table 2 shows what the residents think about some of the recommendations of the officials and parish/city personnel.⁵⁴ There is general agreement among officials and residents, but the table shows the subtle differences.



13 Residents want best practices around science and planning for the fragile coast. Photo: Mary Babic / Oxfam America

Table 2: CPEX policy recommendations and community views

| Policy proposals recommended by state and local officials in <i>The View from the Coast</i> | Community views on policy proposals |
|--|--|
| Fulfill <i>Louisiana's Coastal Master Plan's</i> recommendations by establishing a dedicated funding stream for physical and programmatic nonstructural risk-reduction initiatives. | Nearly all the participants in this study would like dedicated funding for nonstructural risk reduction initiatives. However, they want distribution of these funds to give priority to the most vulnerable areas and the most vulnerable people. They would like any funding to take into consideration how the communities have adapted and changed. |
| Establish stronger coordination for agencies working on nonstructural issues. Establish or designate a lead coordinating entity for local governments' work on nonstructural issues. | The participants would appreciate this change if it would increase efficiency and allow the voices and needs of their communities to be partners in this process. |
| Meaningfully and specifically engage nonstructural risk reduction in the 2017 version of the Coastal Master Plan | All of the participants mentioned specifically that the 2017 version of the Coastal Master Plan should further develop more nonstructural measures. |
| Develop guidelines for hazard mitigation and land use plans in coastal Louisiana. | Not in exactly these words, the participants want best practice to be used in development in their parishes. However, they mentioned several times the need for these best practices to be about science and planning, not politics. |
| Develop and promote public information and education resources related to nonstructural risk reduction. | As stated earlier, most of the participants want more than experts talking with them. They want to see more public engagement around the issues, creating a dialogue where ideas are shared. |
| Develop best practice guidelines for elevation and for construction behind levees. | Throughout the interviews, we heard the need for best practice in all areas of nonstructural and structural risk reduction efforts. |

CONCLUSION

Recommendation 6: The 2017 version of the Coastal Master Plan should further develop nonstructural implementation in an equitable process.

The study documented the views of community people in vulnerable coastal parishes. Throughout these interviews, the breadth of knowledge that these residents have about their land and their lives is apparent. The study's focus on nonstructural mitigation efforts revealed a complex understanding of the value and need for nonstructural measures along with the proposed structural measures. For example, residents may not use the term "multiple lines of defense," but they understand that there cannot be just one solution, and that all the solutions must work in coordination with each other. They support structural measures that would slow or prevent coastal land loss and mitigate sea level rise. Of the nonstructural measures discussed, they support elevation and new retrofitting alternatives. For all of these solutions, however, they would like to engage in public dialogue with the officials in charge of these efforts, in addition to experts in each field.

Additionally, most of the respondents thought that the policies are not implemented fairly. They think that while their views may be voiced and heard more often now, they are still not equal partners in the discussion of the nonstructural issues. Throughout the interviews, the participants stated that they want to save their land and their way of life. They understand this is a complex process with numerous moving parts. Some people want more elevated homes, based on community needs assessments. Others want a dialogue with state officials, experts, and community residents that leads to a collaborative plan for all nonstructural measures. Few want to relocate, and continue to be reluctant to discuss this solution.

Residents are caught between several competing forces. Ongoing land loss and sea level rise present a constant challenge to coastal residents while hurricanes and oil spills are events that put communities even more at risk. At the same time, policies are developed to ameliorate both the slowly developing crisis and the acute events. These policies—such as diversion, elevation, or relocation—have both intended and unintended consequences that somehow appear beyond the control of local residents. Planning for equitable risk reduction should allow residents to participate fully in the process and implementation.

Several major areas emerged for further investigation: elevation design and implementation, public engagement on all issues, and design of a program to discuss resettlement. Elevation design and implementation need further investigation in terms of engineering and land use. Also, the impact of elevated homes in communities and the possible social changes could be further

explored. While there is certainly more public education by state and local officials needed in the area, a program of public engagement that combines scientific knowledge with local knowledge could be implemented. Finally, as part of public engagement, vulnerable communities need to have a significant voice in their future.

The urgency for action, however, is a constant in the lives of the residents. The rate of land loss and sea level rise increases every day and necessitates the need for immediate solutions.



14 Residents consistently voice their commitment to the bayou and the way of life. Photo: Audra Melton / Oxfam America

APPENDIX A: ADDITIONAL INFORMATION ON MULTIPLE LINES OF DEFENSE

The Multiple Lines of Defense Strategy



Lopez, John A., 2006, *The Multiple Lines of Defense Strategy to Sustain Coastal Louisiana*, Lake Pontchartrain Basin Foundation, Metairie, LA January 2006. Diagram: <http://mlods.org/>

There are 11 Lines of Defense (LOD), 5 natural and 6 man-made.

Natural

1st LOD, Offshore Shelf: During Hurricane Katrina there were 60-foot waves in the Gulf of Mexico. These huge waves did not hit land because the offshore shelf greatly reduces wave height by reducing the depth of the water. However, the offshore shelf does cause the storm surge to increase. The shape of the shelf needs to be studied to determine the effect its shape has on wave and surge height.

2nd LOD, Barrier Islands: Barrier islands cause the waves associated with tropical storms to break, protecting the interior sound and coastal marsh. They also help to reduce storm surge.

3rd LOD, Sounds: Sounds provide a buffer to the strong currents that occur in deeper water. Sounds do, however, allow waves to re-generate.

4th LOD, Marsh Landbridges: These are areas of continual marsh, commonly adjacent to natural ridges or levees. Landbridges reduce waves and impede storm surge, protecting areas further inland that perform the same function.

5th LOD, Natural Ridges: Natural ridges are the remains of natural levees from abandoned river channels. They can extend for miles and typically have an elevation of a few feet above sea level. Many have state highways along them.

They commonly determine the natural flow of water throughout the region. They reduce waves and storm surge.

Man-made

6th LOD, Highways: Many highways on the coast are elevated several feet to reduce their probability of flooding, which can reduce the height of waves and storm surges, similar to natural ridges.

7th LOD, Flood Gates: Flood gates are designed to keep high waves and storm surge out of an area but allow natural flow during calm weather. Because our coast is only a few feet above sea level, flood gates must be placed along levees or spoil banks.

8th LOD, Levees: Levees are designed to be an absolute barrier to flooding, storm surge, and high waves. Levees are commonly used to protect highly developed areas such as Orleans, Jefferson, and St. Bernard parishes.

9th LOD, Pump Stations: Pump stations are designed to remove runoff from heavy rainfall. They are not designed to deal with the type of flooding that can occur if a levee is breached.

10th LOD, Elevated Buildings: All homes and businesses in southeast Louisiana are subject to flooding if they are not raised above the recommended height. Elevating the assets that cannot be easily moved is their last line of defense.

11th LOD, Evacuation: Evacuation is the last line of defense for anyone living in hurricane prone areas. While highways are the most common form, railroads and airline travel can also be used.

NOTES

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² The five community organizations that provided interviewees included: Bayou Grace Community Services; Bayou Interfaith Shared Community Organizing (BISCO), Gulf Organized Fisheries in Solidarity and Hope (GO FISH), Terrebonne Readiness and Assistance Coalition (TRAC), and Zion Travelers Cooperative Center (ZTCC).

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⁷ Bailey, C., Gramling, R., & Laska, S. B. (2014). Complexities of resilience: adaptation and change within human communities of coastal Louisiana. In *Perspectives on the Restoration of the Mississippi Delta* (pp. 125-140). Springer Netherlands.

⁸ Gulf Coast Seafood, "Member States," <http://eatgulfseafood.com/about/member-states/>

⁹ Louisiana State, "Louisiana Tourism," <http://www.crt.state.la.us/tourism/louisiana-research/>

¹⁰ The Henry J. Kaiser Family Foundation, "Poverty Rate by Race/Ethnicity," <http://kff.org/other/state-indicator/poverty-rate-by-raceethnicity/>

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¹³ Gramling, Robert and Ronald Hagelman. (2005). "A Working Coast: People in the Louisiana Wetlands." *Journal of Coastal Research*. (44): 112-133.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Bernard, E. (2014). Welcome. Retrieved October 17, 2015 from www.lafourche.com.

¹⁷ City-Data.com. (2016). Lafourche Parish, Louisiana. Retrieved October 17, 2015 from http://www.city-data.com/county/Lafourche_Parish-LA.html.

¹⁸ US Census Bureau: State & County Quickfacts. (2015). Lafourche Parish, La. Retrieved October 17, 2015 from quickfacts.census.gov/qfd/states/22/22057.html.

¹⁹ Lafourche Parish Government. (2016). About Lafourche. Retrieved October 17, 2015 from <http://www.lafourchegov.org/about-lafourche>.

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²⁷ Plaquemines Parish Fair & Orange Festival. (2015). Retrieved October 18, 2015 from <http://www.orangefestival.com/>.

²⁸ Plaquemines Parish. (2015). Hazard Mitigation Plan Update. Retrieved January 14, 2016 from <http://plaquemineparish.com/wp/wp-content/uploads/2015/04/PPG-HMPU-2015-Adopted.pdf>.

²⁹ City-Data.com. (2016). Terrebonne Parish, Louisiana. Retrieved October 18, 2015 from http://www.city-data.com/county/Terrebonne_Parish-LA.html.

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Throughout this report, the participants are not identified. Over the course of the interviews and the participant observations, it became clear that their views about nonstructural risk reduction efforts and understandings were not necessarily the popular view. All interviewees willingly participated, but a decision was made not to identify them directly in the report.

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⁵⁴ For the CPEX study, 63 interviews (including three focus groups) were conducted over 21 parishes. This worked out to be three or so individuals per parish. Some parishes had more individuals, but these were the larger, more urban parishes.

COVER: People living along the bayous in Louisiana make constant adjustments to their homes and belongings to mitigate the effects of water and wind. Elevated buildings are a common sight, including houses and community centers. *Mary Babic / Oxfam America*

A SENSE OF PLACE AT RISK ON THE BAYOU

Residents of coastal Louisiana most at risk of the effects of climate change—such as flooding from severe storms and land loss from sea level rise—need support for nonstructural solutions (such as elevating their homes). However, their voices are rarely included in conversations about nonstructural risk reduction strategies.

As Louisiana moves forward with developing new plans for coastal restoration and mitigation, it's vital to bring these residents into the planning; they have traditional wisdom, intimate knowledge of the ecosystem, and a deeply rooted "sense of place" that has knitted their communities together for generations.

This report is an important effort to document and present the views of people in the Louisiana parishes who are most at risk.



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