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The State of Recovery Housing in New Orleans After Katrina Hurricane, 2005

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ABSTRACT

The housing issue is considered one of the central and important issues in the recovery process after natural disasters in the short and long term. This paper discusses the location of the city of New Orleans, its urban planning, and the catastrophic errors that led to the housing disaster in 2005. Hurricane Katrina is considered the most devastating in the city's history. The city is in a swampy area and has been exposed to the risk of flooding over the past decades, and it was dealt with by building networks of sewage and dams along the coast. In 2005 AD, the city's protection systems failed, and more than 800,000 housing units were destroyed in whole or in part. Thousands of people fled the city.

This paper sheds light on the reality of housing in the city before the disaster, as the city was suffering from a shortage of affordable housing units for low-income families, and how it became more difficult after the disaster. In addition to the reconstruction plans over the years that followed the disaster and how there was no clear plan to deal with the disaster and reconstruction.

It also discusses the decisions taken after one and two years of reconstruction and what happened after ten years of the recovery process. As some neighbourhoods were able to recover and most of the population returned to them. However, some others no longer have about half the population. And the role that FEMA played in dealing with the disaster, the slow response to dealing in the short term, the unclear reconstruction plan, and the organizational problems that faced the institution.

KEYWORDS

Orleans, Hurricane, Katrina, Housing situation, Recovery, FEMA.

INTRODUCTION

The Middle East region is a region of conflicts on various levels, including economic, political, and religious.

The current conflict in the region may intensify with the exacerbation of the problem of global climate change, which may lead to unplanned and unprepared mass migrations.

The report by The Intergovernmental Panel on Climate Change (IPCC) also indicates a possible increase in the intensity of natural disasters such as floods and desertification. All these things increase the possibility of sudden mass migrations for various reasons, such as the destruction of dwellings because of devastating floods or an urgent shortage of water.

It is expected that the sea level rise will accelerate over the next few years, which doubles the possibility of mass migrations. For example, if the sea level rises by 50 cm, this will threaten the displacement of approximately 2-4 million Egyptians in the Nile Delta and Alexandria. All these things impose on the region local and regional cooperation to mitigate the potential effects of these disasters (UNDP, 2018).

The Middle East is not a region of hurricanes, but throughout the past years, we noticed the formation of some of them at a greater rate than it was previously. Scientists attribute this to global climate change and global warming, which contribute to the rise in sea level, which in turn leads to hurricanes. This threatens coastal areas in the Middle East. so, the middle east region needs to prepare in short term to face this type of natural disaster which is going to be more affectionate and frequent than before. Due to that this paper focused on the most vulnerable areas to hurricane and floods in United States America which faced at least 36 hurricanes from 1900 to 2008 and it has still faced this problem. Moreover, concentrate on Katrina Hurricane and its recovery process.

Hurricane Katrina 2005 was considered one of the most destructive hurricanes since 1928. The damage resulting from the disaster was estimated at more than 75 billion dollars distributed along the Mississippi coast and the city of New Orleans.

As a result of this hurricane, hundreds of people lost their lives, and the vast majority were concentrated in the city of New Orleans, which lost 1,500 people, while the city of Louisiana lost nearly 230 people, and the total place of the missing people in that area was 1,800 people.

Figure 1: *Hurricane Katrina Aerial view of flooding in the New Orleans area following Hurricane Katrina, August 2005 (HURRICANESCIENCE, 2020)*

New Orleans city facade hurricane and it was widely believed that sewage systems and dams would protect the city from the danger of flooding and inundation, but soon it became clear that the system failed and entire neighbourhoods in the city sank, and residents climbed on the roofs of buildings to rescue.

This hurricane led to the loss of more than 800,000 people in their homes completely or partially, and material damages were considered the largest in the history of the United States of America (UNIVERSITY OF RHODE ISLAND, 2020). The platform (HurricaneScience) formed by the university focuses on the state of reconstruction and recovery for the city of New Orleans and in particular the state of housing for more than a decade.

THE HISTORY OF THE ESTABLISHMENT OF THE CITY OF NEW ORLEANS AND THE CHANGE OF URBAN DESIGN AFTER DRAINAGE SYSTEMS

In 1718 the mayor of Louisiana establishes a shipping port in New Orleans to access the Gulf of Mexico and the Mississippi. Although the city's location is strategic, it is surrounded by many bodies of water that make it vulnerable to continuous flooding from the Mississippi River to the Gulf of Mexico as well as Lake Pontchartrain.

Moreover, the city is located below sea level, which makes it vulnerable to sinking permanently. Despite all these things, the city was set up in a geographical area not prepared to do so.

Therefore, it is normal that the city faced many natural disasters throughout history. The Engineer Pierre Le Blond de La Tour laid out the master plans for the city in the form of a grid representing the French colonies at the time.

Over time, many neighbourhoods and suburbs surrounding the city were built somewhat organically, but they emerged from the basic grid lines of city design. In 1828, the city faced devastating floods that caused severe damage, which prompted the government to establish sewage and dams to protect the city from the danger of frequent floods (NEWORLEANSUSP100, N.D.).

The construction of flood protection systems helped the city prosper and expand the construction process in areas that were uninhabited, such as swamps and areas below sea level, but the process of building dams and sewage made it possible to reclaim these lands and build some new neighbourhoods, and this led to change the landscape and geography of the area.

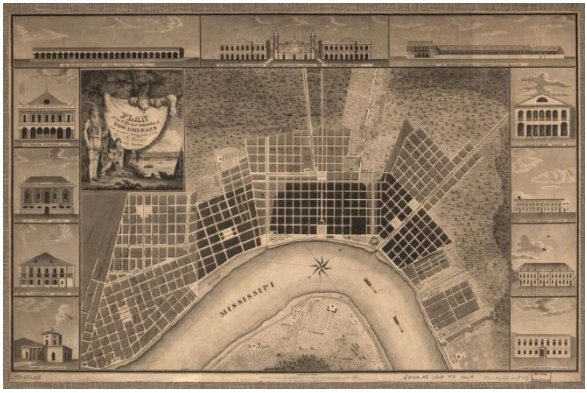

Figure 2: *Plan of the city and suburbs of New Orleans: from an actual survey made in 1815 (TANESSE ET AL.,1815)*

This was done through the construction of pumps, levees, and canals. But all these projects could not protect the city from hazards, furthermore. These projects made the city more vulnerable to floods and hurricanes. Throughout its history, this city used to face natural disasters but some of them had a major impact on the history of the city and it was a turning point in urban design and the shape of the city. In this last century, there are two massive hazards the hurricane of 1947 and the Betsy Hurricane which affect hardly in New Orleans (NEWORLEANSUSP100, N.D.).

THE PROBLEMS THAT LED TO THE 2005 HURRICANE KATRINA DISASTER

Some political and economic systems that encourage the development of cities and residential communities along coasts that lie below sea level or in swampy areas have exacerbated the risks of floods and natural disasters. Destructive floods are often the result of a series of urban planning errors in unsuitable areas or a failure in protection systems.

The construction of huge dams and sewage systems gives an illusory feeling of safety to develop some dangerous areas such as the edges of rivers or coasts that are constantly exposed to floods. And for sure, this was the case for some neighbourhoods of New Orleans City.

The strategic location of the city, which is surrounded by bodies of water, made it a permanent need to build new water channels, and consequently, the reclamation of uninhabitable swampy lands to establish new residential neighbourhoods for workers, which led to the need to establish flood protection systems. This gave a false sense of security and contributed to the increase in population density in these areas.

Canals played a role in the development and destruction of the city at the same time, as they contributed to channelling floodwaters into the city, and this was observed during the major hurricanes in 1915, 1947, 1956 (Flosi), and 1965 (Betsy).

In 2005 a devastating hurricane hit the city and it was expected that the systems would protect the dams and levees from flooding, but as it was happening before the system failed to protect the city. At the end of the hurricane, instead of reconsidering the urban planning of the city and studying the dangerous and vulnerable areas frequently, the city began rebuilding barriers and dams of a larger size than they were and constructing new water channels, which are expected to increase the severity of disasters in the foreseeable future (YOUNGMAN, 2015).

WARTIME CANAL CONSTRUCTION

The shipping industry has been a major impact on New Orleans' growth machine since its founding in the early eighteenth century. The coming of the First World War gave the city what seemed to start to be a golden opportunity to expand its shipbuilding industry.

The entry of the US into the Second World War transformed the fortunes of the Dock Board, as the Industrial Canal became a major pull for federal investment. New Orleans' shipbuilding industry grew rapidly in the early 1940s, largely by federal contracts to local shipbuilding corporation Higgins Industries.

The Dock Boards' expanded canal system has shifted and worsened the hurricane storm surge flood risk facing New Orleans by the mid-1940s. In addition, As New Orleans drained and developed its wetlands for expanded housing, particularly during the rapid growth period of the

1940s, these drainage canals would prove to be a major source of flood risk for many newly created neighbourhoods (YOUNGMAN, 2015).

HOUSING CRISIS

After the Second World War, the city faced a period of especially rapid population growth, and finding housing was most difficult for the many thousands of new workers running into New Orleans.

as result, the newly created Housing Authority of New Orleans (HANO) erected six segregated public housing projects around the city between 1941 and 1947.

Meanwhile, the private real-estate industry took advantage of improved drainage and pumping technology to develop the city's 'backstamp' areas into new neighbourhoods full of modern slab-on-grade (rather than elevated) homes.

The Director of the Division of Public Health Engineering, John H. O'Neill, wrote expressed concern about the development taking place in the area.

(A considerable part of the area east of the Industrial Canal, due to its low elevation and the character of its soil, is presently not suited for residential development. The availability of water lines recently constructed and of the sewer line which it is proposed to construct will) the Board insisted that such problems could be prevented by 'proper protective measures' and urged the local, state, and federal governments to take immediate steps to mitigate the problem.

no major protective actions were taken for these newly developed areas, however; the housing and development needs and the political power of the developers were too great (YOUNGMAN, 2015).

THE SITUATION OF HOUSING IN NEW ORLEANS BEFORE KATRINA HURRICANE

Housing has long been the American Dream and hub of opportunity. also, homeownership provides the chief source of wealth-building for millions of Americans. the pre-Katrina lack of endurable housing in New Orleans has since broken into a major crisis, confiscation thousands of displaced dwellers of their right to return. This problem is

inconsistent bearing by the region's poorest dwellers: about 20 % of the the 82.000, rental units that Katrina damaged or demolished in Louisiana were affordable to low-income families. A Lack of Affordable Housing: before the storm, New Orleans already had a less homeownership rate–only 47% compared to 67% nationally. Of those owning houses, rates were not even among dwellers as African American and low-income households in New Orleans had far lower rates of homeownership than whites and higher-income families, for this reason of this history, New Orleans remained highly segregated when Katrina happened. While residential segregation in the city declined a bit between 1990 and 2000, it continued to remain greatly above the national average (KAISER, 2006).
ethnical segregation had played a part in the economic isolation of New Orleans, causing ethnically segregated high- and intensified-poor areas. Before Katrina, New Orleans had the second-highest rate of African American intensified poverty in the nation, with 37% of the town's African American inhabitants living in neighbourhoods of intensified poverty.

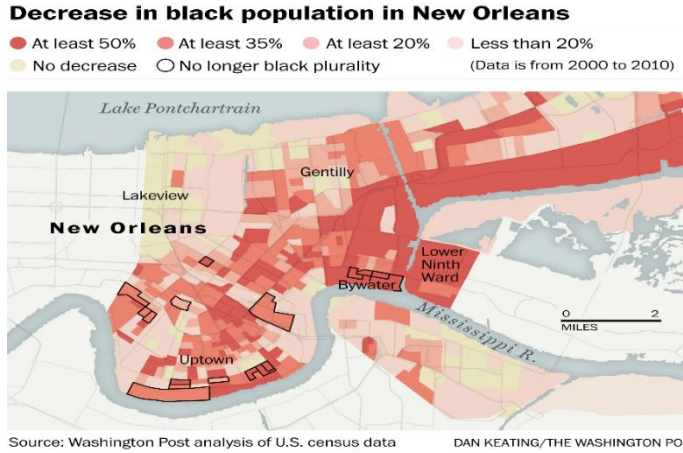

Figure 3: *Washington post analysis of U.S. census data (ROIG-FRANZIA, 2015)*

KATRINA HURRICANE 2005

Katrina Hurricane hit New Orleans on, August 29, 2005, as a Category 4 hurricane. the storm reached to15 miles of New Orleans, Louisiana. The cyclone brought heavy winds and rain to the town, and the height of water broke many levees built to protect the city from Lake Pontchartrain. The levee breaking flooded up to 80% of the city, with water in some places as high as 15 m. The storm and flooding took over 1,500 lives and a diaspora of an estimated 700,000 dwellers. The levee breached and demolished the homes of hundreds of thousands of New Orleans residents. Nearly 228,000 apartments and homes in New Orleans were flooded. furthermore about 204,700 housing units in Louisiana either were demolished or sustained big damage. As of April 2006, 360,000 Louisiana dwellers stayed displaced outside the state and approximately 61,900 people were living in FEMA mobile homes and trailers. As the floodwaters withdraw, displaced dwellers start the difficulty of rebuilding their lives. but one that required access to safe, affordable homes that the state and the federal government still have not assisted to provide (KAISER, 2006).

PLANNING FOR REBUILDING OF NEW ORLEANS AFTER KATRINA

The successful recovery process of any natural disaster takes a long term to reach its aims and needs good planning. in addition, recovery efforts after a catastrophe goal at least to return a region to its previous standard of business activity and exchange the homes lost and demolished. and if authorities deal with the disasters in a good way. it may help to provide opportunities for better hazard reduction, a good urban design, and resilience infrastructure. the success of a recovery process can be noticed by its goodness and the quickness with which this happens.

The best ingredients for any successful recovery have six principles (OLSHANSKY ET AL., 2008):

- Substantial external funding, provided quickly, and with few restrictions

- Strong local leadership
- Local, citizen-based processes for making and reviewing reconstruction decisions
- Previous planning documents which describe consensus policies for future development,
- Pre-existing planning institutions.

Unfortunately, the situation in New Orleans after Katrina was unbelievable and none of the six principles above. in contrast to these, Congress and the White House have been unready, to expedite investment in long-term recovery and send help immediately to the town. furthermore, Relationships were weak between the White House and the governor, between the governor and the mayor, and between the mayor and the city council. The town had no system for citizen involvement in governance and no pre-existing plan for the city's future.

Five main recovery planning operations that seek to land-use planning cases happened in post-Katrina New Orleans through the management of Mayor Nagin (OLSHANSKY ET AL., 2008).

The Bring New Orleans Back Commission planning process (BNOB)

- The New Orleans Neighbourhood Rebuilding Plan process (NONRP or Lambert Plan)
- The Unified New Orleans Plan process (UNOP)
- The Office of Recovery and Development Administration planning process (ORDA)
- Grassroots and neighbourhood-based planning processes (WAGNER ET AL., 2009).

Unfortunately, none of these plans fully achieved their goals.

THE STATE OF HOUSING IN NEW ORLEANS ONE YEAR AFTER KATRINA

After one year of this disaster, the large lack of fit rental houses has caused a severe rent rise in many damaged places around the city. The plans of the United States Department of Urban Development and

Housing to demolish four of the town's largest public housing sets instead of fixing and reopening them will moreover obstruct returning residents' opportunity to start over. The lack of affordable housing is now accompanied by a failure to repeat the areas and infrastructure that supply and enhance society.

For a lot of people who were hardly affected, the recovery process seemed late and irregular. Rebuilding has been stopped by the intensity of the harm, the need to limit future flood disasters, and the need to coordinate the recovery among many facilities of government. The spread of the population has made public meetings and elections difficult. Pre-existing economic trends were already providing stimulants for work and people to leave the place, not stay. reconstructing the Gulf Coast after the Katrina hurricanes presents matchless challenges both to those directly affected and the nation. Hurricane Katrina destroyed approximately 90,000 square miles, made more than 770,000 people homeless, and unfortunately had a death toll of 1,464 in Louisiana (KAISER, 2006).

before the hurricane ridership in New Orleans was about 124,000, but after the storm, the number declined to 431 people the week. A year later weekly ridership was 16,000. Only 16% of the routes and 8% of the buses were operational a little through a month after Katrina. After one year, 49% of the routes and 17% of the buses were in or ready to use. about 19% of electricity customers and 36% of natural gas customers had oncoming to these services in Orleans right away after Katrina, but a year later more than 95% of last customers had access to natural gas and electricity. Access was not the same as usage, because rebuilding had slow, and, in many cases, buildings must be searching for safety before the user can be turned back on. Although, the general availability of electricity and natural gas, only some 60% of former customers were using electricity and 41% were using natural gas a year later. Only 9% of the major hospitals in Orleans Parish were open a month after Katrina, and a year later 50% were open (WEISS, 2009).

TWO YEARS AFTER KATRINA

The population of New Orleans had increased and reached 295,448, about 65% of its pre-disaster scale of 454,863. furthermore, the public service retrieval is about 57% for health centres, also 62% for private schools, 68% for public schools, and 19% for domestic transportation on the pre-disaster scale. There was a passive spiral the dwellers cannot come back due to the bad public service recovery and the retard in recovery planning, at the same time the fall in population leads to a retard of public services (KONDO, 2008).

THE HOUSING SITUATION AFTER TEN YEARS

New Orleans after ten years of the worst catastrophe to hit any U.S. city, has exceeded anticipations in people's recovery. at the end of 2015, New Orleans had Recovered about 86% of its pre-Katrina people, with roughly 390,000 population calling the city home. just four districts have less than half the people they had before Katrina; the Lower Ninth Ward, one of the City's most destroyed districts, and three districts that include three public housing sites that have been destroyed to make way for new mixed-income housing.

New Orleans is one of the highest rates of income inequality across the USA as a gap that falls starkly along ethnic lines. According to the Data Centre, a New Orleans-rely thinks tank focusing on Southern Louisiana, the average income of black households in New Orleans is 54 percent lower than that of white households.

For this reason, the capability for a lot of dwellers to bear housing - in New Orleans of escalating rents and low wages is more threatening than before. but now the city has become a massive workshop for examining solutions to issues in housing, education, and social mobility that are disturbing the full nation.

Figure 4: *Where the white population have increased (orange) and the black population have decreased (white). Changes of 5 percentage points or more since 2000 (CAMPBELL & FAUSSET, 2020)*

The newcomers to the city participated in street culture in the black people's neighbourhood where They have spent a lot of money on homes and paid excellent rent to stay on roads that were neglected and unsafe so long ago. also, the old and neglected houses have been renovated and repainted. the values of the houses in the city rose very high

house prices inflation more than tripled between 2000 and 2013, with some renovated houses now on sale for close to $1 million.

A few of the most prominent owners are black, but according to census data, the percentage of white Tremé residents in 2013, at 36 percent, was more than twice what it was in 2000. Four out of five of them were not Louisiana-born (CAMPBELL & FAUSSET, 2015).

10 years since the storm, many workers from different ethnic who came from outside the city participated in rebuilding New Orleans. many of them decided to stay in the city after finishing their work. one of the neighbourhoods which faced this phenomenon is Mid-City Hispanic workers who burst in after the storm to destroy the broken landscape and reconstruct it. although some mobile far when the working end, a lot of them stayed, roughly doubling Hispanics' portion of the city people and changing the flavour of the neighbourhood.

According to census numbers, the Hispanic inhabitants, 58,000 in 2000, stand at more than 103,000 in 2013, with some of the most spectacular growth in suburban Kenner (CAMPBELL & FAUSSET, 2015).
the Lower Nine of New Orleans is now one of only four city districts that have less than half of its before Katrina people. there were several reasons one of them was That it is under sea level. also, its dwellers were generally poor. this district had become known to the world after the levee explosion and working-class homes were demolished by the waters of the Canal. There was no district in New Orleans where the devastation was more comprehensive, and the recovery more lacking.

The government launched the Road Home Program, which spent $9 billion in reconstruction grants that helped rebuild homes for more than 100,000 people. But it faced many criticisms for set on the unfairness of its design.
Many housing complexes had a bad reputation for shoddy keep, dwellers' poor health, and high levels of violence. like B.W. Cooper complex which is now changed to the far-beautiful Yvonne Marrero Commons New Urbanist apartments finished with wooden siding, brightly coloured front doors, and broad front porches. In the beginning, everything looks good. But not everyone returned
one of a group of sprawling city housing developments was the Big Four which was home to 3,077 households in 2005. Now after ten years of catastrophe there are more than 1,800 elegant apartments and only about 40 percent of them are presented at classic public housing fares, according to the housing authority, with the remainder at higher market rates or a class in between (CAMPBELL & FAUSSET, 2015).
The project was to displace a lot of the old apartments with housing coupons, which have more than doubled in number since Katrina and are now used by nearly 18,000 households, or one in 10 New Orleans families.

however, in a city in which thousands of rental houses were flooded and market rents are soaring, there are merely not enough coupons to fill the need. Some former residents of public housing now look back with severe allegiance and a capable passion.

Figure 5: *Where rent and household income both rose (green), and where rent rose but income fell (orange). Changes of 10 percent or more in median rents and median household incomes since 2000 (CAMPBELL & FAUSSET, 2015)*

FEMA AND KATRINA

The most important thing to mitigate the severe pain of any catastrophe is a quick response to the disaster that needs political support and a strong link between responsible government agencies. but this did not happen during Hurricane Katrina. But Bush administration after 2001 changed the aim of FEMA from Response to natural disasters to a new direction organization loyal to safety and terrorism alertness. With a lot of mistakes was happened, the Katrina disaster was unimaginable.

Many parts of New Orleans-area levees had been badly built because of inferior planning and failing contract work. local state waited a long time to order an evacuation command, furthermore, they failed to consider the miserable dwellers. also, federal and state agencies were too slow to supply relief and recovery resources. in addition, when aid eventually came it was badly coordinated.

from 1993 to 2001, FEMA was so better prepared to deal with catastrophic natural disasters than it was in 2005. according to the

political situation at that time, FEMA had lost a lot of its elements essential Politically appointed emergency managers, including Witt, were changed by Recruited with a few disaster experiences, also in 2003 leaving, soon retirement, and work dissatisfaction had weakened the agencies (ROBERTS, 2006).

when alertness programs were transformed FEMA into a separate office in the Department of Homeland Security. The all-hazards, all-phases concept, was weakened. The Katrina catastrophe revealed the cut-off between preparation and response in agencies. although the possibility of a painful flood and hurricane was a main of domestic traditions and expert studies New Orleans failed to plan for the Katrina hurricane with the urgency that the response required. there were some Plans however never totally trained.

CONCLUSION

The location of New Orleans city made it so desirable for people to come and work, because of the easy access to the Gulf of Mexico and the Mississippi. this made the city need new residential areas and expand urban space every time. Throughout history, the city faced many housing crises which happened during the II war and after the development of the Industrial Canal. the Local authorities of New Orleans solved this issue by Land reclamation, where they change swampland to residential areas and they constructed pumps, levees, and canals to protect the city from the surrounding water bodies. all these infrastructure projects did not protect the city from massive natural disasters like hurricanes and floods. however, after any catastrophe, New Orleans started a new recovery process which change the shape of the city.

In 2005 Katrina hurricane hit New Orleans city causing huge destruction that led thousands of people to evacuate from the city and demolished full many neighbourhoods. On the first day of the disaster, the local authority and FEMA initiated short- and long-term responses, which had a lot of arguments about their role and their preparation for this disaster. where there was not any clear plan to rebuild the city.

Also, at the first, the authority did not allow people to anticipate in planning which made people refuse many of the plans as a result the recovery plan was late. However, in the end, the rebuilding started with a lot of arguments.

this paper discussed the decisions which were done after one year and two years and evaluated the situation of the housing plan and recovery process after ten years. the most noticeable thing is a slowing in reconstruction plan and unclear vision about some neighbourhoods for this reason some areas have less than half the population before Katrina. At the same time, we cannot ignore that some areas flourish and return to the same situation before the storm and in some areas better than before.

The Federal Emergency Management Agency (FEMA) had a major role in recovery during and after the disaster, although the FEMA had many derelictions in different fields, it has an essential role during Katrine in short and long response. after Katrine hit New Orleans a lot of things was changed and developed in it to enhance the aims of this agency. Like hiring experienced workers and solving the problems of corruption and preparing an urgent response plan time we need to think that the calamity as an opportunity to improve agencies.

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