

# Evaluating the Rebuilding Policies for New Orleans after Hurricane Katrina\*

DalByul Lee\*\*, Ju Chul Jung\*\*\*

Department of Fire Administration, Dong-Eui University, 176 Naesudong-ro, Eomgwangno Busanjin-gu,  
Busan, Korea

Department of Urban Engineering, Pusan National University, 2, Busandaehak-ro 63beon-gil,  
Geumjeong-gu, Busan, Korea

## Abstract

Recognizing the importance of rebuilding New Orleans, this paper aims to analyze the rebuilding policies for New Orleans and compare those with an alternative policy which can make the city more sustainable, less vulnerable and more equitable. For this comparison, it analyzes four rebuilding policies as follows: Urban Land Institutes's Policy, the Bring New Orleans Back Commission's Original and Revised Policy, and Policy of Cherokee, IA. It is important that rebuilding New Orleans means not only rebuilding homes but also the lives and futures of people who haslived in the city.

**Key words:** Hurricane Katrina, Recovery, New Orleans, Rebuilding Policies

---

\* This research was supported by a grant 'A Study on Enhancing the Community Capacity for Hazard Mitigation in Climate Change' [NEMA-NH-2013-63] from the Natural Hazard Mitigation Research Group, National Emergency Management Agency of Korea.

\*\* Tel. +82-51-890-4293. E-mail. moon@deu.ac.kr

\*\*\* Corresponding author. Tel. +82-51-510-3521. E-mail. jchung@pusan.ac.kr

Submission & Publication Process

Received: Feb. 10, 2015 / Revised: Mar. 9, 2015 / Accepted: Mar. 20, 2015

## I. Introduction

The uneven geography may not mean just segregation between low-income and high-income people, between African American and White, or between the central city and suburb. It may include the uneven exposure of low-income people, especially African America, to natural hazards because many of them live in environmentally sensitive areas.

New Orleans hit by Hurricane Katrina in the 2005 August showed that individuals and groups with special socio-economic characteristics were more affected by the natural hazards than others. The Brookings Institution (Muro *et. al.*, 2005) indicated that average income of people in areas flooded by Hurricane Katrina is much lower than that in dry areas. The National Low Income Coalition (NLIHC, 2005) also reported that of an estimated 142,000 housing units that were damaged and most likely lost due to flooding by the hurricane, over 112,000 units were affordable to low-income households.

Despite of the potential threats of floods in the future, many people believed that New Orleans should be rebuilt in two reasons: first, the city is not only the center of a metropolitan area with over \$500 billion in real estate assets but also has played a significant role as a major port in the nation; second, the city has national historic and cultural importance. There had been the active debates on how to rebuild New Orleans and the several rebuilding policies for the city had been suggested by the city's Mayor and the research groups. There, however, was no consensus about it.

Recognizing the importance of rebuilding New Orleans, therefore, this paper aims to analyze the rebuilding policies for New Orleans and compare those with an alternative policy which can make the city more sustainable, less vulnerable and more equitable. For this comparison, this paper analyzed four rebuilding policies as follows: Urban Land Institutes's Policy, the Bring New Orleans Back Commission's Original and Revised Policy, and Policy of Cherokee, IA. Rebuilding New Orleans means not only rebuilding homes but also the lives and futures of people who has lived in the city.

## II. Problem Statement: New Orleans before and after Hurricane Katrina

New Orleans has suffered from many problems before as well as after Hurricane Katrina. The problems include mean not only the serious physical damage from the hurricane but also the

social, economic and political problems, which have been existed for the long time before the hurricane. Therefore, verifying and defining these problems in New Orleans are the first step to establish policies to rebuild New Orleans as a more sustainable and more resilient city.

## 1. Before Hurricane Katrina

Even before Hurricane Katrina hit, New Orleans was one of the more troubled metropolitans in the U.S.A. The stark segregation between races, the high concentration of poverty and the topographically vulnerable characteristic to floods have challenged the city (Muro et al, 2005).

According to census data of 2000, over 84 percent of the city's poor population was African American. Almost all of the extremely low-income neighborhoods in the city were predominately African American. About 50 percent of poor African American in the city lived in census tracts with extreme poverty level, while only 11 percent of poor whites did. In particular, most poor minorities were concentrated in the city's poorest neighborhoods, such as Mid-city, Bywater, New Orleans East and Lower 9th Ward District in the east and central portions of the city. As a result, New Orleans was ranked the city with the second highest level of concentrated poverty among the large U.S. cities (Berube and Katz, 2005).

In addition, the topographical and geographical characteristic of New Orleans make the city vulnerable to natural hazards, especially floods. New Orleans surrounded by the Mississippi River to the south, Lake Pontchartrain to the north, and the Lake Borgne to the east. Much of the city's sites are below sea level. Urban development without consideration of the topological characteristics as well as the city's geography might exacerbate vulnerability of New Orleans to floods. In addition, most of the extreme poverty neighborhoods are located in the areas below sea level. Therefore, the serious damage and losses of life in New Orleans by Hurricane Katrina may have been warned previously. It might not be hard to predict that low-income people are particularly affected by natural hazards in New Orleans.

## 2. Effects of Hurricane Katrina on New Orleans

The effect of Hurricane Katrina on New Orleans was catastrophic. It was one of the deadliest natural disasters in U.S. history. Seventy five percent of New Orleans was flooded, with some parts of the city under 20feet of water. The flood continued to have major implications for a large segment of the population as well as for the economy of and politics in the entire United States.

The U.S. Department of Housing and Urban Development (2006) reported that over 134,000 housing units, 71 percent of total housing units, were damaged or destroyed by Hurricane Katrina and over 112,000 units were affordable to low-income households in Orleans Parish, LA, which the City of New Orleans is mainly located in (see Table 1). Over one hundred thousand occupied housing units, reflecting more than 57 percent of Orleans Parish total, were flooded.

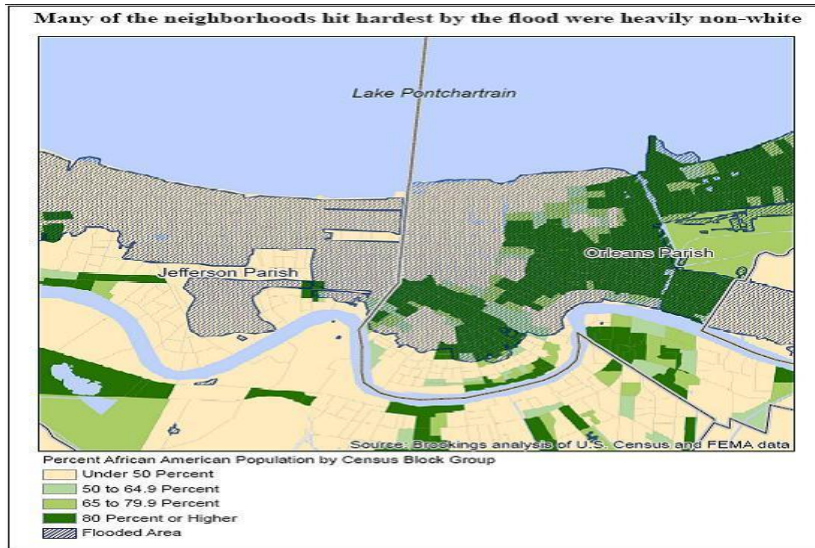
<Table 1> Housing Unit Damage Estimates

Planning District	Total Housing Units	Homes with Damage	Homes with Flood Damage		
			Total	Owner-Occupied	Renter-Occupied
Bywater	14,869 (100%)	11,499 (77%)	9,486 (65%)	5,507 (37%)	3,979 (27%)
Lower 9thWard	6,138 (100%)	5,701 (93%)	5,678 (92.5%)	2,708 (44%)	2970 (48%)
New Orleans East	26,437 (100%)	26,115 (99%)	25,800 (97%)	12,233 (46%)	13,567 (51%)
Mid-City	30,338 (100%)	22,863 (75%)	22,006 (73%)	6,480 (21%)	15,526 (51%)
Orleans Parish	188,251 (100%)	134,344 (71%)	107,379 (57%)	53,908 (29%)	53,471 (28%)

※ Source: U.S. Department of Housing and Urban Development (HUD). 2006.

While the location of the city’s oldest, highest-value sections like the French Quarter, the Central Business District, the Garden District and Uptown escaped the worst flooding, the lowest-lying areas in the lakeside of the natural levee were all inundated. The Lower Ninth Ward and the New Orleans East district were most seriously damaged by the floods and more than 92 percent and 97 percent of total housing units in both districts were flooded, respectively.

Unfortunately, Katrina’s impacts were not just massive, but uneven (see Figure 1). Damage of the extreme poverty neighborhoods such as Mid-City, Bywater and the Lower Ninth Ward were more serious than that of others (see Table 2). Theses neighborhoods had a higher percentage of flooded housing units than average of all neighborhoods in the Orleans Parish. African American and other minority residents made up 80 percent of those whose neighborhoods were flooded. By contrast, whites mad up 55 percent of those who lived in neighborhoods that flooded. Significantly more people in the flooded areas lacked access to a car, which became critical during the evacuation period, which is about four times more than in the dry areas.



※ Source: Brookings Institution. 2005

<Figure 1> Uneven Exposure of Poor and Minority Families to Hurricane Katrina

<Table 2> Demographic Characteristics of Flooded Areas and Dry Areas in New Orleans

Area	New Orleans Metro			Orleans Parish	
	Total	Dry Areas	Flooded Areas	Dry Areas	Flooded Areas
Total Households	498,587	270,908	227,679	54,519	133,732
Average Household Income	\$49,167	\$53,108	\$44,479	\$55,316	\$38,263
% of Owner-Occupied	61.5%	68.9%	52.7%	46.7%	46.4%
% of Renter-Occupied	38.5%	31.1%	47.3%	53.3%	53.6%
% of Non-White Population	45.2%	35.1%	58.0%	55.0%	80.3%
Poverty Rate	18.3%	15.3%	22.1%	23.8%	29.5%
Estimated Population with No Access to a Car	201,176	77,505	123,671	28,019	105,152

※ Source: Muro, M, A. Liu, R. Sohmer, D. Warren and D. Park. 2005. New Orleans after the Storm: Lessons from the Past, a Plan for the Future. Washington: Brookings Institution.

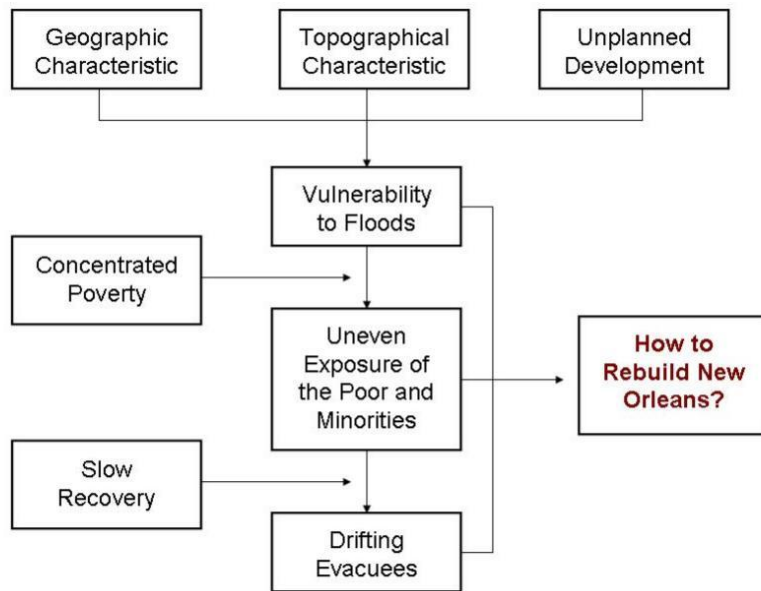
### 3. Causal Model of Problems for New Orleans

After the hurricane, many New Orleans residents were displaced across the United States. Many residents had not been able to return. From January 28-29, 2006 survey, the City of New

Orleans (2006) estimated that 181,400 residents had returned to the city. The number is just 37 percent of the total population in 2000. Just 15 percent of residents who had lived in the flooded areas moved back to New Orleans, compared to 94 percent of people who had lived in un-flooded areas.

After the hurricane, the lack of the housing units was the biggest constraint to come back. This problem was also strongly linked with another problem, how to get capital to rebuild damaged buildings in the flooded neighborhoods because so many buildings were so seriously damaged. In addition, this was a problem related to “time.”

Maybe Hurricane Katrina was not an unexpected disaster of New Orleans (see Figure 2). Unplanned urban development as well as the city’s geographic and topographical characteristics may had warned the city this catastrophic disaster. In addition, the sharp segregation and the concentrated poverty contributed to unequal exposure of low-income and minority families to the hurricane. They had still been drifting across the United States during a lot of debates about whether or how to rebuild New Orleans.



<Figure 2> Causal Model of the Problems for New Orleans

### III. Evaluation Criteria for Rebuilding Policies: Literature Review

Table 3 shows the established criteria for evaluating the proposed rebuilding policies through literature review. The criteria are developed by focusing on what is good for new New Orleans. Many people expected that new New Orleans will be a safer, more equitable, less segregated city (Olshansky, 2006, 2010) Therefore, the criteria analyze how well the proposed rebuilding policies support this new city. The criteria include safety, equity, affordable housing & financial aids, racial & economic diversity, population return, citizen participation, cost, ease of implementation and public acceptability.

## 1. Safety

Making New Orleans safer and less vulnerable to the potential natural hazards should be one of the primary goals to rebuild New Orleans (Olshansky, 2006, 2010). Without a guarantee of safety, rebuilding the city is not meaningful and even makes the city more vulnerable to natural hazards because it can have a high possibility for being affected by the future hazards. Therefore, the proposed policies should be based on this safety issue. Safety and Vulnerability are not just about flood and storm water protection including making the levees stronger, but about regulation of redevelopment of land which is vulnerable to natural hazards. Mileti (1999) said "recovery is characterized by wanting to increase safety."

Questions that may be addressed include 1) "do the proposed policies identify the dangerous areas to natural hazards?" and 2) "do the policies regulate or control the areas to be redeveloped?"

<Table 3> Research Evidence of Evaluation Criteria for the Rebuilding Policies

Evaluation Criteria	Research Evidence
Safety	Wyner and Mann, 1986; Mileti, 1999; Schwab <i>et al.</i> , 1998; Olshansky, 2010
Equity	Mileti, 1999; Schwab <i>et al.</i> , 1998; Urban Land Institute, 2005; Olshansky, 2010
Affordable Housing or Financial Aid	Comerio, 1992; Burby, 1998; Mileti, 1999; Schwab <i>et al.</i> , 1998; Olshansky, 2010
Racial and Economic Diversity	Schwab <i>et al.</i> , 1998; Olshansky, 2006, 2010
Population Return	Schwab <i>et al.</i> , 1998; Mileti, 1999; Olshansky, 2010
Citizen Participation	Schwab <i>et al.</i> , 1998; Mileti, 1999; Olshansky, 2010
Cost	Schwab <i>et al.</i> , 1998; Urban Land Institute, 2005; Olshansky, 2010
Ease of Implementation	Burby and French, 1981; Berke, 1989; Burby, 1998; Schwab <i>et al.</i> , 1998; Olshansky, 2010
Public Acceptability	Burby and French, 1981; Rossi, Wright and Weber-Burdin, 1982; Schwab <i>et al.</i> , 1998; Olshansky, 2010

## 2. Equity

The meaning of equity can be various according to the different perspectives. In the debate on how to rebuild New Orleans, some argued that the proposed policies are not equitable because they force the poor and minority neighborhoods to be bulldozed (Olshansky, 2010, p. 26). On contrast, others argued that the policies are equitable because they prevent the poor and minority families from being unevenly exposed to the future natural hazards, regulating to rebuild the most damaged areas (Urban Land Institute, 2005). As it is believed that safety is prior to preference and the right of shelter, this paper regards that preventing uneven exposure of these people to natural hazard is more equitable than another.

Therefore, a question in assessing the equity issue includes “do the proposed policies allow the poor and minorities to live in the vulnerable areas to the future natural hazards or prevent them from being exposed to the hazards?”

## 3. Affordable Housing or Financial Aid

This criterion is related to the equity issue. Many people who lived in the flooded areas were the poor or minorities (Burby, 1998). If they are not allowed to live in the areas, they should be provided with affordable housing in the safe areas or proper financial aid (Comerio, 1992). Considering that renters who constituted 53 percent of total population before Katrina have suffered from a lack of affordable housing in New Orleans (Olshansky, 2010), the proposed policies should be concerned with the problems of these renters. Therefore, the problems in assessing affordable housing or financial aids include 1) “do the proposed policies provide affordable housing or financial aid for low-income families?” and 2) “are there any programs for renters in the proposed policies?”

## 4. Racial and Economic Diversity

Before Hurricane Katrina, many low-income families were concentrated in the poor neighborhoods which were located in the central city (Olshansky, 2006). There was a sharp segregation of income and race. It mainly contributed to uneven exposure of the poor and minority groups to Katrina. So, the rebuilt city should be a city which various racial and economic groups live together in a neighborhood (Olshansky, 2010). The proposed policies will

include some programs to encourage this diversity of income and race (Schwab *et al.*, 1998).

## 5. Population Return

After Katrina, an issue on how many people will come back to New Orleans was important to decide how to rebuild the city. At the same time, how to rebuild the city and how quick will a rebuilding policy be implemented significantly affect the return of the former residents (Mileti, 1999). As mentioned earlier, the lack of housing in New Orleans was the biggest constraint to people moving back (Olshansky, 2006). Therefore, the speedy decisions about where and how many housing units will be built help more people to return to New Orleans. A questions of assessing this criterion include 1) “do the proposed policies include the speedy action plans or a moratorium for deciding whether or where housing units will be constructed or repaired?”

## 6. Citizen Participation

There were a variety of stakeholder to decide how to rebuild New Orleans: a lot of the former residents who lived in the flooded areas, residents who lived in the un-flooded areas, neighborhood groups, developers or investors, people who work for small or large business, and planners or decision makers in the federal, state and local government. It may be difficult to achieve a consensus among a variety of stakeholder. Involving citizen participation can be a key to solve this problem. Encouraging civic engagement can smooth down the whole process to rebuild the city in the long term, especially for the serious problems such as whether or where their houses can be built (Olshansky, 2010).

The ways of accessing citizen participation include 1) “do the proposed policies require the process of citizen participation in the action plan or implementation plan?” and 2) “do those guarantee participation of all kinds of citizen?”

## 7. Cost

Physical damages by Hurricane Katrina require a lot of money to repair, rebuild and redevelop the housing units in the flooded areas. Federal Emergency Management Agency (FEMA) and U.S. Department of Housing and Urban Development (HUD) have provided the city funds for providing emergency shelters, repairing public housing and offering financial aids (Urban Land Institute,

2005). But much more money had been needed to rebuild the city. The city was not be able to provide money for some proposed policies. Therefore, “how much money will the proposed alternative be required” is an important criterion.

## 8. Ease of Implementation

Whether or not the proposed policies are easy to be implemented is also an important criterion (Burby, 1998; Olshansky, 2010). Even though an alternative is much better in many criteria than others, it can be said to be a best alternative if the proposed policy’s implementation is difficult or if the commitment of the planners is not enough to implement it (Berke, 1989; Schwab *et al.*, 1998)

## 9. Public Acceptability

Public acceptability is related to political viability, which asks whether or to what extent a proposed policy will be acceptable to relevant powerful groups, decision makers, legislators, administrators, citizens, neighborhoods, or others (Wright and Weber-Burdin, 1982; Schwab *et al.*, 1998; Olshansky, 2010). “Is the proposed policy acceptable to policy makers, policy targets, the general public, voters, etc.?” and “does it meet the real or perceived needs of the target group, the public, etc.?” are the ways of assessing public acceptability of the proposed alternative.

# IV. Identification and Evaluation of Proposed Rebuilding Policies

Table 4 identifies and evaluates the proposed policies after Hurricane Katrina and an alternative policy to rebuild New Orleans. These policies include a policy suggested by the Urban Land Institute (ULI) on November, 2005, a policy suggested by the Bring New Orleans Back Commission (BNOBC) on January, 2006, a revised policy by Mayor Nagin of New Orleans on March, 2006, and a policy of Cherokee, IA, as an alternative policy for New Orleans.

## 1. Urban Land Institute’s Policy

In the aftermath of Hurricane Katrina, the ULI presented detailed rebuilding recommendations to the BNOBC, including specifics on economic development and culture, government effectiveness, and planning, including infrastructure, housing and urban planning and design (ULI, 2005). The ULI's policy was based on a idea that "every citizen should have the right to return to a safe city." It highlighted that rebuilding New Orleans should occur through a phased process that accommodates the immediate needs of its downsized population and that the areas, which were seriously damaged by Katrina and have high potential of being flooded, should be regulated and protected for open space.

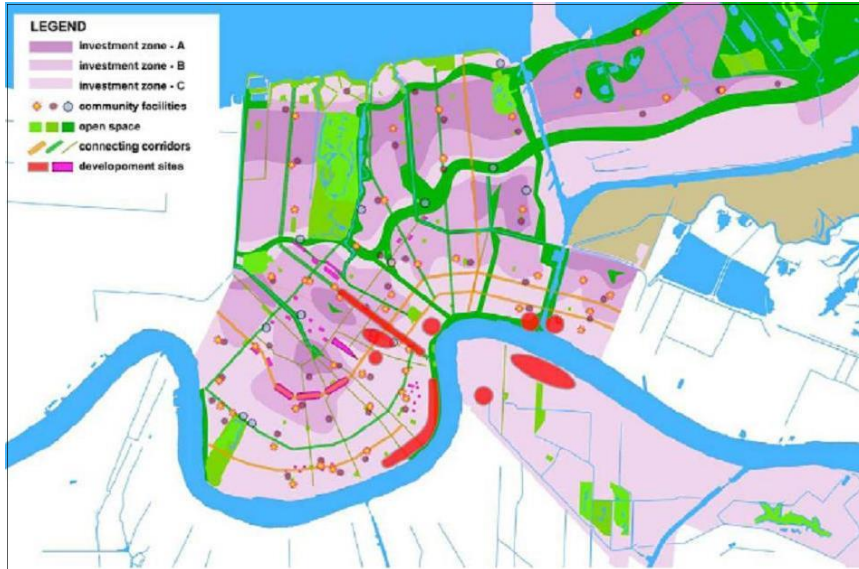
<Table 4> Description of the Proposed Rebuilding Policies

	Urban Land Institute's Policy	BNOBC's Original Policy	BNOBC's Revised Policy	Policy of Cherokee, IA
Natural Hazard	2005 Hurricane Katrina			1993 Midwest Flood
Permits for reconstruction	Mixed - the degree of losses, socio-economical and cultural characteristics	No - during the moratorium(four moths)	Yes - though the city warned potential flood risk	No - Buy-out program
Stakeholder participation	Planners	Planning process with planners and citizen	Planning process with planners and citizen	Neighborhood meeting with planners and citizen

According to several conditions, including topography, the degree of physical damage and historic, cultural and socio-economic characteristics, the policy divided New Orleans into three types: Investment Zone A, B and C (see Figure 3). Investment Zone A is most severely impacted areas such as the New Orleans East, the Lower Ninth Ward and Lakeview, which are the most vulnerable to future hurricanes and flooding. This zone should be conserved as open space toward its greatest capacity to manage storm retention, treatment, and flow. Investment Zone B includes most varied impacted areas. This zone was recommended to use for rehabilitating or developing an array of housing types for a varied market whose residents would like to return to New Orleans. Finally, Investment Zone C, the least impacted area, was recommended to serve as temporary housing for residents waiting on Zones A and B to provide their permanent residence.

Regarding a housing issue, the policy was based on a principle that "New Orleans' property owners and renters are entitled to fair compensation and equitable redevelopment opportunities that provide sufficient resources to rebuild in place or relocate to developable areas (PR Neswire, 2005)." It included some urgent housing action recommendations; assessing the existing housing

stock, activating the Crescent City Rebuilding Corporation (CCRC), providing temporary housing, repopulating suitable public housing, extending the mortgage forbearance period, and providing financial support for homeowner.



※ Source: Urban Land Institute (ULI). A Rebuilding Strategy: New Orleans, LA. November 12-16, 2005. ULI Website <http://www.uli.org>

<Figure 3> Urban Land Institute’s Policy

The ULI noted that New Orleans neighborhoods must be more inclusive, in contrast to the past practice of isolating and concentrating poor and minority families in some specific neighborhoods. So the policy recommended that affordable units be dispersed throughout all neighborhoods in the city, and suggested interim housing issues, including the need for an ample supply of site locations, design issues, and the need to foster greater community acceptance.

The ULI’s policy can reduce the physical damages and human’s loss from natural hazards like Katrina, regulating to rebuild the hardest damaged areas. In particular, it can contribute to less unequal exposure of low-income people to the hazards because most residents who lived in the heavily damaged neighborhoods by Katrina were low-income people, especially African American. Although the policy recommended repopulation of suitable public housing and allowance of Section 8 vouchers, however, It did not exactly provide the policies of affordable housing and financial aids for low-income families. In addition, the policy did not provide the detailed action plan to implement this issue although It seeks to encourage racial and economic diversity, noting that New Orleans neighborhoods must be more inclusive and that the affordable units should be

dispersed throughout all neighborhoods. Regulating the areas to be rebuilt may discourage the former resident to move back to New Orleans because their houses will be destroyed.

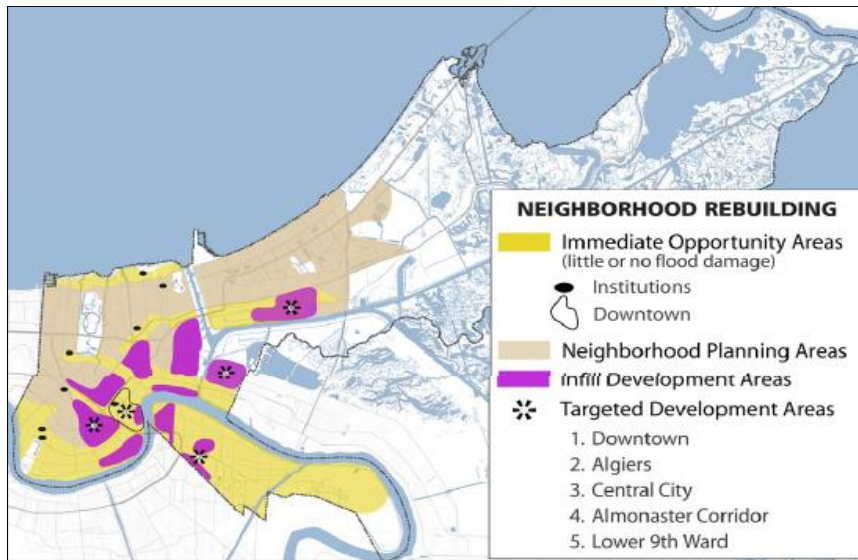
The policy did not involve citizen participation in deciding whether neighborhoods would be rebuilt or be bulldozed. The ULI recommended the areas which should be regulated or controlled for open space, considering technical and objective condition of the areas such as topography, flood extents and depths from levee breeches and storm surge, repeated incidents of damage and so on. So, it was criticized as the exercise of eminent domain of the government (Chattanooga Times, 2006). The policy requires high cost of purchasing the land and properties in the heavily affected neighborhoods and financing redevelopment.

The policy is easier for planners to implement because it did not involve citizen participation, which requires the commitment of planners and relatively long time to achieve the consensus among a variety of stakeholder. But implementation easiness depends on public acceptability. The citizen may not accept this policy because they cannot rebuild their houses in their neighborhoods. But it can be different according to the degree and types of compensation.

## 2. BNOBC's Original Policy

The BNOBC, the group formed by Mayor Ray Nagin to produce a blueprint for the city's recovery, issued a proposal to rebuild New Orleans more sustainable, in the mid-January, 2006 (BNOBC, 2006). It recommended that New Orleans should focus on only rebuilding some areas and not others. The "others" would be the parts of the city where mostly black and low-income residents lived.

The proposed policy divided the city into four types, similar to the ULI's recommendation (see Figure 4): Immediate Opportunity Areas, Infill Development Areas, Targeted Development Areas and Neighborhood Planning Areas. Immediate Opportunity areas are areas with little or no flood damage including Downtown areas. For these areas, repair and reconstruction begin using current rules and regulations, and community and cultural facilities and services are be provided the residents. Infill Development areas include land with various potential for redevelopment, such as underutilized sites on high ground. In these areas, development is encouraged, consolidating public and private ownership. Targeted Development Areas include Central City, Algiers and Lower Ninth Ward. Finally, Neighborhood Planning Areas contain deeply flooded and heavily damaged properties. In these areas, neighborhood planning process is conducted to determine the future of the areas in all neighborhoods.



※ Source: Bring New Orleans Back Commission (BNOBC). Action Plan for New Orleans: The New American City. January 11, 2006. BNOBC website. <http://www.bringneworleansback.org>

<Figure 4> Bring New Orleans Back Commission’s Policy

According to the policy, of all neighborhoods in Neighborhood Planning Areas, only the neighborhoods that could muster sufficient population should be rebuilt. Residents in the districts most heavily damaged by Katrina get four months to demonstrate strong support for rebuilding their neighborhoods, cooperating among residents, planner, commission representative and technician. If they do not give the commission the good reasons for rebuilding their neighborhoods, they should leave their neighborhoods. During the moratorium, any permits to build or rebuild housing units in these areas will not be issued. But the commission also noted that “the greatest challenge will be to contact and involve residents who have not yet returned.”

The policy, like the ULI’s policy, recommended immediate form of the Crescent City Recovery Corporation (CCRC) to receive redevelopment funds, implement redevelopment plans, and buy/sell property for redevelopment. It supported Backer’s federal bill to accommodate buy-out of homeowners in heavily flooded and damaged areas for 100 percent of pre-Katrina market value. The commission estimated approximately \$17 billion of the cost of acquisition of heavily flooded and damaged houses, demolition and reconstruction. Most funding for these uses will come from the federal government, such as through Community Development Block Grant (CDBG) of HUD and Public assistance of FEMA.

The policy allowed the residents to rebuild their houses in the areas which have high risk of

floods. As whether or not the neighborhoods will be rebuilt depends on their plans to support for rebuilding the neighborhoods, it can decrease or increase not only the damages but also uneven exposure of the poor to the future natural hazards. If the communities submit the enough reasons for rebuilding, the communities can be rebuilt with the city's support, even in the heavily damaged areas. This means that these communities are likely to be affected by the similar natural hazards. On contrast, if the group does not develop plans to justify their reconstruction, the neighborhood cannot be rebuilt and finally the damages from the future hazards can be decreased.

But the policy did not include what criteria will be used to judge these neighborhood plans. The unclear rules that determine rebuilding can lead to political decisions. In addition, the neighborhoods which do not have enough capacity to get the residents' consensus would be destroyed. Many of these neighborhoods are likely to be low-income neighborhoods because they have lower-levels of skills and educational attainment and do not have enough time to participate the community meetings. Therefore, it may result in uneven demolition of low-income neighborhoods, compared to higher-income neighborhood.

Although the policy may allow the existing affordable housing units to be reconstructed, it provides no funds to those people, especially renters, who live in neighborhoods that will not be rebuilt. Finally, the city may suffer from a lack of affordable housing. Moreover, four months moratorium can prevent the former residents from moving back to New Orleans and can be opposed by the public.

### 3. BNOBC's Revised Policy

On March 20, 2006, Mayor Ray Nagin rejected the policy proposed by the BNOBC on January and endorsed a new proposal that would allow all residents to rebuild their homes in neighborhoods shattered by Hurricane Katrina. This revised policy repealed a proposed moratorium on building permits in seriously damaged neighborhoods but kept the neighborhood planning process to show that their neighborhoods can recover or face buyouts or redevelopment as parks or industrial zones (Gyan JR, 2006). According to the policy, the city continues issuing building permits to all comers but warned that low-lying neighborhoods like New Orleans East and the Lower Ninth Ward could flood again if another hurricane hits and that homeowners in the areas would do so at their own risk (Burdeau, 2006).

Allowing people to live in the seriously damaged areas, the policy is likely to increase the physical damages and losses of life from the future hazards and even exacerbate the exposure of

the poor and minorities to the hazards. More seriously, it shifts a responsibility of exposure to hazard from the government to residents who live in the vulnerable areas. It is also not clear whether the city will provide these people with financial aids.

This policy can repeat the past segregation of income and races, and concentrated poverty because it permits low-income people to live again in the poor neighborhoods. Although it can encourage residents to return to New Orleans, the conditions of infrastructure in the neighborhoods will affect residents' return to the city. Cost for rebuilding the city is relatively low because the city will not spend money for acquisition of the properties but should be needed to support for rebuilding.

Like the commission's original policy, the revised policy requires citizen participation in neighborhood planning process. But it is not clear when this neighborhood planning process will be necessary. Planners can be relatively easy to implement this policy because they will not face with objection of residents but the degree of ease of implementation can change according to types and degrees of citizen participation.

#### 4. Policy of Cherokee, IA

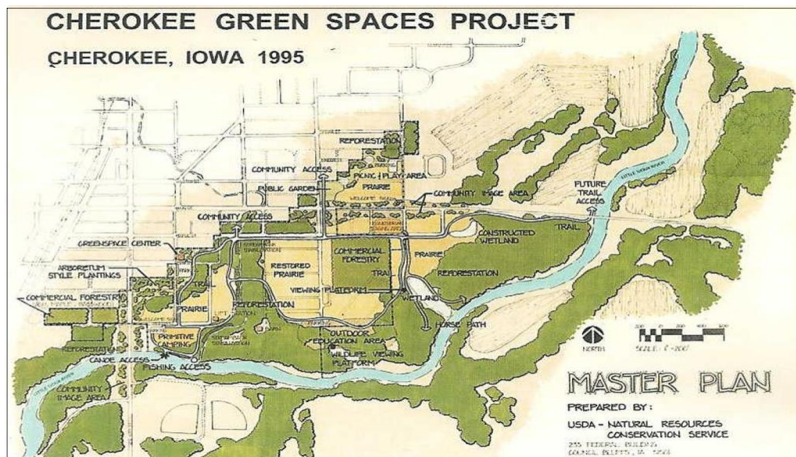
There are several cities to serve as a good lesson to New Orleans. Of them, the City of Cherokee, Iowa is a good example of a city that has mitigated the damage caused by floods through the acquisition of these properties and conservation the land as open space. Cherokee, which has the largest buyout program in Iowa, is cited as an outstanding case of developing a new subdivision, with its massive buyout program (Godschalk *et al.*, 1999).

Before the Midwest Flood of 1993, the city had been working for a number of years to protect and restore floodplain open space. The city had put in place and enforced strong floodplain ordinances. It had also identified the floodplain corridor as a greenbelt and encouraged private donation of land within the corridor. Although the city had tried to buy the properties in floodplain, the moving out was proposed as voluntary because of the lack of funds (Hanson and Lemanski, 1997).

The flood, which caused an estimated \$3.8 million in damage in 1993, promoted residents to become conscious of the importance of the mitigation and then many community meetings were held. Through these meeting, it was decided that the Green Space Project and Buy-out Program be implemented (see Figure 5). A workshop was conducted with a variety of the participants including state and federal level agencies such as FEMA and Iowa Department of Natural

Resources and students from local schools. After the workshop, the buy-out for the Green Space Project Area was conducted, funded 25 percent by the state agencies and 75 percent by the federal agencies.

Since 1994 when the buy-out program started, Cherokee has purchased 187 residential properties on more than 60 acres along the Little Sioux River and then created 67 acres of open space in floodplains (Banson & Lemanski, 1995). Under its buyout program, residents have adequate opportunities for relocation and replacement housing. The City designs and plans a new-lot subdivision to provide a place for these relocated structures. In addition, the City, with CDBG, implemented a down-payment assistance program for low-income people that provides about \$22,000 for a down payment on a new home (Godschalk *et al.*, 1999).



※ Source : Pam Pierce. Website

<http://www.ag.iastate.edu/centers/iawetlands/cases/Cherokee.html>

<Figure 5> Cherokee's Buy-Out Program

Finally, Cherokee has decreased the threats of flood through the buy-out program since the Midwest Flood of 1993, removing the housing units in the repeatedly flooded areas. As a result, the program has dropped the exposure of low-income people as well as higher-income people. Cooperating with housing department, the city has provided the same amount of affordable housing units in higher land to deconstructed units in flooded areas, preventing a lack of the units in the whole city. CDBG program was used to provide these affordable housing units. But it is not clear how this policy has affected integration between people with different income and different races.

Cherokee has promoted citizen participation in the planning process. The various neighborhood meetings have played a significant role in building a consensus between residents and policy makers. As noted earlier, buy-out program is the result of consciousness and active participation of citizen. Although the cost to implement this policy was relatively expensive because the city should purchase homes in the flooded areas, new houses could be built in the safe areas with the aids of the federal assistance money. Active participation of citizen made the policy easier to be implemented.

## V. Policy Comparison and Conclusion

### 1. Policy Comparison

The impacts of these alternative policies are compared according to this paper's evaluation criteria (see Table 5). The BNOBC's two policies can have similar impacts on new New Orleans, although they are little different in the perspective whether residents will be allowed to live in the heavily flooded area. For safety and equity criteria, BNOBC's original policy has mixed effects on the city, while its revised policy is likely to have some negative impacts. It is important that both policies can negatively affect New Orleans in even though they encourage citizen participation in the planning process. It is necessary to discuss what planners should do when citizens (or majority) prefer and select a maybe-wrong policy in democratic process. It seems to be not a technical problem, but a political problem. Compared to BNOBC's two policies, the ULI's policy can guarantee safety and equity issues, preventing the heavily flooded housing units from being rebuilt. It is also different from both policies of BNOBC that it does not involve citizen participation and exercises administrative power to decide how to rebuild New Orleans.

&lt;Table 5&gt; Potential Effects of the Alternative Policies on Rebuilding New Orleans

Criteria	ULI	BNOBC I*	BNOBC II*	Cherokee
Safety	Yes – reduce the exposure of people to hazard	Mixed – depend on the quality of plans submitted by neighborhood groups	No – allow people to live in the dangerous areas	Yes – through buy-out program
Equity	Yes – contribute to less uneven exposure of the poor to hazard	Mixed – depend on the quality of plans submitted by neighborhood groups	Rarely – have high potential for unequal exposure of the poor to hazard	Yes
Affordable Housing & Financial Aids	Unlikely – though repopulation of suitable public housing & Section 8 vouchers are encouraged	Probably Not – but can allow some of the existing affordable homes to be reconstructed	Maybe – existing affordable homes are rebuilt	Yes – provide affordable homes in the higher lands, with CDBG
Racial & Economic Diversity	Somewhat – but provide no detailed action plans to implement it	Somewhat – depend on where new affordable homes will be located	No – repeat the past segregation & concentrated poverty	Not Clear – depend on where new affordable homes were located
Population Return	Probably Not – But depends on aids from the government & economic rehabilitation	Probably Not – 4 months moratorium discourages population return	Possibly – depend on current conditions of infrastructure in the neighborhood	N/A
Citizen Participation	No	Yes – require neighborhood planning process to decide rebuilding	Maybe – it is not clear when it involves citizen participation	Yes – adopt buy-out program through neighborhood meetings
Cost	High – should purchase the properties in the seriously damaged areas	High – should purchase homes	Relatively Low – But should support for rebuilding	High – should purchase homes and support for rebuilding in other areas
Ease of Implementation	Maybe – But depends on public acceptability	Probably Not – citizen participation requires commitment of planners	Maybe – depend on citizen participation	Maybe – but citizen participation requires commitment of planners
Public Acceptability	Probably Not – But depends on the degree & types of compensations	Mixed – some may object to 4 months moratorium	Yes	Yes – accept it through participation

\* Note: \* BNOBC I – BNOBC's original policy, BNOBC II – BNOBC's revised policy

Similarly to BNOBC's original policy, however, it is unlikely to promote not only a supply of affordable housing and racial and economic diversity in the neighborhoods but also the former residents' return to New Orleans.

Cherokee's policy can be the best one among these proposed policies for rebuilding New Orleans because it satisfies relatively many of this study's evaluation criteria, compared to other policies. Though buy-out program, Cherokee's policy has some similar impacts in the perspectives of safety and equity, reducing the exposure of people, especially poor and minority families, to the future hurricane and flood. The major differences between both policies are that this buy-out program has been implemented in the process which citizen, planners and community organizations have exchanged their opinion together, and that the city has provided affordable housing to solve a lack of the housing units, which resulted from removing homes in the repeatedly flooded areas.

The policy, however, may have born a financial burden on Cherokee because the city has to pay to buy the houses in the dangerous areas, although the federal government has supported the policy. And implementation of this policy may significantly depend on the commitment and quality of planners. In neighborhood meetings, planners may have to facilitate discussion and discourse between residents and to lead to build a consensus between them. In addition, they may have to help proceed the buy-out process and to look for some suitable location for building new affordable housing, considering racial and economic diversity. Therefore, it may bear a hardship to be implemented when planners do not sufficiently perform their duties.

## 2. Conclusion

Catastrophic experience of Katrina does not seem to work for "window of opportunity." Even though everybody recognized that it is so dangerous to allow people to live in the heavily flooded areas, many residents as well as even NGOs had pushed the local government to allow people to do so, arguing that to prevent people for rebuilding their houses in their neighborhood is to get out poor and minority families. These arguments were accepted by Mayor Nagin, compromising with his political ambition. As a result, there seems to be no will to rebuild sustainably and equitably New Orleans anymore.

Now, what should we, planners, policy makers and decision makers, do to rebuild New Orleans? First of all, we have to ask ourselves what real equity means. Is it equitable to leave people, especially poor and minority families, who want to live in their vulnerable neighborhoods, to do so? Maybe not. On contrast, it may be really equitable to help escape them from threat of their

life.

Therefore, the experience in Cherokee serves as an excellent lesson for New Orleans. The repeated experience of flooding in a major residential and commercial neighborhood has promoted the City of Cherokee to clear the flood plain and allow the land to revert to a natural area. Instead of flooded houses, the city has provided affordable housing in higher land. There were citizens in the center of these all processes. This successful buy-out program was based on citizen's consciousness of the threat of flood and the importance of mitigating the repeatedly flooded areas.

Consciousness of these problems is an important key to solve the problems in New Orleans and to reach a consensus how to rebuild New Orleans. But it is not easy and short process. Therefore, it is necessary to establish education programs, which would inform threat of flood and importance of control such areas to citizens. And it is needed to discuss about how the previous experience, such as Cherokee, creatively apply to New Orleans because the impacts of Katrina on New Orleans are much more serious than the impacts of flood on Cherokee.

If we apply the experience in Cherokee and in New Orleans to Korea, following policies can be recommended: 1) buy-out program in dangerous areas, 2) education program for citizens participation and citizen's consciousness of threat of natural hazards, 3) supporting program to rebuild in safe areas for vulnerable neighborhoods.

## References

- Berube, A. and B. Katz. 2005. *Katrina's Window: Confronting Concentrated Poverty Across America*. Washington: Brookings Institution.
- Bring new Orleans Back Commission (BNOBC). 2006. *Action Plan for New Orleans: The New American City*. Executive Summary. Urban Planning Committee. The City of New Orleans, LA.
- Burby, R. J. and Steven P. French. 1981. Coping with Floods: The Land Use Management Paradox. *Journal of American Planning Association*. 47(3): 289-300.
- Burby, R. J. 1998. *Cooperating with Nature*. Joseph Henry Pres. Washington, D.C.
- Burdeau, Cain. 2006. *Nagin's Commission on Rebuilding New Orleans Issues Final Report*. The Associated Press.
- Bustillo, Miguel. 2006. January 13. A Will-to-Rebuild Deadline Proposed for New Orleans. *The Los*

- Angeles Times*.
- Chattanooga Times. 2006. *Rebuilding New Orleans*. Chattanooga Times Free Press.
- Comerio, Mary C. 1992. *Impacts of the Los Angeles retrofit ordinance on residential buildings*, Earthquake Spectr. 8: 79-94.
- City of New Orleans. LA. Emergency Operation Center. 2006. *Rapid Population Estimate Project: January 28-29 Survey Report*.
- Davis, Matthew. 2006a. January 11. New Orleans Rebuilding Unveiled. *BBC News*. Washington.
- Davis, Mike. 2006b. April 10. Who is Killing New Orleans?. *The Nation*.
- Dillon, David. 2005. November 20. Rebuilding New Orleans: Imaging the New City. *The Dallas Morning News*.
- Godschalk, D. R., T. Beatley, P. Berke, D. J. Brower, and E. J. Kaiser. 1999. *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*. Washington. DC: Island Press.
- Gyan, JR. J. 2006. March 21. Nagin rejects limits on rebuilding. *The Advocate*.
- Hanson K. and Lemanski U. 1997. *Greenways and Community Trails: Hard-earned Lesson from the Midwest Floods*.
- Marshall, Bob. 2005. November 30. 17th Street Canal Leveewas Doomed. *The Times: Picayune*.
- Mileti, D. S. 1999. *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Washington. DC: Joseph Henry Press.
- Muro, M, A. Liu, R. Sohmer, D. Warrenand, and D. Park. 2005. *New Orleans after the Storm: Lessons from the Past, a Plan for the Future*. Washington: Brookings Institution.
- National Low Income Housing Coalition (NLIHC). 2005. *Hurricane Katrina's Impact on Low Income Housing Units*.
- New York Times. 2006. January 14. Hard Decisions for New Orleans. *The New York Times*.
- Olshansky, Robert B. 2006. Planning after Hurricane Katrina, *Journal of the American Planning Association*. 72(2): 147-153.
- Olshansky, Robert B. 2010. *Clear as Mud: Planning for the Rebuilding of New Orleans*, APA Planners Press.
- PR Newswire. 2005. November 18. Moving Beyond Recovery to Restoration and Rebirth: Urban Land Institute Makes Recommendations on Rebuilding New Orleans. *PR Newswire US*.
- Rathke, Wade. 2006. January 12. A New Orleans for All, Tom Paine. *Common Sense*.
- Schwab, Jim, Kenneth C. Topping, Charles C. Eadie, Robert E. Deyle, and Richard A. Smith. 1998. *Planning for Post-Disaster Recovery and Reconstruction*. APA Planners Press.
- Urban Land Institute (ULI). 2005. *A Rebuilding Strategy: New Orleans*. LA. November 12-16,

2005. Retrieved from [http://www.uli.org/AM/Template.cfm?Section=Search&section=Reports\\_PDF\\_files\\_&template=/CM/ContentDisplay.cfm&ContentFileID=10080](http://www.uli.org/AM/Template.cfm?Section=Search&section=Reports_PDF_files_&template=/CM/ContentDisplay.cfm&ContentFileID=10080)
- U.S. Department of Housing and Urban Development (HUD). 2006. February 12. *Current Housing Unit Damage Estimates: Hurricanes Katrina, Rita, and Wilma*.
- Wyner, Alan J., and Dean E. Mann. 1986. *Preparing for California's Earthquake: Local Government and Seismic Safety*. Berkeley, Calif. Institute for Governmental Studies, University of California.

---

**이달별:** Georgia Institute of Technology에서 도시계획학 박사학위를 받고(논문: The impacts of natural disasters on neighborhood change. 2012년 12월), 현재 동의대학교 경찰행정학부 소방행정학 전공 조교수로 재직 중이다. 재난관리, 토지이용계획, 환경계획 등이 주요 관심분야이며, 주요 논문으로는 “The Growth of low-income population in floodplains: a case study of Austin, TX(2014)”, “Estimating the social and economic consequences of earthquakes and other natural hazards(2010)” 등이 있다(moon@deu.ac.kr).

**정주철:** The University of Texas at Austin에서 도시 및 지역계획학 박사학위를 받고(논문: 자연재해완화정책에 있어 계획의 제도적 영향에 관한 연구. 2005년 12월), 현재 부산대학교 도시공학과 부교수 재직 중이다. 도시계획, 재난관리, 방재정책, 환경평가 및 정책 등이 주요 관심분야이며, 주요 논문으로는 “한국의 사전재해영향성검토 제도운영 개선방안 연구(2014)”, “도시개발사업에 있어서 비점오염원저감시설의 유형별 효율 비교연구(2014)” 등이 있다(jcjung@pusan.ac.kr).