

# Post Disaster Community Recovery

## —Case Study: 2008 Hurricane Ike in the United States vs 2015 Caihong Typhoon in China

Yuanyuan Tang

School of Public Management, Jinan University, Guangzhou, China

Email: Tyuanyuan@hotmail.com

**How to cite this paper:** Tang, Y.Y. (2017) Post Disaster Community Recovery. *Open Journal of Social Sciences*, 5, 105-113.  
<http://dx.doi.org/10.4236/jss.2017.51009>

**Received:** December 26, 2016

**Accepted:** January 10, 2017

**Published:** January 13, 2017

Copyright © 2017 by author and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).  
<http://creativecommons.org/licenses/by/4.0/>



Open Access

---

### Abstract

Disaster happens frequently these years. Both America and China suffer all kinds of disasters. Many researches have been done to study the four stages of disaster: Mitigation, Preparedness, Response, and Recovery. But few researches are about the community recovery plan in these two countries. This study is based on case study about 2008 Hurricane Ike in Galveston, Texas and 2015 Typhoon Caihong in Zhanjiang, Guangdong. By comparing the difference between the recovery plan process, the results suggest that recovery plan process shows the way of “from bottom to top” in America and “from top to bottom” in China. And the civil participation is much deeper in America.

### Keywords

Post Disaster Recovery, Hurricane Ike, Typhoon Caihong, Recovery Plan, Civil Participation

---

## 1. Introduction

There are four stages in disaster cycle: mitigation, preparedness, response and recovery. To deal with disasters, each stage is indispensable. Mitigation means “taking necessary actions to help with disasters for people and property in a long-term perspective”. Connected with mitigation, preparedness is viewed from a short-term perspective. It means pre-impact actions to support active responses for a disaster. Once a disaster happens, this is the stage of response, which means quick and efficient emergency and relief (Lindell & Prater, 2003) [1]. When the whole response actions finished, recovery is the final and the most important process. At this stage, restoration and reconstruction in physical and social aspects are the main task to bring the community back. In this study, we focus on the last stage: recovery.

China is suffering the disaster all the time, such as Typhoon, Earthquake, Drought. And with this situation, the overall planning documents of disaster recovery after each disaster have stressed the importance of disaster recovery. America has a relatively developed emergency management system but still faces all kinds of disasters, such as flood, hurricane. According to the extent of disaster, the recovery plan will be formulated from different level of government. And there is basic difference between China and America; China is more intensively governed by central government, while America is less intensively governed with different power. And they have a different policy system (Prater & Wu, 2002) [2].

In the recovery stage, China and America both developed recovery plans for the disasters, which means that recovery plan plays an important role in this stage. Recovery plan process always shows two ways: “from bottom to top” and “from top to bottom”. In the way of “from bottom to top”, different stakeholders participate in the recovery plan process, such as NGO, community, citizen and experts, government is only one of the stakeholders. But in the way of “from top to bottom”, government dominates the recovery plan process, other stakeholders can barely participate. Based on the different policy system, we suggest China and America show different ways in the recovery plan process.

This study compares the difference of disaster recovery plan after 2008’s Hurricane Ike in United States, which made landfall in Galveston, Texas and 2015’s Typhoon Haiyan in China, which made Zhanjiang sustain a severe damage. By comparing the recovery plan after each disaster, we provide insight into the specific post disaster recovery policy difference between the two countries.

## **2. Literature Review**

### **2.1. Community Recovery**

The existing research about community recovery is kind of piecemeal. Some researchers focus on the housing recovery (Peacock *et al.*, 2006) [3]. Prater and Wu (2002) study the politics of emergency response and recovery, and find that “a centralized government would facilitate emergency response even disaster recovery”. Wu and Lindell (2004) focused on the relationship between pre-impact recovery plan and speed of recovery, and found that “ [4] pre-impact recovery plan will increase the speed of housing reconstruction and increase the extent to which hazard mitigation is integrated into recovery process”. Xiao and Van Zandt (2011) also study the relationship between business and household and prove that there exists spatial relation between each other [5].

The existing study focus on different part of recovery: the housing recovery, the business recovery, the relationship between different factors of recovery. But there are not many relevant studies compare the recovery plan between US and China in Policy level.

### **2.2. Comparison of Post Disaster Recovery**

As for comparison of post disaster recovery, there are existing research about the

business recovery and housing recovery, the housing reconstruction, and policy change after Hurricane Katrina, Ike [6] (Sapat & Li, 2011). Yan and Suzanne (2012) compare the resourcing difference of disaster reconstruction between China and Indonesia [7].

Some Chinese researchers study the comparison of post disaster community recovery between America and China. Some focus on the policy change, America always based on community to help with recovery, and the victims participate in the recovery process by establishing ways to improve policy. But the community recovery in China is not obvious with the concept of community. Some researchers compare the planning system of post disaster recovery between China and America, Du and Yang (2013) basically compare the planning system, the carry-out process and the content of recovery plan [8]. There are also researchers to compare the model of disaster response between the two countries, Lv (2014) compares the difference of disaster response model between China and America from the disaster cycle perspective: mitigation, preparedness, response and recovery [9]. A few researchers compare the funding resource based on case study, the funding resource in America is almost from the insurance while in China the funding resource is from government subsidy, individual saving and bank.

The difference of recovery plan formulating process in America and China based on Hurricane and Typhoon in coastal city is rarely studied in the previous study. But Hurricane is common in America, and typhoon is also popular in China. The disasters both happen in coastal cities.

### 3. Methodology

#### 3.1. Research Design

The method of this study is based on comparative case study, comparing two jurisdictions which are similar with the disaster and other variables, except the one: long-term recovery plan. To control for the hypothesis, two coastal cities in two countries are selected with Hurricane and Typhoon. They both suffer from the disaster over years, the two communities that have the comparability are the 2008 Hurricane Ike in Galveston, Texas and 2015 Typhoon Caihong in Zhanjiang, Guangdong Province.

Galveston and Zhanjiang are both coastal cities in each country and locate in the south of their country. Galveston belongs to the Texas state, which is relatively more developed in America, Zhanjiang belongs to Guangdong province, which is also a big economic province in China. About the population, Galveston has 49,608 according to the 2014 census estimate, Zhanjiang has 6,993,304 from the 2010 census/the sixth in China. In Texas, from 2010, the amount of Hurricane is 13. In Zhanjiang, the amount of Typhoon is 22. Actually there are similarities in the two cities, so that they can be compared (see Table 1).

Hurricane Ike caused 21 people died in Texas, 34 people missing and 3600 buildings destroyed. Power outage also showed up, totally caused 21.3 billion economic losses. It has been 8 years since it happened in 2008, and it's still

**Table 1.** Basic information of Galveston & Zhanjiang.

Factor	Galveston	Zhanjiang
Location	South of US/Coastal city/Texas	South of China/Coastal city/Guangdong province
Economic Situation	More developed	More developed
Population	49608 (2014 census estimate)	6993304 (2010 census the sixth)
Disaster time	Sep/13/2008	Oct/04/2015
Amount of Hurricane/Typhoon	13 in Texas (2010-present)	22 in Guangdong (2010-present)
Loss	21 deaths, 34 missing, 3600 buildings were destroyed. Power outage, 21.3 billion loss	18 deaths, 3374 buildings were destroyed. Power outage, 23.2 billion loss
Recovery time	8 year-present	1 year-present

Data sources: National Hurricane Center (<http://www.nhc.noaa.gov/>); Typhoon in China (<http://typhoon.weather.com.cn/>); FEMA mitigation assessment report P-757/April 2009.

recovering (National Hurricane Center). Typhoon Caihong led to the death of 18 people, 3374 buildings destroyed and 23.2 billion economic losses (Typhoon in China). Both the disasters are severely destructive, we can study post disaster from these disaster events in different views. What's more, comparing the two disasters can help us better understand the difference of post disaster recovery in different countries.

### 3.2. Hypothesis

To answer the research question, there are two hypotheses:

- 1) In America, the way of the recovery plan shows "from bottom to top". While in China, the recovery plan shows "from the top to bottom".
- 2) In America, the civil participation is much deeper, for example, the local government, the state government, the federal government, community and NGO all participate in the recovery plan process. While in China, the participation of other stakeholders is less, mostly the central government.

### 3.3. Data Collection

The data are almost the documents from different level governments, the article from official news, FEMA website and the recovery plan report. The documents prove that the Hurricane Ike has a specific long-term recovery plan while Typhoon Caihong doesn't have one.

The first hypothesis is measured by the post disaster recovery plan formulate process. Additional data are from official government website, such as official report and articles. The second hypothesis is also measured by the recovery plan formulate process. And secondary resources are selected to interpret the outcome.

### 3.4. Analysis

There are four stages in disaster cycle: Mitigation, preparedness, response and recovery. Every stage is important and stresses the different aspect of disasters.

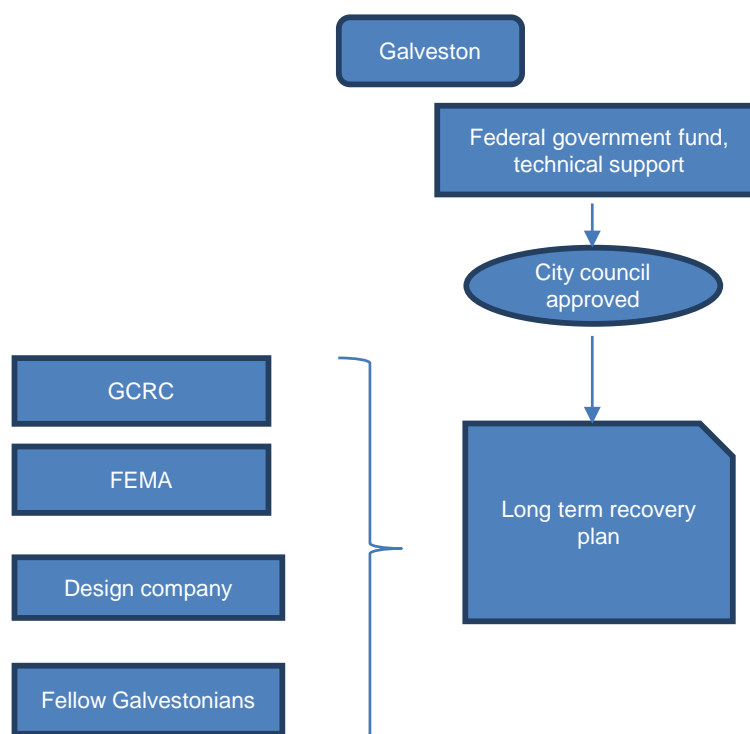
This research focuses on the last stage: Recovery.

Disaster recovery plan is an important process in recovery stage. It based on the community view after a disaster to focus on rebuilding and renewing the community from the loss of economic, housing condition, mental health, natural resource, infrastructure condition and social condition, aiming to help the community recovery to the previous situation or better in all aspects.

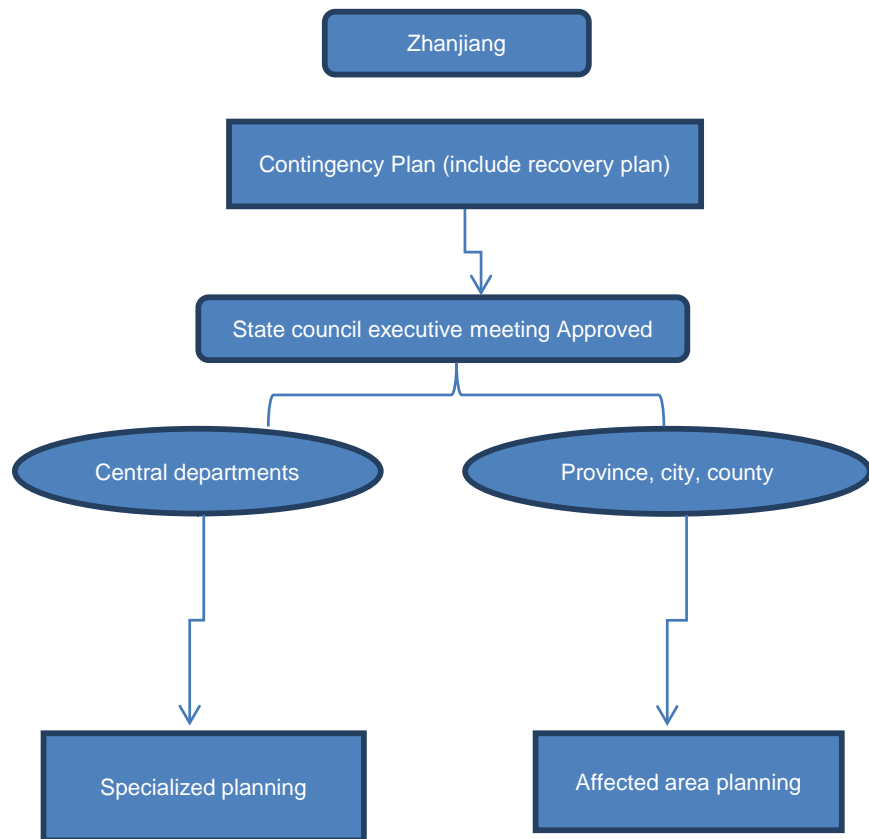
But in America and China, the recovery plan formulate plan is different, the two cities have a different governmental system. In America, local government, state government and federal government all have enough power to deal with the disasters. If the local government doesn't have enough ability to deal with the disaster, then they can ask the state government, the federal government for help. And the NGO, the community also plays an important role. But in China, the government system is much more centralized. Central government has the definitely great power to deal with disasters and offer technical and funding resource. This study focuses on the recovery plan to compare the specific difference in each country.

#### 4. Expected Findings

After data collection and documents reading of the community recovery plan formulate process in Galveston and Zhanjiang. The first hypothesis can be interpreted by the following finding. In America, the way of the recovery plan shows "from bottom to top" (see **Figure 1**), while in China, the recovery plan shows "from the top to bottom" (see **Figure 2**).



**Figure 1.** Community recovery plan process in Galveston (Long term community recovery plan, Galveston, Texas April 9, 2009).



**Figure 2.** Community recovery plan process in Zhanjiang ([www.recuecn.com](http://www.recuecn.com)).

In Galveston, Hurricane Ike made landfall in September 13, 2008. After ten weeks later, the planning process began. GCRC (Galveston Community Recovery Committee) led the recovery plan with 300 committee members selected to participate for the whole six weeks. It seemed the time was really tight in the beginning. The recovery plan was also guided by the experience of FEMA team, and the GCRC included a bunch of fellow Galvestonians and the design company member [10]. With the different power formulating the long-term recovery plan in local Galveston community, then the city council approved and applied, the federal government would offer technical and fund resource support [11]. The whole long-term recovery plan formulate process shows a way of from “the bottom to top” and accumulates different power to participate.

In Zhanjiang, after the Typhoon Caihong, there was not a specific recovery plan. However, there is an Emergency Plan that includes the recovery plan for all kinds of disasters. The emergency plan was formulated by the state council, and asked advice from the public, then the state council executive meeting approved. The overall emergency plan carried out in different central government departments, each department has a specific plan.

And different province carried out to different cities and counties, the affected areas need to have their own plan (see Figure 2). So this plan can be applied to Zhanjiang. The overall emergency plan formulating process shows the way of “from top to bottom”, the central government guides the whole process.

Then comes to the second hypothesis—In America, the civil participation is much deeper, for example, the local government, the state government, the federal government, community and NGO, while in China it's mostly the central government. From **Figure 1** and **Figure 2** we can see that the whole recovery plan formulate process in America collected the different powers of community, local government, design company, fellow Galvestonians and FEMA and government of different levels [12] [13]. Before the long-term recovery plan was carried out, it shows respect and professional attitude to formulate the plan, the civil participation is much deeper. But in China, almost only government of different levels can participate and central government can hold dominant position. There exists the public participation but only shows publicity for 3 - 7 days after the plan formulates. So the civil participation is really not high [14].

## 5. Expected Conclusion

### 5.1. Summary of Findings

Both counties have advantages in community recovery, the recovery plan and process they adopted conform with their own national conditions.

In America, the long-term recovery plan always formulated by different powers and shows a way of “from bottom to top”, this way can also improve the civil participation and make a better plan. In China, the government system is much centralized, central government has a domain position in dealing with public affairs. So the recovery plan in China shows a way of “from top to bottom”, this way limits the civil participation but can improve the efficiency of administration.

### 5.2. Expected Policy Implications

From the view of response, America collects different powers to participate, and made a long-term recovery plan for Galveston. But in China, Zhanjiang suffered the similar loss after Typhoon Caihong, but there wasn't a specific recovery plan for Zhanjiang, and fund resources basically come from individual saving and government financial funds.

However, as to China, there are special recovery plan after the Wenchuan Earthquake by the state council, but there is no special recovery plan for Caihong Typhoon, which means that the extent of disaster damage can lead to the relevant policy. Maybe the relevant recovery plan is needed to better deal with the recovery process for Zhanjiang. Typhoon in coastal cities is common every year, and a governmental mitigation and recovery plan is necessary.

### 5.3. Suggestions for Future Research

The recovery research is piecemeal, but recovery after disasters is kind of important because a good recovery work can lead to a better community than the situation before disaster and also help with the prevention of next disaster. But the Hurricane Katrina, Hurricane Ike and Hurricane Sandy all lead to a severely

destructive aftermath and a long term recovery. So what's the variable that affects recovery time is a worthwhile question to study.

Furthermore, the process of recovery plan carry-out and the result of recovery in America and China is also an interesting question to explore. I can't find enough data to prove that the carry-out process of recovery plan in America is long and in China the process is short and the recovery time in America is much longer than in China, so this is another question to explore [15].

Recovery is the last stage of disaster and also an important stage to prevent the next disaster. America has relatively developed policy system to deal with disaster, and China is trying to improve the disaster policy system. Each country has its own way to recovery, but learning from each country is also a good way to deal with disaster recovery. And international cooperation is also necessary. Disaster may happen in only one country, but with the development of the world, disaster is every country's responsibility.

## References

- [1] Lindell, M.K. and Prater, C.S. (2003) Assessing Community Impacts of Natural Disasters. *Natural Hazards Review*, **4**, 176-185.  
[https://doi.org/10.1061/\(ASCE\)1527-6988\(2003\)4:4\(176\)](https://doi.org/10.1061/(ASCE)1527-6988(2003)4:4(176))
- [2] Prater, C.S. and Wu, J.Y. (2002) The Politics of Emergency Response and Recovery: Preliminary Observations on Taiwan's 9/21 Earthquake. *Australian Journal of Emergency Management*, **17**, 48-59.
- [3] Peacock, W.G., Dash, N. and Zhang, Y. (2006) Sheltering and Housing Recovery Following Disaster. In: Rodriguez, H., Quarantelli, E.L. and Dynes, R., Eds., *Handbook of Disaster Research*, Springer, New York, 258-274.
- [4] Wu, J.Y. and Lindell, M.K. (2004) Housing Reconstruction after Two Major Earthquakes: The 1994 Northridge Earthquake in the United States and the 1999 Chi-Chi Earthquake in Taiwan. *Disasters*, **28**, 63-81.  
<https://doi.org/10.1111/j.0361-3666.2004.00243.x>
- [5] Xiao, Y. and Zandt, S.V. (2011) Building Community Resiliency: Spatial Links between Household and Business Post-Disaster Return. *Urban Studies*, **49**, 1-20.
- [6] Sapat, A. and Li, Y.M. (2011) Policy Learning and Policy Change: Katrina, Ike and Post Disaster Housing. *International Journal of Mass Emergencies and Disasters*, **29**, 26-56.
- [7] Chang, Y. and Wilkinson, S. (2012) Resourcing for Post-Disaster Reconstruction: A Comparative Study of Indonesia and China. *Disaster Prevention and Management*, **21**, 7-21. <https://doi.org/10.1108/09653561211202674>
- [8] Du, J. and Yang, S.N. (2013) Disaster Recovery in China and the United States—Case Study of Greensburg and Wenchuan. *Journal of Beijing Normal University (Natural Science Edition)*, **49**, 506-510.
- [9] Lv, L.L. (2014) A Comparative Study of Disaster System between China and the United States. *Disaster*, **29**, 206-213.
- [10] City of Galveston (2009) Long Term Community Recovery Plan.  
<http://wgipoa.com/GalvestonLongTermCommunityPlan.pdf>
- [11] Peacock, W.G. and Zandt, S.V. (2014). Inequities in Long-term Housing Recovery after Disasters. *Journal of the American Planning Association*, **80**, 356-371.  
<https://doi.org/10.1080/01944363.2014.980440>



- [12] Wan, X.Y. and Zhang, C. (2011) The influence of Disaster Plan System in Community Recovery: Case Study of Beiling in US. *Urban Planning International*, **4**, 10-15.
- [13] Federal Emergency Management Agency (2005) Long-Term Recovery Planning Process: A Self-Help Guide. Federal Emergency Management Agency, Washington DC.
- [14] Robert, B.O. and Laurie, A.J. (2014) The Evolution of the Federal Role in Supporting Community Recovery After U.S. Disasters. *Journal of the American Planning Association*, **80**, 293-304.
- [15] Zhang, Y. and Walter, G.P. (2010) Planning for Housing Recovery? Lessons Learned from Hurricane Andrew. *Journal of the American Planning Association*, **76**, 5-24. <https://doi.org/10.1080/01944360903294556>

Scientific Research Publishing

---

**Submit or recommend next manuscript to SCIRP and we will provide best service for you:**

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.

A wide selection of journals (inclusive of 9 subjects, more than 200 journals)

Providing 24-hour high-quality service

User-friendly online submission system

Fair and swift peer-review system

Efficient typesetting and proofreading procedure

Display of the result of downloads and visits, as well as the number of cited articles

Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact [jss@scirp.org](mailto:jss@scirp.org)

