



A Systematic Approach to Analysis and Prioritization of Socioeconomic Policies and Legal Barriers to Rapid Post-Disaster Reconstruction

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ABSTRACT: A community's goal, after a disaster, is to return to a normal level of functioning as quickly as possible. Hence, the barriers that cause delays in the post-disaster recovery phase are of high importance. Policy and legal barriers are the primary obstacles to a timely post-disaster recovery process. The objectives of this paper are to identify, categorize, and weight the socioeconomic policies and legal causes that affect the process of post-disaster recovery in the U.S. For this purpose, a thorough review was performed of more than 300 scholarly papers, then the socioeconomic policies and legal post-disaster recovery barriers (PDRBs) to timely recovery were identified and classified into either social or economic categories. Finally, the PDRBs were weighted and ranked through a survey, and some recommendations were presented for ways to prevent delays in the recovery process. Fifteen PDRBs in the social and economic categories were identified from past studies, and were weighted and ranked by subject matter experts (SMEs) in post-disaster recovery. This research assists in understanding how the PDRBs affect the timeliness of recovery after a disaster, and proposes ways to mitigate the delays. The results of this study will help the stakeholders and policymakers assess the policy and legal PDRBs, and achieve timely post-disaster recovery.

1 INTRODUCTION

Catastrophic disasters of different types frequently happen and affect millions of people all around the world every year, including the U.S. Hence, preparedness for rapid reactions and recovery is necessary in order to return the communities to normal functioning. Delays in the process of recovery affect the effectiveness of the process and cause difficulties in achieving planning objectives (Tagliacozzo, 2018; Rouhanizadeh et al., 2019b); therefore, the causes of the delays should be identified to formulate effective policymaking and planning (Moatty and Vinet, 2016).

Funding limitations can cause delays in the developmental investments, which lead to delays in the process of recovery (Wein et al., 2011). Eventually, delays in the recovery cause inappropriate allocations of resources and inefficiency of the governmental response (Siriwardana et al., 2018). Furthermore, delays can increase the vulnerability of a community to probable future disasters (Ferreira et al., 2016).

Both the local and federal governments have roles in planning for post-disaster recovery (Burby, 2006). Local recovery plans pertain primarily to managing the general conditions, coordinating the controlling of resources, measuring opportunities and barriers, managing the public input, and presenting a future view of the recovery (Amaratunga et al., 2018). Delays in recovery postpone the short-term goal of actualizing programs for disaster risk reduction (Amaratunga et al., 2018).

Recovery plans include two time periods: pre-disaster and post-disaster (Boyd et al., 2014). Pre-disaster recovery planning normally includes the integration of local planning efforts, coordination of community priorities, role assignments, and quick implementation (Schwab, 2010; Kermanshachi and Rouhanizadeh, 2018). Post-disaster recovery is a continuation of the pre-disaster planning and is critical to achieving timely

development (Schwab, 2010). It is not limited to reconstruction of the buildings; it is a complicated political, economic, and social process, (Tierney, 2012; Zhang et al., 2017).

In recent years, disaster recoveries have faced delays due to different causes. While the short-term recovery phase has comprehensively been investigated, the long-term recovery phase has not been studied in detail (Hettige et al., 2018; Kermanshachi et al., 2019). Furthermore, a lack of studies on legal and policy barriers to timely recovery, with a focus on the social and economic categories, is evident (Moe and Pathranarakul, 2006; Rouhanizadeh and Kermanshachi, 2019).

This paper investigates post-disaster recovery from legal and policy perspectives. By a comprehensive review of over 300 scholarly papers in the post-disaster reconstruction and recovery area, the objectives of this paper were determined as: (1) identification and categorization of socioeconomic legal and policy PDRBs that cause delays in the process of post-disaster recovery, (2) weighting and ranking of the PDRBs, and (3) suggesting recommendations to reduce recovery delays. The results of this paper will allow policymakers, such as governmental organizations; stakeholders, such as volunteer groups; international agencies; disaster-stricken communities; and researchers to evaluate the policy and legal PDRBs in order to achieve a sustainable recovery.

2 METHODOLOGY

The important socioeconomic policies and legal PDRBs that affect the timeliness of the post-disaster recovery process were primarily identified through a thorough literature review. The reviewed documents included various journal articles and published governmental reports. The database was formed by a review of over 300 research articles that comprehensively considered different aspects of the post-disaster recovery. To thoroughly analyze this database, a content analysis was then performed. In the second step, 15 of the PDRBs were analyzed and categorized into social or economic categories. The PDRBs in each category were weighted and ranked by conducting a survey. The categories and the corresponding PDRBs were explained and analyzed to thoroughly define the causes of the PDRBs and the way they affect the process of recovery. Finally, proper recommendations and suggestions were presented to decrease delays in the post-disaster recovery process. Figure 1 demonstrates the above-explained six-step methodology.

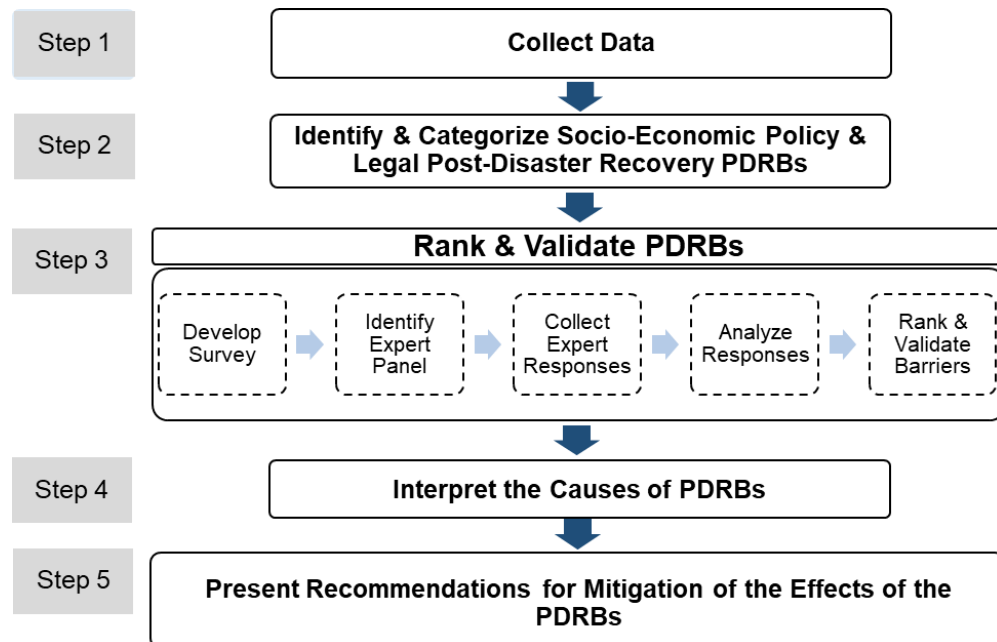


Figure 1. Research Methodology.

3 FINDINGS

Using policies and regulations during the post-disaster recovery results in the proper and timely return of communities to their normal lives. For post-disaster management, the four main categories of federal laws

are: mitigation, preparedness, response, and recovery. Local and state governments have policies that they implement while dealing with disasters. One of the organizations that implements these legislations is the Federal Emergency Management Agency (FEMA). The mentioned regulations are relative to transportation, housing, small businesses, funding, the environment, and other areas in which emergency provisions aim to return the society to its normal state by accelerating the recovery process. For instance, the Post-Katrina Emergency Management Reform Act, 2006, included a national framework through which adjustments were made to previous pre-disaster and post-disaster management and control systems. The percentage of each studied category in this research (social and economic), per the reviewed papers, is presented in Figure 2. As demonstrated, 62 percent of the studies focused on social PDRBs, while the economic PDRBs were addressed in 38 percent of the studies. Both of the categories and the corresponding PDRBs are presented and described in the following.

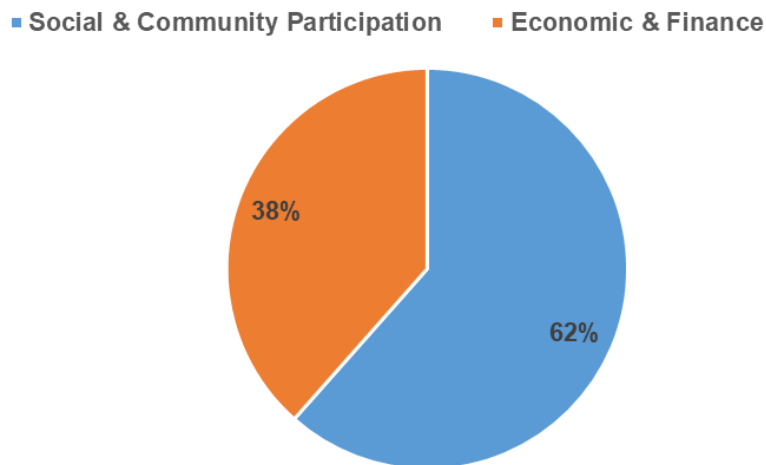


Figure 2. The Percentage of Studied Papers Based on Each Category

3.1 Social and Community Participation

Fair distribution of resources and equity are essential to achieving resiliency in a society (Nakagawa and Shaw, 2004). One of the significant features of a resilient society is its ability to return to its normal condition as quickly as possible (Cutter et al., 2010; Nipa et al., 2019). This is immensely dependent on the policies and legislations that have been determined by either the local or federal government (Kuwabara et al., 2008). Thus, the policies for recovery should consider participation of the public, as well as social equity, to decrease the probable recovery delays (Chamlee-Wright and Storr, 2009). In this regard, Kermanshachi (2010) found that collaboration among private and public parties increases efficiency of the construction and reconstruction processes significantly. As a result, policies and legislation should be established to distribute the recovery services in an unbiased manner so that all of the community, from different social classes, is treated identically. (Lindell and Prater, 2003; Rouhanizadeh et al., 2019a). Table 1 shows the PDRBs that are relative to the social and community participation category.

Table 1. Post-Disaster Policy and Legal PDRBs of Social and Community Participation Category

Post-Disaster Recovery Barriers
B1: Improper policies that instill fear and distrust of individuals in governmental organizations
B2: Weakness of the policymakers in encouraging people to perform prescribed actions for recovery
B3: Biased recovery service allocation for high-income people due to their ability to negotiate with the system
B4: Ignorance of land-use and construction standards in reconstruction process
B5: Negligence of condition of low-income affected people in the regulations for recovery
B6: Weakness of policymakers in receiving public acceptance of legislation changes in the post-disaster condition

The effects of natural disasters are greater on people from poor social classes, who are more vulnerable to such events (Fatemi et al., 2017). Land-use policies, as well as building codes and other standards, should be designed to increase the resiliency of a community and alleviate the negative effects of disasters (McDaniels et al., 2015). Many poor people neglect these codes, however, in an effort to decrease their expenses (Alipour et al., 2015). This issue might boost the devastation level, thereby reducing the speed of recovery. On the other hand, high-income citizens might be able to directly access policymakers because of their social connections, and their needs might be met simply due to these direct negotiations. Since the poor are more vulnerable to damages resulting from disasters, a quick response is more important for them. When this does not occur, the catastrophe expands, and the recovery process extends.

3.2 Economic and Finance

Despite efforts to improve the resiliency of communities during the past decades, the economic impacts of disasters have substantially increased (Jordan, 2012). Many researchers have long been interested in disaster-related financial and economic issues (Andriansyah, 2015), and many of them have declared that a connection to higher levels of government would increase a community's ability to recover very fast and to withstand the effects of a disaster (Morrow, 1999). For instance, people living in informal settlements or remote rural areas that are isolated might be neglected during the post-disaster recovery process, or might receive assistance and resources later than those living in urbanized areas (Miles and Chang, 2011). In contrast, people with a connection to the government may rapidly access resources, including technical expertise, funds for recovery, or even required trainings. A community's access to government resources is a critical element in obtaining help (Bolin, 1993). Dependence on external sources of funding leads to more delays in the process of recovery; accordingly, to accelerate the process, the long-term recovery funding should be provided by the local governments (Olshansky, 2005). Because the low-income class needs more funding for reconstruction and recovery purposes, policies and legislations should be flexible so that they can receive financial aid and loans promptly. In addition, tough rules prevent the poor from receiving assistance, making their recovery very slow. Table 2 presents the PDRBs relative to the economic and finance category.

Table 2. Post-Disaster Policy and Legal PDRBs of Economic and Finance Category

Post-Disaster Recovery Barriers
B7: Weakness of local governments in funding
B8: Delay in disbursement of emergency funds
B9: Lack of economic resources for recovery
B10: Lack of long-term recovery funding programs
B11: Policies which lead to income disparity and diversification of livelihoods
B12: Lack of legislation to enable immediate access to emergency capital (loans)
B13: Tough legislative criteria for low-income groups to obtain strong financial assistance
B14: Unavailability of Small Business Administration (SBA) loans to those with lower-than-average incomes
B15: Weakness or inability of housing providers and decision makers to help the low-income class cope with post-disaster financial demands

4 DISCUSSION AND RECOMMENDATIONS

Identifying the socioeconomic policy and legal PDRBs leads to understanding the deficiencies that can cause delays in the process of recovery. Therefore, some recommendations are provided to alleviate the negative effects of the PDRBs. For communities, one of the recognizable considerations ahead of an event is the establishment of a database of past post-disaster recovery experiences to enhance the awareness of the public and the decision makers. Pre-disaster exercises can be provided from the database for groups that are in charge and whose responsibilities should be clearly established to avoid conflicts and any consequential delays. The economic requirements for a successful and timely recovery can be estimated by looking at costs of previous disasters. The list of probable economic necessities assists the policymakers in assessing the preparedness of a resilient community overall, and the database might be expanded to include a Geographic Information System (GIS) software, through which a hazard recovery plan could be conducted. The planning should be both national and local to provide a strong preparedness (Schwab,

2014), and should consist of policy and legislation considerations. Through pre-disaster planning, timely post-disaster recovery can be evaluated, and the role of both the federal and local governments can be clearly determined. An urbanization approach to planning should be taken to guide the communities in their reconstruction. Proper planning increases the resiliency of the community by decreasing the potential delays and risks of rebuilding and redevelopment.

For a successful recovery, financial allocations should be clearly determined prior to the occurrence of disasters. The federal government provides financial assistance for housing to homeowners and renters, which may be utilized for rental, replacement, permanent housing construction, and repair (FEMA, 2014). When affected communities have no or partial government and/or private sources, some financial assistance will be fulfilled by state cooperation and FEMA (FEMA, 2008). Providing housing items, clothing, furnishings, and appliances are examples of such assistances. Since many businesses might stop working due to disasters, the rate of unemployment increases after a disaster (FEMA, 2008); thus, this should be considered as part of the planning. Public training on how to be prepared for disasters, especially for the poor and low-income community, will ensure their safety and will facilitate a faster recovery (FEMA, 1994). Providing property tax relief for home purchases in a post-disaster time period and using fast-tracking approaches for reconstruction are also recommended (Schwab et al. 1998).

5 WEIGHTING AND RANKING THE PDRBS

After determining and categorizing the socioeconomic policies and legal PDRBs, a survey was developed to evaluate the impact of the PDRBs on the timeframe of recovery. The survey was distributed to 500 SMEs in disaster recovery, from which 30 experts from a variety of organizations provided responses. The targeted organizations were local emergency management agencies in hurricane-affected states, FEMA, Red Cross, and other professionals who have had experience with post-disaster recovery (Table 3). The targeted experts were familiar with legal barriers and all of them had a education level of higher than bachelor of Science.

Table 3. Demographic Information of the SMEs Participated in the Survey

Occupation	Total Number of Participants	Number of State Level Participants	Number of National Level Participants
Emergency Manager	8	5	3
Project Manager	6	4	2
City Official or Staff	6	6	
State Social Services Director	5	5	
Chief Executive Officer (CEO)	3		3
State Recovery Section Chief	2	2	
Total	30		

The SMEs were selected with criteria of having more than 10 years of experience in the post-disaster recovery process, and a high level of education. Table 4 demonstrates the education level of the expert participants in this survey. Of the 30 SMEs, 28 had a bachelor's degree or higher, and 5 had a doctoral degree.

Table 4. Level of Education of the SMEs

Education Level	Number of Participants
Bachelor's degree in college (4-year)	15
Master's degree	8
Doctoral degree	5
Professional degree	2
Total	30

The survey consisted of 30 questions, including demographic questions about the SMEs' experience, as well as the opportunity for them to score the 15 identified PDRBs. It was pilot-tested in order to assess the clarity and readability of the questions and to ensure its viability. The SMEs were asked to score all of the

PDRBs individually on a recovery timeframe, based on a seven point Likert-scale format. The lowest score, declaring no effect, was 1, and the highest score, indicating the highest importance level, was 7. The mean value of the scores for all of the PDRBs is shown in Table 5. As shown, the socioeconomic policy and legal PDRBs were ranked, both in each category and accumulatively, according to their impact on timely post-disaster recovery. B10, “*Lack of long-term recovery funding programs*” was identified by the SMEs as the most influential PDRB in both of the categories.

Table 5. Score and Rank of the PDRBs

ID	PDRB/Category	Rank Within Category	Cumulative Rank	Score
<i>Social and Community Participation</i>				
B3	Biased recovery service allocation for high-income people due to their ability to negotiate the system	1	5	5.62
B2	Weakness of the policymakers in encouraging people to perform prescribed actions for recovery	2	7	5.45
B5	Negligence of conditions of low-income affected people in the regulations for recovery	3	8	5.33
B4	Ignorance of land-use and construction standards in reconstruction process	4	9	5.29
B6	Weakness of policymakers in receiving public acceptance of legislation changes in the post-disaster condition	5	12	5.12
B1	Improper policies that instill fear and distrust of individuals in governmental organizations	6	15	4.95
<i>Economic and Finance</i>				
B10	Lack of long-term recovery funding programs	1	1	6.20
B7	Weakness of local governments in funding	2	2	6.15
B12	Lack of legislation to enable immediate access to emergency capital (loans)	3	3	6.12
B8	Delay in disbursement of emergency funds	4	4	5.95
B15	Weakness or inability of housing providers and decision makers to help the low-income class cope with post-disaster financial demands	5	6	5.58
B14	Unavailability of Small Business Administration (SBA) loans to those with lower-than-average incomes	6	10	5.29
B13	Tough legislative criteria for low-income groups to obtain strong financial assistance	7	11	5.20
B9	Lack of economic resources for recovery	8	13	5.12
B11	Policies which lead to income disparity and diversification of livelihoods	9	14	5.08

6 CONCLUSIONS

Federal, state, and local governments play an important role in recovery by considering sufficient policies and legislation for the post-disaster recovery process. The adoption of appropriate policies, especially the socioeconomic ones, is vital to the capacity of a system to return to a normal state after a disaster occurs. Slow recovery is caused by many factors, but delays are one of the biggest problems that affect post-disaster recovery and resiliency. This paper strived to develop insight into post-disaster recovery by identifying, categorizing, and weighting the socioeconomic, legal, and policy PDRBs. Through a comprehensive literature review, including more than 300 scholarly papers, 15 PDRBs relative to socio-economic categories were identified. A survey was developed and distributed to 30 SMEs in post-disaster recovery, in which they were asked to weight and rank the identified PDRBs. Finally, practical recommendations were presented that help to mitigate the negative impacts of the PDRBs, based on the lessons learned from previous disasters and by interpreting the issues due to the policies and planning. The PDRBs were ranked in the category in which they belonged, and also cumulatively. The results showed

that “*Lack of long-term recovery funding programs*” was the most prominent PDRB that causes delays in the post-disaster recovery process. Among the proposed recommendations, some were related to the pre-disaster period, and some to the post-disaster period; however, most of the policy and legislation PDRBs related to the pre-disaster timeframe. Insightful planning that considers the various aspects that affect the recovery process, as well as preparing for the disaster, are the most effective general recommendations for decreasing delays that are due to policy and legal PDRBs.

This research will assist policymakers to achieve timely post-disaster recovery by providing valuable knowledge for assessment of the PDRBs. Furthermore, the results of this research will help decision prioritize their plans for the occurrence of a disaster.

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