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The Impact of Post-Disaster Reconstruction Policies on Different Categories of Households in Bam, Iran

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Abstract

Previous studies in the field of disaster management have found that housing reconstruction programs can facilitate the recovery of households, or make them even more vulnerable. Although it is believed that reconstruction policies should be aimed at reducing vulnerabilities and enhancing resilience, there is still insufficient knowledge about *how* these policies can affect different groups of households. The purpose of this paper is to bridge this gap by exploring the impact of reconstruction policies implemented after the 2003 earthquake in Bam (Iran) on different groups of households. This detailed, qualitative case study recognizes ten categories of households affected by policy, using a set of indicators that include ownership rights, sources of livelihood, social connections, quality and location of houses, relationships between households and authorities, impacts of the disaster on households, and the type and quality of temporary houses received after the disaster. The findings then confirm that pre-disaster vulnerabilities and conditions (that vary significantly among household groups) largely determine the success or failure of policies. For instance, pre-disaster house-owners rebuilt their permanent houses fast and policies helped them returned to a “normal life” quickly. Instead, tenants and apartment owners - who before the disaster relied on a complex social fabric based on proximity - were adversely affected by policies that allocated them a unit in a residential complex located in the city outskirts. The findings can help academics and practitioners understand the effective impact of reconstruction policies in affected households.

Keywords: Households, Policy, Housing Reconstruction, Vulnerabilities, Bam, Iran.

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Objective and Methods

In the last decades, disaster and reconstruction-related studies have made a considerable endeavor to ascertain the variables behind the failure and success of reconstruction programs. Numerous studies have examined the short and long-term impacts of interventions on settlements to pave the way for the improvement of reconstruction policy (Alexander, 2008). Duyn-Barenstein (2006), for instance, explores how the reconstruction of houses after the 2004 tsunami in Tamil Nadu paid less attention to the social-cultural and environmental conditions, destroying peoples' cultural identity and livelihood resources. Other authors have found that reconstruction policies adopted after disasters often neglect the variety of households and the diversity of their needs and desires (Aysan & Oliver, 1987), and fail to consider how they affect residents differently (Aldrich, 2012).

This study aims at exploring *how* housing reconstruction policies affect different households and influence their capacities to recover. It is based on a detailed, qualitative case study of the permanent housing reconstruction program conducted after the devastating earthquake that struck the historic city of Bam in Iran on December 26, 2003. The study examines the evolution of pre- and post-disaster conditions among different household types affected by the disaster. The results are obtained from 12 interviews with stakeholders and authorities, 70 interviews with local residents, five visits (the last one in July 2014), and the comprehensive review of more than 32 reports and 6 policy documents, including minutes of project meetings, contractual documents and agreements, press releases and construction documents, and the 11 thematic reports¹ of the Bam Reconstruction Documentation Project (BRDP) conducted by Housing Foundation (HF).

Before the earthquake, Bam had 98,145 inhabitants. It is estimated that the earthquake claimed more than 30,000 lives, destroyed around 39,000 homes and left 70,000 people homeless (Asgary et al., 2006; Gharaati et al., 2008; Omidvar et al., 2010; Statistic Center of Iran, 2003). For the purpose of this study, affected households were classified according to a set of five indicators that address their most significant pre-disaster conditions, two indicators of impacts of the disaster on households, and one indicator of the way the program responded to these conditions. The eight indicators are: pre-disaster (1) ownership rights, (2) sources of livelihood, (3) social connections, (4) quality and location of houses; as well as (5) relationships between households and authorities, (6) casualties and emotional impacts of the disaster, (7) physical impacts of the disasters, and (8) type and quality of temporary houses received after the disaster.

By a combination of all variables, households could be categorized in more than 1000 types. However, the detailed observation of social constructs on the ground, the experience of the main researcher with Iranian social groups, the identification of the most significant communities, the responses of interviewees regarding social groups and the analysis of demographic data (notably the social groups identified by the Statistics Center of Iran), revealed that 10 main types of households can be considered socially representative in the city. They are: (1) house-owners who received masonry temporary houses, (2) house-owners who received prefabricated temporary

¹- The publications by the BRDP project include the following themes: 1- Relief and rescue process, 2-Debris removal process 3-Temporary housing process, 4- Participatory approach, 5- Project management, 6- Resource management, 7- Permanent housing process (planning and designing), 8- Involved Non-Government Organizations (NGOs), 9- Needs assessment and damage assessment, 10- Control and monitoring techniques, and 11- Indexing resources.

houses, (3) house-owners relocated in apartments, (4) relocated apartment owners, (5) members of extended families whose livelihoods depended on the household head, (6) members of extended families whose livelihoods did not depend on the household head, (7) employees of the local government, (8) tenants, (9) informal settlers, and (10) couples that married after the disaster. The households' characteristics and an estimated (not statistically validated) demographic distribution of the population in each category are developed in Section A of Table 2 and Figure 1.

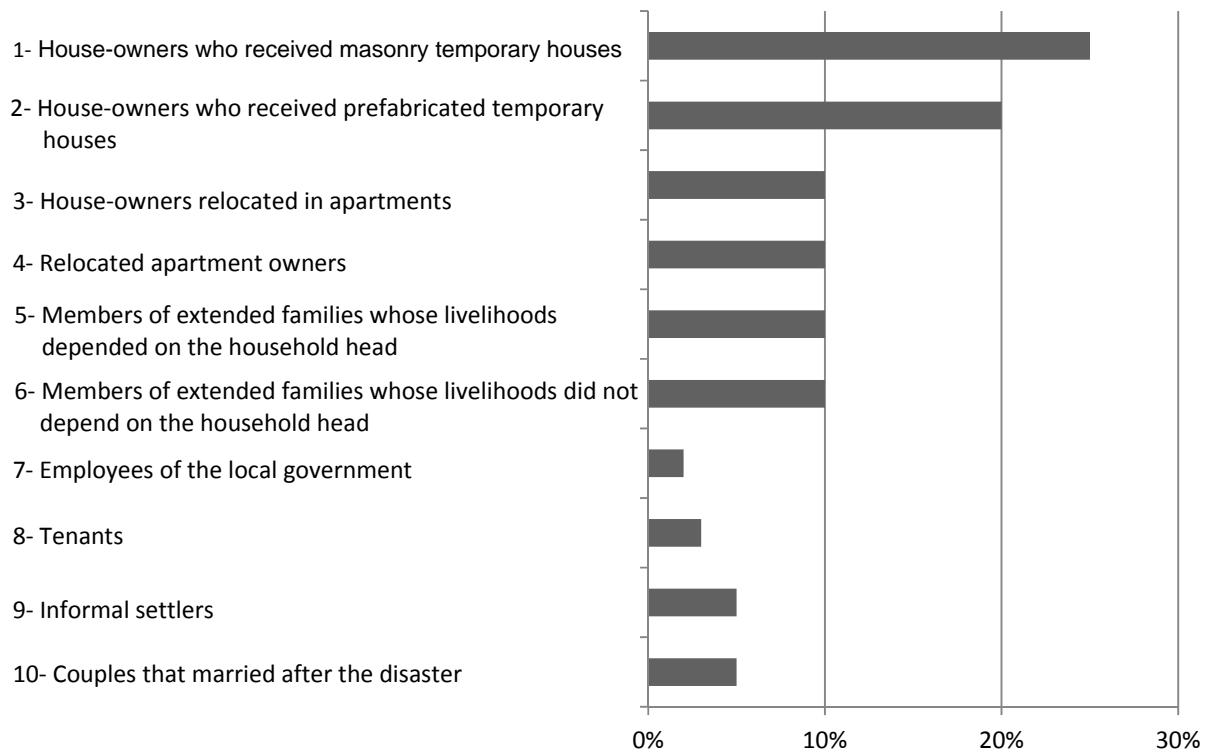


Figure 1: Estimated demographic distribution of the affected population in each different category

Housing Reconstruction Policy after the 2003 Bam Earthquake in Iran

Immediately after the earthquake, the Iranian government set up the Reconstruction Supervision and Policymaking Association (RSPA), an inter-ministry organization headed by the Minister of Housing and Urban Development with an extensive power only similar to the president's cabinet (Fallahi, 2007; Fayazi, 2012; Fayazi et al., 2013a). The Housing Foundation (HF) was quickly identified as the sole housing reconstruction executor. In order to prevent the emergence of parallel organizations and excessive bureaucracy, the RSPA designated the HF to coordinate the relationship between contractors, banks, affected families, and the municipality. The RSPA then established three strategic objectives based on nine critical policies that applied to all residents affected by the disaster (Table 1). The program helped households rebuild about 26,900 houses after the disaster. Besides, The HF built about 2,300 apartment units located in 50 multi-storey residential complexes located on the eastern side of the city (Ghafory-Ashtiany & Hosseini, 2008).

Table 1: The housing reconstruction policies and objectives adopted after the 2003 Bam earthquake

Main Objectives	Policies
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- | | |
|--|---|
| <ul style="list-style-type: none"> A. To empower affected communities and families, B. To preserve Bam's historical and cultural identities, and C. To reconstruct the city safely, increasing its capacity to withstand future disasters and prevent damages and casualties. | <ol style="list-style-type: none"> 1. To provide equal compensation and resource distribution between households - 5% interest loans (of about 10.750 US\$) to all affected households 2. To provide temporary houses for all 3. To use the maximum amount of families' participation in the design and implementation of permanent houses 4. To reconstruct the city at the same place 5. To preserve pre-disaster social connections and neighborhood structures 6. To respect inhabitants' desires and consider climate conditions in the design of houses 7. To disseminate transparent information between families, contractors and decision-makers 8. To introduce new construction technologies and materials, and train in safe construction principles both families and local construction workers 9. To retain pre-disaster ownership rights and help tenants and informal settlement dwellers gain ownership rights |
|--|---|

The Impact of Policy on Households

Single families, who owned traditional houses before the disaster, were able to place temporary shelters in the yards of their destroyed houses. This allowed them to live close to their assets, stay in touch with their neighbours and friends, and take care of their data gardens, which often provided their main source of livelihood (Rafieian & Asgary, 2013). This type of households started the reconstruction of their houses fast, participated actively in design and implementation, and received sufficient training about safe construction technologies and use of new materials (see categories 1 & 2 in Table 2). Yet, the quality of temporary houses that were developed played a crucial role in households' recovery. 'Temporary' units made of masonry (with safe construction techniques) eventually provided an extra bedroom or an area for resuming domestic businesses after the reconstruction of permanent houses. Prefabricated units, instead, did not last long and became delapidated and of little use for residential purposes (Figure 2 and the category 2 in Table 2).



Figure 2: Temporary units made of masonry materials became extra rooms after reconstruction

The collapse of traditional houses, which caused numerous casualties, caused long delays, additional costs and difficulties in the process. The value of the financial aid provided by the government decreased because of rising inflation at that time, eroding the capacity of households to reconstruct their houses. Thus, some house-owners were never able to reconstruct their houses and eventually moved into apartments in the newly built residential complexes (category 3 in Table 2).

The vast majority of pre-disaster apartment owners met significant technical, logistic and legal challenges in the reconstruction of their buildings – such as the complexity of dealing with

inheritance laws when neighbors died. Therefore, the majority of them lived in camps of temporary houses and then moved into the new residential complexes built in the outskirts of the city, in Razmandegan Town. (Category 4 - Table 2).

Before the disaster, hundreds of young couples rented one or some rooms in their parents' houses. Many of them lived from harvesting their parents' data gardens or had their small businesses. Even though many had lived in rooms located the yards of the destroyed houses and stayed temporarily with their parents after the disaster, they were not allowed to reconstruct new houses in the same yard. This resulted in two different cases. Many of the young couples who had their small business (and thus were economically independent), were able to buy a piece of land, borrow money and build a new house (Table 2 - Category 5). Instead, those who lived from harvesting their parents' garden could hardly afford a piece of land. Three years after the disaster, they received a loan to acquire an apartment in the new residential complexes located in Razmandegan Town. Yet the majority of those who adopted this solution lost access to their previous livelihood (Figure 3 and the category 6 in Table 2).



Figure 3: Residential complexes located in the periphery of the city (Razmandegan Town)

Employees of the local government who were tenants before the disaster often had poor relationships with their neighbors and weak social connections (category 7). They were moved to temporary camps, where the majority of them stayed for more than 18 months, suffering from severe climate conditions and insecurity. Most of them were satisfied when they received in 2005 and 2006 a 10,750 US\$ loan to acquire their own apartment on the residential complexes. (See Figure 4)

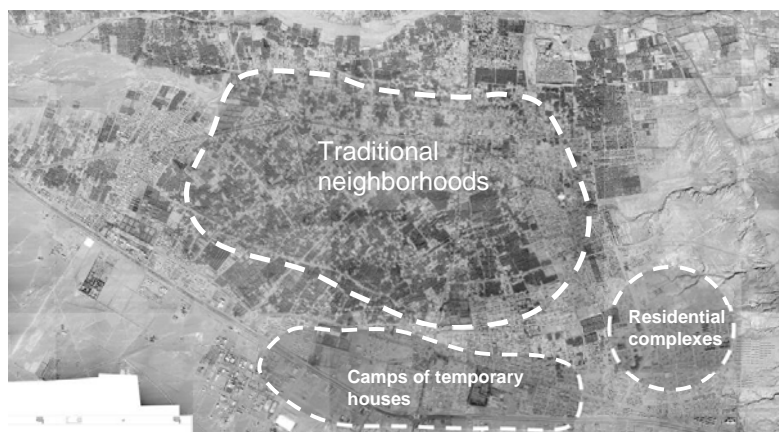


Figure 4: Location of the main areas. Photo by Statistical Center of Iran

Hoping to receive funds to build new houses, some pre-disaster-tenants rushed to buy land at cheap prices in the outskirts of the city (in Janbazan Town). However, the municipality did not give them permissions to construct new houses in this area. It is estimated that more than 100 affected families carried their prefabricated temporary housing units from the camps to Janbazan and formed an informal settlement (see Figure 5 and category 8 in Table 2).



Figure 5: Informal settlement (Janbazan) in the outskirts of the city

Before the disaster, a (still unknown) number of households lived in an informal settlement in the eastern side of the city. Reconstruction policy considered them equal to the rest of the affected families in Bam and gave them the opportunity to receive loans. With the help of the loans, they bought units in the new residential complexes (Table 2 – Category 9). The government also gave them equal access to basic services, reducing their pre-disaster socio-economic vulnerabilities.

In order to accelerate social and psychological recovery, the reconstruction program encouraged single youngsters to marry; and gave these new couples a 10,750US\$ loan to reconstruct a house or purchase an apartment in the new residential complexes (Table 2 - category of 10). It is estimated that about 3500 new couples were created in the next 5 years after the disaster (Fallahi, 2007; Fayazi, 2012).

Table 2: Section A: categories of households - Section B: the impacts of policies on the households

Section A	VARIABLES	CATEGORIES OF HOUSEHOLDS													
		1	2	3	4	5	6	7	8	9	10				
Pre-disaster conditions	Ownership	House owners	X	X	X										
		Apartment owners				X									N
		House tenants					X	X		X					A
		Apartment tenants							X						
		Without legal ownership rights										X			
	Sources of livelihood	Domestic manufactory - Agriculture (harvesting date)	X	X	X			X							
		Small businesses			X		X					X	X		
		Labour of building industry								X	X				
		Employees of local government				X			X						
	Lifestyle	Lease of houses	X												
		Single families	X			X	X	X	X	X	X				N
		Extended families		X	X							X			A
	Social connections	Having strong social connection and sense of attachment to place	X	X	X	X		X		X	X				N
		Weak social connections and no sense of attachment to place					X		X						A
	Location	Inner-city (downtown)		X	X		X								
		Affluent neighbourhood	X					X							N
		Low-income neighbourhoods				X			X	X					A
		Informal settlements (in the outskirts of the city)										X			
	Connection with local institutions and authorities	Having connection with neighborhood associations, city councils, municipality, and other authorities	X				X								N
		Without connection with neighborhood associations, city councils, municipality, and other authorities		X	X	X		X	X	X	X	X			A
Impacts of the disaster	Loss of bodies and emotional impacts	Minor impacts (no loss of family members)	X	X		X		X	X					X	
		Major impacts (loss of family members and deep depression)			X		X			X	X	X		X	
	Physical impacts	Traditional houses (collapsed entirely after disaster)		X	X		X			X	X				
		Semi-traditional houses (destroyed largely and unsafe to occupy)	X					X						N	
		Multi-floor apartments (severely damaged)				X								A	
		Multi-floor Apartments (slightly damaged)							X						
Temporary houses received after the disaster	Masonry units built in the yard of destroyed houses	X				X									
	Prefabricated units in the yard of destroyed houses		X				X								
	Camps in the outskirts of the city or inside the city			X	X			X	X	X					
Section B THE IMPACTS OF POLICIES															
	Owning a piece of land to reconstruct their houses	X	X	X	-	X	-	-	X	-	-				
Reconstructing houses on their lands (receiving the loans to reconstruct house)	Adjacent to destroyed houses (no-relocated)	X	X	-	-	-	-	-	-	-	-	-	-		
	Land bought after the disaster (relocated)		-	-	-	X	-	-	-	-	-	-	-		
	Receiving an apartment in the residential complexes located on the periphery of the city (receiving the loans to acquire an apartment)	-	-	X	X	-	X	X	-	X	X				
	Participating in the design and reconstruction of permanent houses (choosing the design, technology and materials)	X	X	-	-	X	-	-	-	-	-	-	-		
	Managing the housing reconstruction process	X	X	-	-	X	-	-	-	-	-	-	-		
	Participating in the implementation of housing reconstruction process (learning the safe construction technology and the use of new materials)	X	-	-	-	X	-	-	-	-	-	-	-		
	Direct contact with the reconstruction institutions	X	X	-	X	X	X	X	-	X	X				
OVERALL RECOVERY		X	X	-	-	X	-	X	-	X	X				

Discussion and Conclusions

The reconstruction policies adopted in Bam benefitted some groups of households but affected others adversely. Single-family-homeowners who had more than one source of income and strong social connections had the greatest chance of recovery. They had the opportunity to stay in the yard of their destroyed houses during the phase of temporary housing and to participate in the reconstruction of their permanent houses. The pre-disaster house-owners, apartment owners and tenants who could buy a piece of land built permanent houses fast and resumed activities quickly. Similarly, pre-disaster tenants, who were not closely dependent on their neighbors and social communities, and single persons, who married after the disaster, were satisfied with the chance given to them to own new apartments.

On the other hand, pre-disaster tenants and apartment owners who could not afford a piece of land and were economically, socially, and emotionally dependent on their neighbours, their extended family and their communities, were adversely affected when moved into the new residential complexes. Different pre-disaster conditions, priorities, and needs caused dissimilar levels of satisfaction amongst households. While the acquisition of a new apartment decreased tenants' vulnerabilities in different dimensions, for many of them, living in residential complexes was similar to exclusion from their communities. They deplored the increase in transportation costs, the loss of social networks and the limited capacity to receive family and friend support.

This study illustrates *how* housing reconstruction policies impact affected households differently. It reveals how housing reconstruction policy sometimes oversimplifies vulnerabilities and overlooks the existence of pre-disaster heterogeneous conditions. The effectiveness of reconstruction programs depends on respecting varieties and differences. If the objective of housing reconstruction programs is to recover households equally and effectively, scholars and practitioners need to recognize these differences and make policies that reflect them. The one-policy-for-all approach cannot effectively lead to the recovery of affected families.

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Author's Biography



Mahmood Fayazi is a Ph.D. candidate affiliated to the IF Research Group at the School of Architecture of Université de Montréal. He has solid experience in research, implementation and management of post-disaster reconstruction projects. He was involved in important projects after several earthquakes in Iran including; Bam, 2003; Zarand, 2004; Lorestan, 2005; and Semnan, 2009. He has taught at Université de Montreal and the Universities of Azad in Iran. He also has given lectures in McGill University and Université de Montreal.



Faten Kikano is a Ph.D. student affiliated to the IF Research Group at the School of Architecture of Université de Montréal. She was self-employed for 20 years as a designer and a consultant. She has taught design courses at the Lebanese American University, the American University of Science and Technology, and Académie Libanaise des Beaux-Arts in Lebanon. Her research is to explore the appropriation of space in self-made and in organized camps. Her research focus is more on the Syrian refugee camps in Lebanon.



Gonzalo Lizarralde is a Professor at the School of Architecture of Université de Montréal. He has long experience in consulting for architecture and construction projects and has published important research in the fields of low-cost housing and project management. Dr. Lizarralde is the director of the IF Research Group (grif) of Université de Montréal, which studies the processes related to the planning and development of construction projects. He is a founding member of i-Rec.