



Stakeholder management in disaster restoration projects

Bassam Baroudi

*School of Natural and Built Environments, University of South Australia,
Adelaide, Australia, and*

Randy R. Rapp

*Department of Building Construction Management, Purdue University,
West Lafayette, Indiana, USA*

Abstract

Purpose – This paper aims to identify stakeholder issues on disaster restoration projects from a contractor perspective. Disaster occurrences normally warrant substantial restoration and reconstruction efforts. These projects involve the mitigation and repair of disaster-affected buildings and structures.

Design/methodology/approach – This study is essentially exploratory in nature. It reviews relevant literature and then presents empirical research findings garnered from disaster restoration practitioners. A survey using the Likert rating scale method was used. The data were collected via an online questionnaire survey.

Findings – The results confirm that disaster restoration projects contain significant stakeholder issues and challenges. Furthermore, these can differ from conventional construction and the work of “first responders” to disaster situations. Hence, disaster restoration projects are seen as having their own unique identity.

Research limitations/implications – This paper has only set out to uncover stakeholder issues on disaster restoration projects. Future research that delves into the issues in greater depth would be useful.

Practical implications – Disaster restoration practitioners need to be aware of conflicting stakeholder interests. These need careful management so that stakeholder issues do not impact successful project outcomes. Hence, informing industry (and academia) on these issues carries significant importance.

Originality/value – Past research has tended to adopt macro perspectives on disaster preparedness, response and management. This research focuses on repairing and restoring disaster-affected buildings and structures from a restoration industry standpoint. The findings should be useful to the global disaster restoration community and those in associated fields.

Keywords Disaster, Contractors, Buildings, Stakeholder management, Restoration, Structures

Paper type Research paper

Introduction

Disasters come in many forms and can be categorised into natural, man-made and hybrid types (Shaluf, 2007). Natural disasters include flooding, hurricanes, earthquakes and tsunamis. Man-made disasters include fire, transport accidents, radiological contamination and war. The hybrid types combine both natural and man-made

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disasters. Disasters are often termed “catastrophic” in nature, for example, a natural phenomenon over a wide area that causes death and destruction (Braga *et al.*, 2008). However, with restoration and reconstruction projects, disasters are also seen in lesser terms limited to smaller occurrences such as a building fire.

It is widely held that the occurrence of disasters is on the increase (Ofori, 2004; Freeman, 2004; Kitamoto, 2005; Whybark, 2007; Kovacs and Spens, 2007; Boshier *et al.*, 2009). Furthermore, a recent US Government study shows that the country recorded more billion dollar disasters in 2011 than at any time before (NCDC, 2011). This does indicate that disaster events are a mounting problem for the developed and developing world. As such, the interest in disaster recovery and its related outcomes are attracting significant attention.

In the context of this study, disaster recovery can be described as the restoration and reconstruction of disaster-affected structures (Rapp, 2011). This study focuses more specifically on the restoration aspect involving the mitigation and repair of the built environment. It would appear that there is ample literature on disaster management operations at the macro level that cover perspectives of government, emergency agencies, relief organisations, building regulators, designers and those who do not physically rebuild damaged structures. However, there is little information in respect to contractor perspectives on disaster restoration or reconstruction projects. This research redresses this situation from the disaster restoration standpoint.

Disaster restoration

A major part of disaster recovery is the undertaking of building restoration projects. Peacock *et al.* (2007) see building restorations as “restoration of the restorable”. This would apply to buildings which have only suffered limited damage, not requiring demolition or complete rebuilding. In contrast, Chandrasekhar (2010) uses the term “restoration” in the context of restoring services and infrastructure for the community immediately after a disaster. Restoration contractors may disagree with this definition, as they view “restoration” more specifically in terms of restoring buildings and structures to their original condition, and in many cases not immediately post disaster.

Alexander (2004) points to the inadequacy of many post-disaster arrangements, arguing that in the haste to rebuild, restorable buildings are often demolished to make way for newly constructed buildings. Hence, thorough and appropriate post-disaster planning and assessment is required to ascertain what can be saved and what cannot by appropriate government authorities. Furthermore, Zillante *et al.* (2010) suggest the recovery effort with respect to the repair and reconstruction of buildings needs government and community to cooperatively work together. Coles and Buckle (2004) add that effective disaster recovery can only take place if the whole community works behind the effort. However, the community must have the capacity and knowledge to undertake the required works.

Few studies illustrate the depth of the disaster restoration problem. However, Spafford-Ricci and Graham’s (2000) investigation of the Royal Saskatchewan Museum fire in Canada provides some insight into restoration projects. In this case, the museum needed to be promptly brought back into operation post fire. As such, restoration activities focused on building areas that required the least rehabilitation and were easiest to reinstate, and then followed onto the more extensively damaged areas. In this instance, a staged approach was taken to the restoration work, with building areas

broken down into sub-projects. [Rotimia et al. \(2006\)](#) also provide some insight within the area. They highlighted how local contractors were of limited assistance after the 2004 Manawatu Flood in New Zealand. It was found that larger national contractors were more valuable, as these companies had prior established networks across the country and therefore had greater capability to draw in the required resources.

The disaster restoration field has become an industry within its own right. The USA appears to be well advanced, with [Armstrong \(2000\)](#) suggesting that they are ahead of countries such as the United Kingdom. This contention is based on the USA having many dedicated organisations specifically set up to deal with disaster remedial work. He strongly advocates education and training programmes to improve skills within the restoration field. Organisations such as the Restoration Industry Association (RIA) also support and promote disaster restoration education via their industry involvement. The RIA is based in the USA and has a global membership of > 20,000 restoration practitioners ([RIA, 2012](#)). As such, the RIA is seen as one of the most influential bodies within this field, particularly in the area of restoration industry development. For example, RIA's Certified Restorer[®] credential is at the pinnacle of certifications having the aim of improving practices via developing, teaching and promoting an industry body of knowledge.

Restoration stakeholders

Leading project management publication *PMBOK[®] Guide* ([PMI, 2008](#)) defines stakeholders as any person or organisation that is either actively involved in, affected by or can influence a project. [Freeman and McVea \(2001\)](#) describe stakeholders as being any person or group that is in some way affected or in return can have an effect on an organisation reaching its objectives. [Preston and Sapienza \(1990\)](#) discuss stakeholders in terms of their identification as well as the balancing of their many interests. [Sutterfield et al. \(2006\)](#) contend that in a general sense projects often fail due to the ineffective management of various project stakeholders with their sometimes hidden and conflicting agendas. [Preble \(2005\)](#) places the utmost importance in an organisation effectively managing the participation of primary stakeholders such as shareholders, customers, employees and suppliers. Additionally, external stakeholders such as those in the general community need consideration.

[Asgary et al. \(2006\)](#) contend that disaster stakeholders include persons, groups or organisations that are affected by reconstruction processes and can either support or oppose plans, policies or projects. In essence, they are referring to the affected community. [Rotimia et al. \(2006\)](#) say that post-disaster stakeholders can include asset owners, businesses, government departments, insurance companies, construction and reinstatement organisations, welfare agencies, charities and funding organisations. [Chang et al. \(2010b\)](#) see the construction marketplace and its players as significant stakeholders within disaster recovery. [Wein et al. \(2011\)](#) see local government as a major stakeholder in post-disaster efforts, having an interest in physical recovery, such as restoring the built environment, as well as broader social and economic redevelopment. In the disaster context, [Haigh and Amaratunga \(2010\)](#) put forth that we must first understand what constitutes the built environment, and then consider the nature of the stakeholders that create and maintain it. However, where they and many authors fall short is providing understanding of what drives disaster restoration stakeholders; that is, those people at the coalface of resurrecting damaged buildings and structures.

Chang *et al.* (2010a) contend that resourcing problems exist during post-disaster recovery, with supply systems disrupted through damaged facilities and general disorder within the construction marketplace. Furthermore, shortage of people with professional expertise and appropriate skills can create significant problems. This was the case in the 2005 Sri Lanka tsunami as well as the 2005 northern Pakistan earthquake (Hayles, 2010). These types of issues produce challenges for stakeholders on a broad scale, particularly in underdeveloped countries. Maki and Hayashi (2005) suggest that disaster recovery and reconstruction requires a more holistic view. They say that comprehensive planning with stakeholder involvement while new within this area is an essential requirement.

Rubin (2007) discusses insurance companies and the “restoration, rebuilding and resurrection” post 1992’s Hurricane Andrew in southern USA. He suggests that competing interests between various stakeholders such as homeowners, commercial owners and industry for higher insurance payments created problems that in the long-term were not of benefit to the community. Soetanto *et al.* (2008) contend that flood situations generally end with the original value of properties mostly retained once restorations are complete. However, they also suggest that some properties become “unsaleable” due to financial reasons. For example, property prices could undergo discounting after a disaster event such as flooding. In these cases, owners may not be able to acquire funding against the property from lenders for restoration works. This would be due to the owner’s accumulated mortgage debt exceeding the estimated sale price. Thus, the area of restoration funding can often create stakeholder tension.

The above highlights the many and varied interests of stakeholders during disaster recovery. These have to be effectively managed to secure desirable and harmonious outcomes. As such, there has been significant research on disaster management and recovery. However, this study separates itself from past research by looking at specific stakeholder management issues from a restoration industry perspective.

Research method

A survey containing important disaster restoration questions was formatted. A Qualtrics online questionnaire survey was used with a series of general demographic questions, followed by 28 specific disaster restoration questions. Of the 28 specific questions, 15 were directed at disaster restoration stakeholder management. The other questions related to disaster restoration leadership and education and are not within the scope of this study. The specific survey questions were crafted by a process of examining key issues raised via the literature review alongside industry consultation. These efforts were driven by two senior academics with combined experience in project management, construction and disaster management aided by a senior representative of the RIA. Levacic and Glatter (2001) point out that researcher experience and qualifications within the industry increase the credibility and quality of findings. All involved were cognizant of not overly impinging on participant time, and so the survey was designed to be completed within 15 minutes or less.

The stakeholder management questioning used a rating scale method in the form of the Likert method. Cohen *et al.* (2007) advocate such methods concluding that they are very attractive and widely used research instruments that have inherent built-in subtlety. A five-point scale was used: strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. Prior to official data collection, a brief pilot study

was conducted and adjustments were made. The online survey then went “live” on the US-based RIA’s website. The online survey was also extended out to industry participants that frequent official disaster restoration social media websites to build response rates. As [Bryman and Bell \(2007\)](#) point out, a study should collect responses from as many participants as possible to be representative of the current situation and be applicable in a general sense. Within this research, the participants are seen as being expert in their field; hence, a small, but significant, number of responses will be deemed appropriate. As [Ayyub \(2001\)](#) points out, an expert is a person with related or unique experiences with respect to a particular area. Hence, their individual judgement can carry significant weight. Note that participants were kept anonymous in line with the acquired ethics approvals.

The collected data will be represented in percentage terms highlighting collective participant concerns with respect to specific disaster restoration stakeholder issues. It is intended that the research method collects meaningful data with a high degree of validity. This is paramount with [Ticehurst and Veal \(2000\)](#) describing validity in terms of how well the data capture the essence of a particular situation. The nominated research method is thought suitable for this objective.

Research results, analysis and discussion

Research results

The aforementioned Qualtrics online survey garnered a total of 58 responses. However, while this number attempted the survey, only 48 participants answered all required questions. The survey targeted qualified disaster restoration practitioners, and as such the response rate is considered sufficient due to the specific relevant expertise held by each individual participant.

The general demographic responses indicated that survey participants had experience within disaster restoration activities concerning water loss, fire and smoke, reconstruction, microbial, biohazard and contents, with the majority having experience across all areas. It is also clear that most of the participants came from small-/medium-sized companies, with 63 per cent employing between 7 and 100 employees. Only 12 per cent of companies had > 250 employees. These figures give some insight into the industry’s structure. Participant experience based on geographic regions was reasonably evenly distributed across the USA noting 40 per cent having experience within other countries. The responses indicated participants were quite experienced in restoration project management, with 80 per cent having at least 6 years of experience and 55 per cent having at least 12 years of experience in this specific area. Quite valuably, 21 per cent had > 20 years of experience. Participant education was also at very good levels, with 69 per cent possessing degrees. Hence, the participant sample is considered of high standard for this research.

As previously indicated, the survey contained 15 stakeholder management questions. These questions are listed below in [Table I](#) accompanied by the Likert scale results, which have been converted into percentages and rounded off for clarity. The five-point scale is annotated as SD – strongly disagree, D – disagree, N – Neither disagree nor agree, A – agree and SA – strongly agree. The results tabled below represent the findings from the empirical research phase of the study.

The results in [Table I](#) show collective opinions on specific disaster restoration stakeholder management issues. It essentially highlights the level of concern or

	Stakeholder management questions	SD	Percentage			SA	Stakeholder management
			D	N	A		
1	Waiting for emergency authorities (e.g. police, fire, FEMA, etc.) to allow site access often hinders disaster restoration projects	8	32	28	30	2	187
2	Utility service providers sometime create delays for the commencement of disaster restoration projects (i.e. getting power and water working)	8	10	27	47	8	
3	Building occupants often do not want to move out of their buildings during disaster restoration projects forcing restorers to work around them	2	13	10	67	8	
4	Building owners are often very demanding during disaster restoration projects	4	4	6	61	25	
5	The services of architects and engineers are generally not required on disaster restoration projects	0	42	19	37	2	
6	IEPs are important stakeholders within disaster restoration projects	2	8	38	48	4	
7	Waiting on building permits from building inspectors or authorities often unnecessarily delays the work schedule on disaster restoration projects	2	23	22	30	23	
8	Waiting on insurance adjuster approval of project scope and cost can often unnecessarily delay disaster restoration projects	0	8	11	48	33	
9	Mortgage company failure to promptly endorse checks/drafts often delays or stops restoration projects	0	15	24	26	35	
10	It is difficult finding competent restoration technicians to staff disaster restoration projects	0	26	15	55	4	
11	It is difficult to hire and retain company personnel who are willing to respond at all hours (i.e. night, weekends, holidays) to disaster restoration projects	0	21	19	48	12	
12	Sending company personnel out of town to staff disaster restoration projects is common	2	24	17	51	6	
13	Specialist subcontractors and restoration equipment vendors have difficulty keeping up with demand during disaster restoration projects	2	30	24	38	6	
14	Property managers put unnecessary pressure on restorers to complete restoration projects quickly post disaster	0	21	34	43	2	
15	The work of various non-governmental organisations (e.g. Red Cross, community groups, charities) is necessary for successful CAT restoration projects	2	15	38	43	2	

Table I.
Disaster restoration stakeholder management questions and response data

sentiment within each area as currently held by restoration industry practitioners. Hence, analysis and discussion can commence. This will provide an overview with respect to specific stakeholder issues as applicable to the current restoration industry experience.

Research analysis and discussion

As previously indicated, a stakeholder is any person, group or organisation that is affected or that can affect any particular situation or outcome (Freeman and McVea, 2001; PMI, 2008). Within disaster restoration projects, there are many stakeholder matters that need factoring into project planning. The stakeholder issues identified within this research are surmised as holding significant importance to disaster restoration projects at this time. This is said from the disaster restoration practitioner perspective. This perspective is essentially based around the task of managing various stakeholder relationships. The following analysis discusses disaster restoration stakeholder issues in light of the research results.

On the subject of emergency authorities and site access following a disaster, the response was quite split. While many respondents thought agencies such as the police, fire department and Federal Emergency Management Agency (FEMA) hindered their restoration projects, there were similar numbers that were either non-committal or did not see this as a problem. This division could be due to varying circumstances dependent on disaster size and severity. With utility service providers it was more clear that these stakeholders could sometimes create delays for the commencement of work on disaster restoration projects, with 55 per cent agreeing or strongly agreeing. Of note, a substantial number appeared undecided. As with conventional construction, disaster restoration projects require electricity and water availability as a first point of order. However, disaster events create abnormal conditions that quite often impact restoration projects. Hence, affected properties and regions cannot progress until utility providers reinstate these essential services, notwithstanding their capability and capacity to respond.

The survey revealed that building owners could be very demanding during disaster restoration operations. The issue was endorsed quite decisively, with 86 per cent in general agreement and 25 per cent of those strongly agreeing. In other words, it appears that these stakeholders require a high level of restoration contractor servicing. Furthermore, the strong result obtained could point to this being characteristic of these projects. As such, judicious client relations management is needed from the onset. Furthermore, the actual building occupants, who may or may not be the building owners, also create difficulties for disaster restoration projects. It was found that 75 per cent of respondents supported the notion that building occupants preferred not to move out while disaster restoration works were in progress. It is unknown whether this is due to financial, business or social reasons. However, anecdotal evidence points to building occupant desire to secure possessions or save money, particularly where low-quality insurance policies do not cover alternative accommodation. With commercial establishments they are seen as remaining at their work premises to minimise disruption and business losses. These outcomes are seen to create work environments that are more difficult for restorers to operate within.

The results show that many within industry believe that design consultants such as architects and engineers are not required on disaster restoration projects. This is

evidenced by 39 per cent participants who agreed or strongly agreed; however, this was balanced out by 42 per cent who disagreed. Notwithstanding, this would seem contrary to conventional construction or reconstruction projects where very few would agree that design consultants are not needed. The demographic results indicate that most research participants work across a wide range of restoration activities so this would affect their views on the engagement of design professionals. However, what the results do point to is that these consultants are not a foregone conclusion on disaster restoration projects as might be the case on other forms of building activity. Interestingly, consultants known as Indoor Environmental Professionals (IEPs) were endorsed as important stakeholders within disaster restoration projects by 52 per cent of respondents. IEPs are consultants that inspect a building post disaster to assess the remedial works necessary to create a healthy indoor environment. This could include examining the effect of flood waters, mould growth, bacteria contamination, odours and fire/smoke within buildings. This is understandably necessary work in disaster restorations. Another professionally based stakeholder within disaster restoration projects is the building inspector who guards the domain of building regulation. Within this area it seems that there is an issue with respect to delayed building permits impacting on disaster restoration schedules. This is evidenced by significant support from research participants. If problems do exist in this area, then the recovery of an entire region could be impeded. Hence, disaster restoration projects need prompt building inspector attention and approval to proceed. However, it is acknowledged that regulators need time to assess post-disaster affects so as to plan for future repeat occurrences.

Disaster restoration projects are quite often financed via insurance companies. However, the findings would seem to indicate that the restoration industry is at issue with the insurance industry, with 81 per cent of respondents either agreeing or strongly agreeing that the wait for insurance adjuster approvals on project scope and cost can often unnecessarily delay disaster restoration projects. Again, delays are occurring in situations where prompt action is of the essence. Furthermore, the results also infer that insurance companies are possibly in dispute with claimants regarding what needs to be restored and the associated costs. For example, flood insurance may cover water damage, but mould losses are commonly limited. Hurricane Katrina in 2005 and the Queensland Floods in 2011 highlighted insurance policy disputation problems leaving building owners (and occupants) in difficult positions. Hence, the building owner – insurance adjuster – contractor nexus is of high importance within disaster restoration projects. For the uninsured or inadequately insured, possible financing options may come from banks, lending institutions and personal resources. The question regarding mortgage company failure to promptly endorse payments highlighted another finance-related delay for disaster restoration projects. There was 61 per cent participant support for this notion, which included a notable 35 per cent in strong agreement. Perhaps *Soetanto et al.'s (2008)* aforementioned contention with respect to post-disaster property discounting plays a part in these lender delays. Of note is that governments of more developed nations can provide financial assistance towards repairs and rebuilding for those in need. However, a recent experience of the FEMA in the USA during Hurricane Sandy recovery shows that they may be under-funded to address the needs that their activities are intended to accomplish.

The survey highlighted that it is difficult finding appropriately qualified staff for disaster restoration projects with support from 59 per cent of respondents. The

emerging disaster restoration field needs to adopt strategies that improve the quality and number of restoration technicians available in the marketplace. Promotion of the said RIA Certified Restorer® credential may hold the key to this issue. Furthermore, the findings indicate that hiring/retaining staff who are available on nights, weekends or holidays is difficult. Disaster restoration projects need personnel that do not adhere to regular work calendars such as those in conventional construction. These projects require a swift contractor response to ease possible hardship on owners/occupiers. Prompt response and repair times are also often demanded by insurance companies on approved work. The aspect of company personnel needing to work out of town on disaster restoration projects was signaled by 57 per cent of respondents as being common. This could further exacerbate the situation with respect to staffing issues. Research participant experiences were reported as spread across the USA as well as overseas, possibly indicating the universal nature of the restoration staffing problem. With specialist subcontractors and restoration equipment vendors, there was reasonable agreement that they struggle to keep up with demand during times of disaster. However, there were very many who did not think this was a major issue. Possibly those who did not agree are better resourced or managed. In any case, preplanning for possible disaster events and their associated needs is prudent.

On the issue of property manager expectations, it does seem that unnecessary pressure is placed on restorers to complete disaster restoration projects. The results show that 45 per cent of respondents supported this view. Hence, this could be seen as another significant issue within restoration stakeholder management. The final stakeholder issue raised was with respect to non-governmental organisations and their contribution to successful disaster restoration projects of the CAT (or catastrophic) variety. The participant response substantially indicated that they did indeed have a part to play; however, a large proportion (38 per cent) seemed ambivalent, i.e. did not agree nor disagree. These groups attend to those harmed by disasters and provide temporary shelter and food. These activities are aimed at reducing human suffering. Without doubt essential work so the participants that did not support the importance of these groups is concerning. However, restorer perspectives can be quite different from that of “first responders” to a disaster. Restorers often do not arrive on site until after the emergency and relief phase, which is when disaster recovery commonly begins. Also, many of the research participants were from the small to medium business demographic, possibly limiting them to smaller-scale disasters where these groups are not as active.

Conclusion

The research findings indicate that there are significant stakeholder challenges for disaster restoration projects. The collective responses to stakeholder issues are of importance and ratify the need for this study. These responses were purposely garnered from the restoration community, the entities who actually do the work and whose viewpoints are often overlooked, to make this research clearly distinct from other related research. Furthermore, the study highlights disaster restoration issues to separate them from those in associated areas such as conventional construction or emergency response and relief. It is felt that the disaster restoration field has its own unique identity and should be viewed differently to other related fields.

Research participant opinion now provides us with assurance that considerable restoration stakeholder issues are in existence. For example, there was very strong support for the notion that building owners are overly demanding and insurance adjusters tardy and possibly difficult on these projects. There was also strong backing on building occupants not vacating during restoration works producing contractor difficulty. Furthermore, the results convincingly showed that building regulators and mortgage companies could be slow in providing permits or endorsing loans/payments, respectively. Other stakeholder concerns were also highlighted with respect to the challenges involved within restoration project staffing. These concerns and others are all deemed significantly important to this emerging industry.

The findings are thought to provide a gauge on current stakeholder concerns and associated issues from the disaster restoration practitioner viewpoint. Continued research on the highlighted issues and others is now seen as important. Further studies could provide deeper understandings possibly focusing greater attention on restorer demographics. It is also acknowledged that respondent experience on various forms of disasters could have contributed to mixed opinion. However, it is thought that these findings, in the exploratory sense, contain credible information for disaster restoration practitioners and their stakeholders.

In conclusion, it is believed that the research has delivered valuable knowledge on current stakeholder issues within the disaster restoration industry. Much of the past literature seems to come from a non-contractor perspective. Hence, this study has sought to present insights from the project-execution standpoint. It is now important that future investigations continue this focus.

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About the authors

Bassam Baroudi is Program Director for the Master of Project Management programme at the School of Natural and Built Environments in the University of South Australia (City East). Bassam Baroudi is the corresponding author and can be contacted at: sam.baroudi@unisa.edu.au

Randy Rapp is an Associate Professor at the Department of Building Construction Management at Purdue University. He is also responsible for the Disaster Restoration and Reconstruction Concentration.

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