

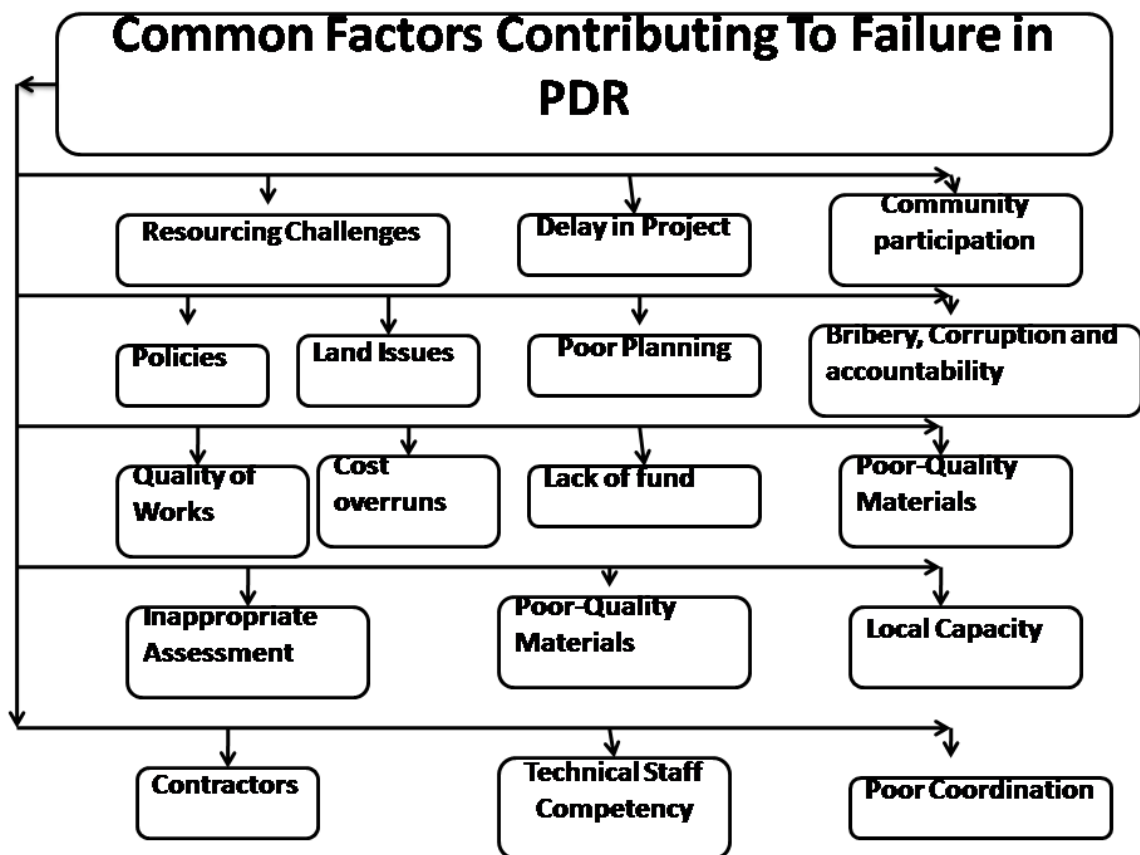
A Review on Common Factors Contributing To Poor Performance in Post Disaster Reconstruction Projects: From Non-Governmental Organizations Prospective

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Graphical Abstract



Abstract

Disasters may cause huge loss of wealth, health and bring miscellaneous problems. Post-disaster reconstruction projects often deal with uncertainties (Hayles, 2010; Sun & Xu, 2011) complexity (Boano & García, 2011; Bello, 2006; Ye & Okada, 2002) consider one of the most challenging tasks to be deal with those involved in reconstruction of disaster-affected areas. Following a disaster, there is an immediate community need for essential infrastructure to be returned to a safe and operational state within the shortest possible timeframe (Norling, 2013). The broad objective of this research is to study the common factors contributing to poor performance in PDR projects. The goal of this research is to improve project management practice in PDR project specifically for International NGOs. The result of the review will provide the foundation on which such strategies - on how to avoid project failures - can be developed in the future.

Keywords: Infrastructure, Post-Disaster Reconstruction, Project Management

1. INTRODUCTION

The average reported losses rose from around \$US 50 billion a year in the 1980s to almost \$US 200 billion a year in the past decade, totaling \$US 3.8 trillion from 1980 to 2012 (World Bank, 2013). The post-disaster reconstruction (PDR) initiative is part of a sequence of four identifiable post disaster periods: emergency, restoration, reconstruction, and betterment construction (Ismail, Majid, Roosli, & Samah, 2014). Project management play a significant role to ensure the reconstruction projects finish successfully (Baroudi & Rapp, 2010; Hidayat & Egbu, 2010) and a more effective reconstruction projects can be met (Kulatunga, 2011). As stated by (Munns & Bjeirmi, 1996) that successful project management techniques will contribute to the achievement of projects (Ismail, 2005), but project management will not stop a project from failing to succeed. In line with this view, (Caiyu Sun & Xu, 2011) added that reconstruction is complex in nature, and requires the application of a new system to form a mechanism to carry out the post-disaster reconstruction in an orderly and efficient manner. In the wake of recent natural disasters, NGOs have become progressively involved in the permanent reconstruction of affected communities (Meding et al., 2009). According to (Soelaksono, 2009) during the rehabilitation and reconstruction stage of Aceh there were 124 International NGOs, dozens of United Nations (UN) organizations and 430 local NGOs.

2. Post Disaster Reconstruction (PDR)

PDR projects often deal with uncertainties, (C. S. Hayles), (C. Sun and J. Xu) and complexity (Y. Ye and N. Okada), (C. Boano and M. García), (W. Bello) which consider one of the most challenging tasks to be deal with.

The PDR initiative is part of a sequence of four identifiable post disaster periods: emergency, restoration, reconstruction, and betterment construction. Reconstruction should be defined, planned, and implemented in stages (R. Roosli, M. Vebry, A. O. Mydin, and M. Ismail). Yi & Yang suggested that PDR require existing tools be adapted or new tools to be developed to allow the specific issues and elements of post disaster reconstruction efforts to be effectively managed and evaluated (H. Yi and J. Yang). Poor plan and implementation of PDR can create further vulnerabilities in a disaster-affected community (Y. Chang, S. Wilkinson, R. Potangaroa, and E. Seville). Planning for reconstruction from a disaster must be realistic and reflective. Without a plan, it is impossible to predict or expect a successful recovery (Y. Ye and N. Okada). Each disaster had its uniqueness during reconstruction efforts. Despite the aid assistance from the agencies, government and NGO’s on the development after a disaster, the amount of reconstruction projects that have been successfully completed has remained low. Based on Sun & Xu (2011), there are five major reconstruction types considering the view from other authors in PDR. Table 1 summarised the finding of post-disaster reconstruction project classification.

Table.1 Post-Disaster Reconstruction Project Classification

No	Classification	Type of Project	Sources
1	The ecological construction	Water balance, landscape and biodiversity, optimal arrangement for land utilization, ecological conservation priority.	(Pei-jun et al., 2000) (Claudia Schneider, 2012) (Caiyu Sun & Xu, 2011).
2	The industrial reconstruction	Warehouses constructing factory, water and sewage treatment plants, and etc	(Barakat, 2003), (Lindell, 2011), (CRS, 2011), (Taylor et al., 2013)
3	The reconstruction of Infrastructures	Improving and extending utility services (physical infrastructures) such as water supply, sewerage, drainage, electricity and telephones, and public facilities.	(R. Shaw & Goda, 2004), (Mayo et al., 2006), (Norling, 2013)
4	Public reconstruction	Health facilities, School buildings, Government buildings, Markets/kiosks.	(Mayo et al., 2006), Silva (2010)
5	Residential reconstruction	Residential reconstruction	(Ochiai & Shaw, 2009), Ahmed, (2011),

3. Common Factors Contributing To Failure in PDR

Therefore, it is vital for Organizations to study the causes, issues and challenges and find a concrete solution to overcome the complexity and uncertainties of PDR. The below segment will discussed in details the issues and challenges during post-disaster reconstruction project from the NGOs context;

3.1 Resourcing Challenges

After a large-scale disaster, housing reconstruction projects are susceptible to numerous resourcing bottlenecks inherent in post-disaster circumstances, such as resource shortages (Steinberg, 2007), price escalation (Nazara and Resosudarmo, 2007), and supply chain disruption (Zuo et al., 2009), which significantly impede the reconstruction process in disaster-affected countries. As Jayasuriya et al. (2005) observed in Sri Lanka, the impacts of the 2004 Indian Ocean tsunami intensified resource shortage, fueled inflation, constrained government's fiscal capacity, and adversely affected housing reconstruction. The availability of resources has been recognized by a number of scholars as a driving force necessary for a successful construction project (Tukel and Rom, 1998; Chua et al. 1999; Bassioni et al. 2004, 2005). Park (2005, p. 585) claimed that 'construction management is nothing but resource management'. A real impact after a high-profile disaster is the 'socioeconomic displacement' manifested in forms of inflationary chaos (Jayasuriya et al., 2005; Nazara and Resosudarmo, 2007), 'Dutch Disease'¹ (Adamand Bevan, 2004), and cost surge (Jayasuriya and McCawley, 2008). Therefore, the need for better understanding of factors affecting resource availability and their potential impacts on resourcing outcomes can be of crucial importance to effective construction performance (Chang, Wilkinson, Potangaroa, & Seville, 2011).

3.2 Delay

Material delays, especially long-lead items, are a well-known cause for construction delays and can also trigger other relevant resourcing issues (Manavazhi and Adhikari, 2002). Delay can cause the time overruns either ahead of the targeted date specified in the contract, or beyond the date for delivery of the project. A survey carried out by Iwai & Tabuchi (2013) shows that close to 30 percent of the total 28,017 public housing units for the evacuees of the March 2011 Great East Japan Earthquake and tsunami had faced delays in project delivery. Amnesty International in the report stated that four years after a massive earthquake hit Haiti, about 170,000 people made homeless by the tragedy are still surviving in makeshift tent villages in dire weather and are at threat of being pulled out of the tents (Moloney, 2014). Reconstruction of Aceh had experienced delays and slow in progress (Boen, 2006; Steinberg, 2007; Nazara & Resosudarmo, 2007) that the delay had greatly affected the region's economy and recovery (Matsumaru, Nagami, & Takeya, 2012).

3.3 Community participation

It has been widely accepted that community participation is an important ingredient for the successful delivery of post-disaster housing reconstruction projects (Davidson et al., 2007; Wardak, Coffey, & Trigunaryyah, 2011). Affected communities have the knowledge (R. Shaw & Goda, 2004) crucial for designing successful reconstruction projects and they also have a very specific role to play (Ophiyandri et al., 2013) in all stages of post-disaster housing reconstruction and their participation ultimately determines project success (Wardak et al., 2011).

3.4 Poor Planning

Planning stage of reconstruction is commonly take lengthy time to understand the context of disaster, to coordinate among agencies, to identify disaster victims or beneficiaries resolve land problem (Hidayat & Egbu, 2010) cost-vs.-effect and efficiency (RDC, 2011) incorporates risk-reduction measures (Boen, 2006) and financing plans (World Bank, 2013). Reconstruction should be defined, planned, and implemented in stages (Roosli, Vebry, Mydin, & Ismail, 2012). Yi & Yang (2014) suggested that Post Disaster Reconstruction (PDR) require existing tools or new tools to be adapted, that if not well planned and implemented, can create further vulnerabilities in a disaster-affected community (Chang, Wilkinson, Potangaroa, & Seville, 2010b). Planning for reconstruction from a disaster must be realistic and reflective. There are thus few data on how effective such planning is in reducing the delays in reconstruction (Alexander, 2004). Without a plan, it is impossible to predict or expect a successful recovery (Ye & Okada, 2002).

Each disaster had its uniqueness during reconstruction efforts, every disaster provides an opportunity to study different approaches adopted in housing reconstruction, their success and related issues (Karunasena & Rameezdeen, 2010). Therefore, integrated reconstruction management is the key to accelerate reconstruction process and to improve human settlement environment (Ye & Okada, 2002) thus a successful project is one that is delivered on time and managed within the budget (Kandelousi, Ooi, & Abdollahi, 2011).

3.5 Lack of fund

Facing large numbers of homeless after a major natural disaster, it is politically desirable for a government to provide reconstruction funding for permanent housing (Freeman, 2007). According to Hidayat & Egbu (2010), the most usual problems found in beginning of reconstruction are funding for reconstruction. A case study carried out by Oppong (2011) in Ghana for post-disaster reconstruction activities reveals that inadequate funding is the primary challenge and the same situation faced by PDR in

Bam, Iran (Gharaati & Davidson, 2008) Sri Lanka (J. Shaw & Ahmed, 2010) Aceh (Silva, 2010) Tangshan, China and Hyogoken-Nanbu, Japan (Ye & Okada, 2002).

3.6 Inappropriate Assessment

Immediately after a disaster, a preliminary assessment (sometimes called rapid assessment or situation assessment) is conducted to obtain an early but full assessment of the geographical extent of damage, the number, categories, location, and circumstances of the disaster-affected population (EPC, TCG, & LLC, 2004). According to (Kennedy et al., 2008) many organizations did not conduct or did not use environmental impact assessments nor did they consider long-term spatial, urban, or regional planning in their settlement and shelter programmes where failing to conduct proper assessments in new sites could increase exposure to other hazards.

3.7 Poor Coordination

The roles of parties involved in post-disaster reconstruction should be carefully arranged (Hidayat & Egbu, 2010) for the performance of reconstruction activities. The task of reconstruction, as indicated by United Nations (2008) and Zuo, Potangaroa, Wilkinson, & Rotimi (2009) demand a high level of coordination and a careful managerial approach. A Review Of NGO Coordination In Aceh PostEarthquake / Tsunami carried out by Canny (2005) found that many NGOs in the area display a lack of coordination and as a result had created conflicting programs amongst the NGOs (Soelaksono, 2009). As a result of poor coordination has led to duplication of activities and the inefficient utilisation of funds (Nazara & Resosudarmo, 2007), poor management capability (Hosseini & Izadkhah, 2008), and create competition among the organizations (Wardak et al., 2011). In Aceh, it was found that the differing recovery objectives between NGOs and the local government to some extent delayed further effective collaboration at a later phase of reconstruction (Chang, Wilkinson, Potangaroa, & Seville, 2011a). Some issues highlighted which regards to government influenced in PDR include government-driven resourcing approach (Chang et al., 2010b), management ability (Chunling Sun & Bi, 2010), assistance and assessment (Arslan & Ünlü, 2008; Ochiai & Shaw, 2009), inconsistency in funding of housing (Freeman, 2007), changes of policy (Ibanez, 2007; Karunasena & Rameezdeen, 2010) total integrated response (King, 2002) and lack of technical expertise (MIs & Mslis, 1999).

3.8 Bribery, Corruption and accountability

Besides the challenges discussed above reconstruction projects can also fall prey to fraud and corruption

resulting in huge losses of project funding (Hidayat & Egbu, 2010; Wardak et al., 2012) higher timber prices (Chang, Wilkinson, Potangaroa, et al., 2010b) and affect the reconstruction of housing (Ahmed, 2011). In the case of Aceh, Oxfam, the international NGOs has sent in five investigators, including a former police officer, to unravel the skein of apparent corruption that has led to losses in its Banda Aceh office and forced it to suspend construction (Jones, 2006). Silva (2010) added by referring to one case in Aceh where the head of the village sold family ID cards to outsiders making them eligible to receive housing assistance at the expense of the rest of the village.

3.9 Policies

Post-Natural Disaster Reconstruction is not only a good opportunity to transform the destructive area into a sustainable community, but also an opportune moment to prepare for the next disaster (Ye & Okada, 2002). Policies and strategies in place is critical to ensure the availability of resources required for long-term reconstruction efforts (Chang, Wilkinson, Potangaroa, & Seville, 2010a) but not suited for rapid release of funds for disaster response and can cause delays in reconstruction (Taylor, Seneviratne, Baldry, & Pathirage, 2013). The responsibility for establishing and implementing reconstruction policies rests primarily with the government (EPC et al., 2004).

3.10 Quality of Works

The lack of in-house capacity of the NGOs eventually becomes a big problem which results in quality concerns, fraud and costly implementation of reconstruction (Soelaksono, 2009). It is crucial to improve the quality of structural design and construction in earthquake-prone areas (EPC et al., 2004) because poor quality of work is found to be a major reason for a higher level of destruction and deaths in developing countries (Taylor et al., 2013). It become worse as some of the NGO have no experience in reconstruction (Ophiyandri et al., 2013), the shortage of materials (Caiyu Sun & Xu, 2011) lead to poor materials quality (Boen, 2006; Parker & Little, 2004) plus poor workmanship (Lyons, 2009) resulted in poor quality reconstruction project delivery.

3.11. Land Issues

Looking to the future, the protection of land rights is a high priority (Nazara & Resosudarmo, 2007). The changes the disaster made to the contours of the landscape complicated identification of land ownership after the event (Ghafory-Ashtiany & Hosseini, 2007; World Bank, 2004) and lost of land titles information had

caused delay in the reconstruction process (Ochiai & Shaw, 2009). It was estimated that over 50% of the economic impact resulted from an inadequate land use practices (CEPAL 1998; Mora & Lu'cke 1998; Mora 2003). Incorrect location, design, construction quality and lack of appropriate maintenance were the second cause (35%) of losses.

3.12. Cost overruns

Caiyu Sun & Xu (2011) pointed out that time delays and cost overruns are prominent issue in reconstruction areas (Haigh & Sutton, 2012). Poor scope definition at the budget stage (Attalla, Hegazy, & Elbeltagi, 2004), late starts, delays in delivery and inflation found as the most contributing factors to cost overruns of reconstruction projects (Taylor et al., 2013) while improving the efficiency of resourcing process (Chang, Wilkinson, Potangaroa, & Seville, 2012) may reduce the cost overruns.

Issues like purchasing of lands (Hosseini & Izadkhah, 2008; J. Shaw & Ahmed, 2010), purchasing or hiring plant (Lu, Shen, Asce, & Yam, 2008) materials purchasing (Chang, Wilkinson, Potangaroa, & Seville, 2011b; Silva, 2010) were highlighted among most of the NGOs involved in PDR. Catholic Relief Services, an NGO working in PDR had come out with a purchasing policy to ensure all goods and services are at the best terms consistent with the required quality and delivery, and at the lowest total cost (CRS, 2011).

3.13. Poor-Quality Materials

Poor-quality materials can directly cause the failure of physical connections between construction elements (Belassi and Tukel, 1996) or interrupt such connections when defective materials are replaced (Love et al., 1999). Various issues on resource supplier were highlighted with regards to materials' quality (Chang, Wilkinson, Potangaroa, & Seville, 2010a; that lead to PDRs' performance failure.

3.14. Local Capacity

The most effective post-disaster actions tend to have local bases (e.g. Lewis, 1999; Wis-ner et al., 2004). Settlement and shelter are usually socially and environmentally contextual. As a result 'it is not necessarily feasible to design settlements and shelters as an off-the-shelf package' (Kennedy et al., 2008, p. 26). Different people and different cultures have different expectation are grading, for example, infrastructure layout and appearance. One consequence is that flexibility should be a component of the design, meaning that occupants can adjust their own shelter to meet their own needs, supporting acceptability and ownership of the transitional settlement and shelter (e.g. Ash-more et al., 2003).

3.15. Technical Staff Competency

Few humanitarian organisations have the technical capabilities within their own organisation to manage construction. They were faced either with building up a team of national and international consultants with technical expertise in the built environment, procurement, logistics and finance within their own organisation or partnering with the few specialist NGOs or the private sector (Silva, 2010). Caiyu Sun & Xu (2011) indicate that the shortage of technical staff is still a very prominent issue for reconstruction projects. USAID had difficulties securing staff particularly technical staff, the expertise (contracting officers and engineers) who were willing to live and work in

the country after the earthquake which contributed to delays in their efforts (GAO, 2011). At the design stage, indicators must be established (UNCHS, 2001) to help clarify the logical framework of the programme or project beside looking at the land size, location and overall facilities (Karunasena & Rameezdeen, 2010) also consider owner driven approach (Davidson, Johnson, Lizarralde, Dikmen, & Sliwinski, 2007; Ratnayake & Rameezdeen, 2010) in order to meet the needs of the beneficiaries. Not only work as design translator (Boano & García, 2011) architects and designers should be able to take decisions regarding the construction materials, construction system, planning and spatial requirements (Dikmen, 2005) in order to meet the needs of the beneficiaries. However, the designer has to obtain strong qualification, to take overall consideration and seize of the whole building design, and to be able to control the overall situation in the beginning stage of design. There cannot be too much or too large change happening to the design after the building work starts (Yi-lin & Jin-e, 2010).

3.16. Contractors

The contractors are responsible for all aspects of construction including labour, materials and workmanship. It was suggested that the quickest and most effective way to rebuild houses after a disaster is to employ the “donor-driven” approach, where the government or an external funding agency leads the reconstruction process with the help of consultants and contractors procured for the project (Karunasena & Rameezdeen, 2010). Incompetence of contractor (Chang, Wilkinson, Potangaroa, et al., 2011a), poor performance (Silva, 2010), run away before finishing the construction process (Davidson et al., 2007) inadequate number of building contractors (Rotimi, Le, & Wilkinson, 2006) lack of experiences (World Bank, 2004) corrupt (Wardak et al., 2012) where among the issues in dealing with contractors at PDR project which highlighted by the NGOs.

4. Conclusion

Unlike normal construction, post-disaster reconstruction is complex, dynamic and chaotic in nature and as such represents many challenges. The task of reconstruction necessitates a high level of coordination and a rigorous managerial approach are essentially needed to bring about higher levels of successful implementations. PDR is generally very chaotic and resources are in scarce supply (Davidson, Johnson, Lizarralde, Dikmen, & Sliwinski, 2007). The contractors can be incapacitated in terms of meeting the sudden surge of demand in labour increased and local natural resources (e.g., building materials) (Randall & Jowett, 2010; Keraminiyage et al., 2008) which lead to difficulty to follow work schedules (Iwai & Tabuchi, 2013). This paper presented common factors contributing to poor performance particularly for INGOs participate in PDR projects. The previous writers work were then categorised into sixteen main categories. The include issues of delay, resourcing, poor quality materials, community participation, local capacity, poorly funded reconstruction, preliminary assessment, lack of coordination, bribery and corruption and Build back better/safer, policies, quality of works, land issues, cost overruns, contractors and a deficit of technical staff. This paper has provided a general review of PDR in the aspect of improving the project performance by looking in to the most common and fundamental problems contributing to poor performance in PDR projects. It can serve as a platform for other researchers to launch into this evolving new field.

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