Project Management For Post Disaster Reconstruction Project: A Literature Review

1Dzulkarnaen Ismail, 2Taksiah A. Majid And 3Ruhizal Roosli

1&2 School of Civil Engineering, Universiti Sains Malaysia, Penang, Malaysia
3School of Housing Building and Planning, Universiti Sains Malaysia, Penang, Malaysia

ARTICLE INFO

Article history:
Received 25 September 2014
Received in revised form
26 October 2014
Accepted 25 November 2014
Available online 31 December 2014

Keywords:
Project management, Post Disaster Reconstruction (PDR).

ABSTRACT

Natural disasters, may cause huge loss of wealth and bring financial problems. It can be felt in the community, city and state level, or persistently can impact an entire country. Regions affected by disaster are often involved with a number of different and well-coordinated courses of action. Therefore, it is vital that these complex activities are well planned, subject to thorough consultation and undertaken after effective collaboration with the widest range of members of the affected communities. The broad objective of this research is to analyze the problems and issues related to past project management practice on PDR projects and to propose a Project Management methodology suitable for the implementation of PDR project. The goal of this research is to improve project management practice in PDR project through research output that is relevant to industry and practice needs. The impact of the methodology on project efficiency creates tremendous potential to enhance the value of Project Management services and project delivery.

© 2014 AENSI Publisher All rights reserved.

To Cite This Article: Dzulkarnaen Ismail, Taksiah A. Majid And Ruhizal Roosli., Project Management For Post Disaster Reconstruction Project: A Literature Review. Adv. Environ. Biol., 8(22), 103-107, 2014

Overview:

In recent years, natural disasters happened frequently around the globe and responsible not only for heavy loss of lives but also create a greater property loss. According to the World bank [1], losses due to natural disasters are 20 times greater in developing countries than in developed states. In 2013 alone, as reported by EM-DAT [2], there are 315 numbers of reported disasters, an approximately loss of US$116 billions, more than 95 millions people are affected and 22,279 people were killed due to natural disasters (refer Fig. 1).

Fig. 1: Annual reported economic damages and time trend from disasters: 1980-2013 [2].

The average losses reported 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 [3]. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social wellbeing, together with damage to property, destruction of assets [4], loss of services, social and economic disruption, and environmental degradation [5], [6]. Natural disaster is a natural phenomenon as common understood, however, it is also a technological, economic, societal and environmental issue [7].

The Impacts of Disaster:

Barakat stated that disasters have a greater impact on the built environment of developing countries than industrialised ones [8]. Lindell & Prater added that the property damage caused by disaster impact causes direct
economic losses that can be thought of as a loss in asset value. This can be measured by the cost of repair or replacement [4]. Post-natural disaster reconstruction is not only a good opportunity to transform the destructive area into a sustainable community, but also a right moment to prepare for the next disaster [7], decrease their vulnerability from disaster impacts and encourage recovery when disaster strike [4]. The affected nations that require reconstruction after the impact of disaster should see the development as a dynamic process, and disasters offer the opportunity to vitalize or revitalize this process, especially in the generation of local economies and the upgrading of livelihoods and living conditions. This is relevant especially in the context of the developing nations.

**Post Disaster Reconstruction (PDR):**

PDR projects often dealt with uncertainties, [9], [10] and complexity [7], [11], [12] which consider one of the most challenging tasks to be dealt 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 [13]. 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 [14]. Poor plan and implementation of PDR, can create further vulnerabilities in a disaster-affected community [15]. Planning for reconstruction from a disaster must be realistic and reflective. Without a plan, it is impossible to predict or expect a successful recovery [7]. 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.

**The Issues and Challenges in Post-Disaster Reconstruction(PDR):**

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 [16], [17]. A survey carried out by Iwai and Tabuchi [18] 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 homeless people caused by the tragedy are still surviving in makeshift tent villages in dire weather and are at threat of being pulled out of the tents [19]. Reconstruction of Aceh had experienced delays and slow in progress [20], [21], [22] that the delay had greatly affected the region's economy and recovery [23].

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. Distinctive cases of project failure occur when the project didn't deliver on time, under budget and of quality expected in common with the criteria such as integration [7], financial [24], inappropriate assessment [25], communication and coordination [15], inadequacies of resource procurement [26], ineffective design [27], transportation [23], corruption [3], and many more (refer to Table 1). Research into past experiences has led many authors to argue that PDR is the least successful physically visible arena of international cooperation [28]. Therefore, integrated reconstruction management is the key to accelerate the reconstruction process and to improve human settlement environment [7]. Project management play an importance role to ensure the reconstruction projects completed successfully [29].

**Project management success factor for PDR:**

It is the Tsunamis that struck the South East Asia region on December 26th 2004 which triggered a surge in research interest on how to improve delivery of critical aid relief projects [30]. As the incidents of natural disasters increase, it is crucial that NGOs and other agencies involved in disaster relief manage the risk by learning as much as possible from each disaster recovery and reconstruction process they are involved with; its successes and failures [31], [32]. Very few researches were carried out in post-disaster reconstruction focusing on project management [30], not alone the critical success factors (CSFs) for post-disaster reconstruction [33], [34]. Some attempts have been made by both professional bodies and academic researchers to determine the most common factors contributing to the poor performance and reasons for failure of some of the least successful projects.

Moe & Pathanaranakul discovered that in order to complete a particular project successfully, there are ten (10) Critical Success Factors (CSFs) must be taken into consideration through the project life cycle phases. They are as follows [35]: effective institutional arrangement; coordination and collaboration; supportive laws and regulations; effective information management system; competencies of managers and team members; effective consultation with key stakeholders and target beneficiaries; effective communication mechanism; clearly defined goals and commitments by key stakeholders; effective logistics management; sufficient mobilization and disbursement of resources [35]. Wardak et al. [28] added that from the research carried out, it is clear that effective community participation is a major key to success in PDR. Affected communities have the understanding that is crucial for
designing reconstruction projects. They likewise receive a very specific role to play in all phases of post-disaster housing reconstruction that determines project success.

Table 1: Identified post-disaster reconstruction problems [29].

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Politics</th>
<th>Funding</th>
<th>Resettlement</th>
<th>Land ownership</th>
<th>Construction cost</th>
<th>Construction labour</th>
<th>Communication quality</th>
<th>Contractor stability</th>
<th>Aid agency capability</th>
<th>Coordination</th>
<th>Communication</th>
<th>Temp Facilities</th>
<th>Political environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fritul EQ</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico City EQ</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kalamata EQ</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niortbridge EQ</td>
<td>V</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kobe EQ</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey EQ</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armenia EQ</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gujarat EQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Ocean Tsunami (Indonesia)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Indian Ocean Tsunami (Sri Lanka)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Katrina Hurricane</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While Chang et. al [15] in her studies found out that post-disaster housing reconstruction is likely to suffer project deficiencies in relation to the availability of resources. Inefficiencies in dealing with resource shortages in the aftermath of a catastrophe can trigger economic and environmental impacts on the affected areas. Post-disaster housing reconstruction with the community-based method has gathered a lot of success in the reconstruction of many affected areas, for instance in Bam, Iran, Gujarat, and Indonesia [33]. The critical success factors (CSFs) listed by Ophiyandri et. al [33] are: transparency and accountability; appropriate reconstruction policy/strategy; understanding the community-based method; gathering trust from the community; facilitator capacity; good coordination and communication; sufficient funding availability; implementer capacity; significant level of community participation/control; involvement of all community members; successful beneficiary identification; and government support.

Conclusion:

The research specified that post-disaster reconstruction (PDR) projects are inherently complex and therefore acquire project management approaches to bring about higher levels of successful implementations. PDR projects require a certain way of thinking to foster successful outcomes [36]. Despite the long durations, there is a competing need for speed in reconstruction to satisfy pressure to achieve a fast recovery. In addition, there is a growing need for transparency in progress and accountability to time frames that is imposed by donors, government and other stakeholders. As stated by [29] that management of the construction procedure of PDR may be similar to a general project, only with more emphasis on inadequate resource, quality and coordination. However, there had been many reports on PDR problems in practice, making it necessary to systematically analyse the current PDR research for future improvements [14]. This paper has provided a general review of PDR in the aspect of improving the project performance by looking into critical success factors (CSFs) listed by previous authors and exposing the most common and fundamental problems affecting project delivery performance.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the Disaster Research Nexus (DRN) and the Universiti Sains Malaysia (USM) for providing necessary research facilities and supervision.

REFERENCES

106

Dzulkarnaen Ismail et al., 2014

Advances in Environmental Biology, 8(22) November 2014, Pages: 103-107


