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International Journal of Project Management xx (2017) xxx – xxx
International Journal of Project Management
www.elsevier.com/locate/ijproman

A new model for effective post-disaster housing reconstruction: Lessons from Gujarat and Bihar in India

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Received 31 March 2016; received in revised form 19 January 2017; accepted 6 February 2017
Available online xxxx

Abstract

This paper critiques the traditional project management (PM) approach for post-disaster reconstruction work in relation to long-term effectiveness at strengthening disaster resilience of communities. While assessments of post-disaster reconstruction projects normally occurs within a few years of the disaster this paper is based on a study of four 'good practice' reconstruction projects, 15 years after the earthquake and seven years after the flooding disaster from the Indian states of Gujarat and Bihar respectively. This extended timeframe enabled the examination of long-term outcomes related to disaster resilience of communities. The comparison of the four case study projects through extended timeframe enabled authors to articulate critical success factors contributing to project's effectiveness. The research found that the best long-term outcomes were achieved when the agencies implementing post-disaster housing reconstruction projects: 1) adopted an 'agile' approach to project planning and implementation; 2) allocated ample time for gaining and maintaining community trust; iii) provided multiple materials, technologies and skilled labour choices to ensure hazard-safety of housing, and (iv) continued community capacity building beyond the completion of the reconstruction work. These imperatives have prompted the development of a progressive, spiral model for effective post-disaster housing reconstruction project management which is presented in this paper.

Classification: Empirical research paper.

Keywords: Project life-cycle; Housing reconstruction; Post-disaster project management; India; Community capacity; Resilience

1. Introduction

Over the last 10 years, disasters have continued to increase in frequency, magnitude and complexity, affecting the wellbeing and safety of increasing numbers of people and communities, especially those with high levels of hazard exposure most commonly found in 'developing' countries (UNISDR, 2015). This increase in disaster exposure has prompted a growing interest in how post-disaster reconstruction (PDR) work can make affected communities safer and more resilient to future disasters, whether they are deemed to be 'natural' or human-induced disasters (Jha et al., 2010; UNDRO, 1982). The relatively new focus on 'disaster resilience' echoes earlier suggestions that PDR can provide an opportunity to "Build Back Better" (Sendai framework for Disaster Risk Reduction 2015–2030) and can play a role in "building a culture of safety and resilience" for the long term (Hyogo Framework for Action 2005–2015) (IFRC, 2004; UN-Habitat, UNHCR, and IFRC, 2012; UNISDR, 2005, 2015). In theory, effective PDR should aim to enhance disaster prevention and preparedness (GoI-UNDP, 2011) (see Table 1) and should "pay

Abbreviations: EDM, Earthquake Disaster Mitigation and Research Centre; GSDMA, Gujarat State Disaster Management Authority; ODR, Owner Driven Reconstruction; PDR, Post-disaster reconstruction; PM, Project management; SEEDS, Sustainable Environment and Ecological Development; UNCRD, United Nations Centre for Regional Development

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http://dx.doi.org/10.1016/j.ijproman.2017.02.002
0263-7863/00

Table 1
Commonalities in core processes across Project management life-cycle (PLC) stages, post-disaster reconstruction (PDR) projects and Disaster Management (DM) (grey background is the focus of this research and red text suggests limitations).

	Project mgmt. life-cycle stages (Baum 1970, PMI 2005)	**Post-disaster reconstruction processes** (IFRC 2010; Jha et al. 2010)	**Disaster Management continuum** (IFRC 2008a; NDMA undated; UNDRO 1982; UNISDR 2007)
1	**Identification**	– Context analysis/ risk identification – Hazard damage assessment – Political commitment (policy, social, financial and technical assistance) – Awareness raising – Beneficiary selection – Programme/ project formulation	**I. Relief / response**
2	**Preparation/ planning**	– Planning reconstruction implementation approach – Participatory	**II. Reconstruction and recovery**
3	**Appraisal or negotiation**	– Test/ pilot project – Partnerships – Refine implementation approach – Shared goals	
4	**Implementation, monitoring, supervision**	– Project implementation – Efficient resource management – Monitoring, information management – Capacity building – Social and economic development – Knowledge transfer mechanisms – Environmental management	
5	**Close-out**	– Project completion – Hand over to local agency	
	Self-renew/ continue into a new project	Limited continuity in projects beyond reconstruction for long-term gains	**III. Prevention** (resilience impact; disaster risk reduction) **IV. Preparedness**

for itself many times over in the form of disaster avoided and lives safeguarded" (Office of the UN Secretary-General's Special Envoy for Tsunami Recovery & Clinton 2006, p. 22). However, such noble rhetoric can mask the fact that PDR work is highly complex and multi-faceted, requiring reconstruction agencies to address multi-hazard safety of housing construction, multi-stakeholder engagement, whilst also meeting government mandates and donor pressures. Government and donor pressure encourages haste in the completion of PDR projects (Mulligan and Nadarajah, 2012) and this, in turn, has hindered research on the longer term outcomes of PDR projects, which could help agencies to learn the lessons from past experiences.

The International Project Management Institute (PMI) has maintained that a well-established project management (PM) approach offers a suitable framework for efficiency of PDR projects by guiding agencies in the coherent application of "knowledge, skills, tools and techniques" (Kulatunga, 2011; PMI 2005, p. 2). The suggested benefits of applying a PM approach to PDR projects are: the delivery of project goals in the quickest time and specified budget (Steinfort and Walker, 2007); and establishment of synergy among various stakeholders for working towards a common project vision and project efficiency through pre-determined closed-loop life-cycle phases (identification, preparation, appraisal, implementation and monitoring/ supervision and close-out (Baum, 1970; PMI, 2005)) (see Table 1). Table 1 draws out some commonalities and difference between PM life-cycle stages, PDR processes and a disaster management continuum. While the PM approach has clear efficiency dividends, this paper presents arguments that it fails to grasp the complexity of PDR projects.

The paper begins with a discussion of the key inadequacies of the traditional PM life-cycle approach for managing complex PDR work. It then describes the case study research in Gujarat and Bihar which underpins the articulation of a new model of managing PDR projects for achieving long-term disaster resilience of communities. Description of four case study PDR projects through their life-cycle phases from planning, implementation, immediate results and long-term impact, follows comparative analysis. The research findings underpin the articulation of a new life-cycle model for PDR work which can deliver better long-term outcomes that the prevailing PM approach cannot.

2. Limitations in traditional Project Management approach for post-disaster reconstruction interventions

The PM approach to PDR work has been criticised for the following limitations: i) it focuses on a single project life cycle or inflexible timeframe for project completion, ii) it tends to identify PDR work as a technical challenge to the exclusion of other complex challenges and iii) it measures project effectiveness in terms of project outcome rather than on-going

Please cite this article as: M. Vahanvati, M. Mulligan, 2017. A new model for effective post-disaster housing reconstruction: Lessons from Gujarat and Bihar in India, Int. J. Proj. Manag. http://dx.doi.org/10.1016/j.ijproman.2017.02.002