Abstract: Natural disasters have significantly increased for the last 40 to 50 years. In 1992, more than 368 natural disasters were reported, affecting 170,478,000 people. In 2001, this number more than doubled with 712 disasters reported and 344,873,000 people impacted. A disaster is the occurrence of an extreme hazard event that impacts on vulnerable communities causing substantial damage, disruption and possible casualties, and leaving the affected communities unable to function normally without outside assistance. Reconstruction projects are defined as the modification, conversion and complete replacement of an existing facility that involved expansions, additions, interior renovation, or upgrading the functional performance of a facility. Also reconstruction can be referring to restoring basic services and life support infrastructure to normal.

Sustainable reconstruction offers the chance to improve the quality of buildings, the environment and living conditions in disaster-affected regions. Disasters due to natural hazards create enormous pressure to provide survivors with adequate permanent housing as rapidly as possible.

Introduction

Natural disasters have significantly increased for the last 40 to 50 years. In 1992, more than 368 natural disasters were reported, affecting 170,478,000 people. In 2001, this number more than doubled with 712 disasters reported and 344,873,000 people impacted. The increase of natural hazards and the growing population worldwide are pointed out as the causes for the augmentation of natural disasters. A disaster is the occurrence of an extreme hazard event that impacts on vulnerable communities causing substantial damage, disruption and possible casualties, and leaving the affected communities unable to function normally without outside assistance. Reconstruction projects are defined as the modification, conversion and complete replacement of an existing facility that involved expansions, additions, interior renovation, or upgrading the functional performance of a facility. Also reconstruction can be refer to restoring basic services and life support infrastructure to normal.

Conventional reconstruction efforts often failed because of a one-sided approach, e.g., one that focuses only on technical or construction aspects. There were cases where houses were constructed but without the necessary infrastructure, water supply and sanitation, because of one-dimensional attitudes and, among other challenges, institutional constraints, bureaucracies, etc. Often, conventional reconstruction neglects important social and livelihoods issues which result in a poorer economic situation for beneficiaries with interrupted social relations.

Compared to conventional reconstruction, sustainable reconstruction is an integrated approach to reconstruction based on the well-known definition of sustainable development. In contrast to conventional reconstruction, environmental, technical, economic, social and institutional concerns are considered at each stage and activity of a sustainable reconstruction programmed to ensure the best long-term result, not only in house design and construction activities, but also in the provision of related infrastructure such as water supply and sanitation systems. As a result of buildings enhanced performances during construction, use and demolition phases, sustainable reconstruction offers a variety of environmental, economic and social benefits.

2. Literature Review

Title - A Framework for Managing Post-Disaster Housing Reconstruction.
Author - Bilau A.A., Witt E. and Lill L.

The housing reconstruction process may be usefully considered as comprising three general phases:
3. Scope, Methodology and Purpose

3.1 Scope-
Following are the objectives of the proposed dissertation work.

Title-Project Management Success For Post-Disaster Reconstruction Projects
Author -Dzulkarnaen I., Majid T.A., Roosli R., Samah N.A.

There are large uncertainties associated with the future performance of the built environment due to changes in regional and local scale climatic conditions. Author stated that disasters have a greater impact on the built environment of developing countries than industrialized ones. 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. Typical cases of post-disaster reconstruction project failure often refer to problems in financial inappropriate assessment, communication and coordination, inadequacies of resource procurement ineffective design, transportation, corruption, delay.

Title- Sustainable Reconstruction In Disaster-Affected Countries Practical Guidelines.

Sustainable reconstruction offers the chance to improve the quality of buildings, the environment and living conditions in disaster-affected regions. Disasters due to natural hazards create enormous pressure to provide survivors with adequate permanent housing as rapidly as possible. The urgent need for housing normally leads to numerous or large-scale reconstruction programmes and huge demand for construction material, and the potential environmental impact of reconstruction can become considerable. Improperly managed resource exploitation for construction materials can result in deforestation, pollution of water resources, and damage to coral reefs and depletion of locally available materials. The construction process in itself can result in waste generation, water and air pollution. The mitigation of natural disaster risks, however, requires building a culture of prevention disaster management should not be overlooked in the rush to restore life to pre-disaster conditions. The pressure to regain equilibrium as quickly as possible must be balanced with seizing opportunities for long-term risk reduction and community improvements through sustainable reconstruction.

Title-Post Disaster Housing Reconstruction: Comparative Study of Donor Driven Vs. Owner Driven Approach.
Author – Ratnayake & Rameezdeen

Any reconstruction programme has to meet a range of complex and often conflicting needs of affected people. Reconstruction programmes often fail to take in to account the desires of disaster affected populations. If proper attention is not given to needs of affected people there is a possibility that the newly constructed facilities become obsolete from the day the construction is complete. Therefore, reconstruction strategies should be implemented after studying the desires of the affected people. Post disaster reconstruction is a complex issue with several dimensions. Government, non-governmental and international organizations have their own stakes in disaster recovery programmes, and links must be established among them, as well as with the community. Reconstruction is one of the most demanding forms of activity after a disaster, because it operates in conditions of uncertainty, often in remote locations and within severe time constraints. Therefore, proper planning is of outmost importance to reduce future vulnerabilities and to improve long-term sustainability. A good housing reconstruction strategy will take in to account the social need together with long-term disaster mitigation and sustainability. Author identified five approaches, namely; the Owner-driven approach; the subsidiary housing approach; the participatory housing approach; the contractor-driven approach in situ; and the contractor-driven approach ex nihilo, that have been used during the reconstruction. The author has compared these five approaches and discussed the issues related to implementation of each of these methods.

3. Scope, Methodology and Purpose

3.1 Scope-
Following are the objectives of the proposed dissertation work.
a. To study the impact of disaster
b. To study the challenges of post-disaster housing reconstruction programmes.
c. To study the principle of sustainable reconstruction.
d. To develop general framework for the management of post-disaster housing reconstruction programmes.
e. To provide guidelines regarding the key aspects of sustainable reconstruction.

3.2 Methodology-
For carrying out the proposed work, following methodology will be adopted. First a comprehensive literature review will be studied on disaster management and reconstruction strategies by referring books, reports, journals and research publications. The Tsunami, which hit Sri Lanka on the 26th of December 2004, has been selected as the case study for this research. In order to meet the objectives of this study, it was essential to gain an in depth understanding of the different agencies and institutions involved in the reconstruction process, including the framework within which they act, their relationships and interactions. Therefore, qualitative research was carried out, using a range of techniques including semi-structured interviews and the analysis of governmental and non-governmental policy documents.

For sustainable reconstruction, it is essential to observe the reconstruction choices made in different sectors. For this reason, the policies applied to preparation phase, planning phase and construction of infrastructure were analysed. The Pakistan Straw Bale and Appropriate Building (PAKSBAB), has been selected as the case study for this research.

3.3 Purpose of Dissertation:-
Reconstruction process should be considered as development opportunities and should open the access of different types of innovative solutions. These innovations should lead to vulnerability reduction, and should enhance human and other activities security in long term. By evaluating the overall information on the post disaster sustainable reconstruction programme, the successfulness of the process are raise awareness of sustainable reconstruction and to improve resilience to natural hazards in the future.

This study encourages project managers as well as planners to adapt this approach wherever possible in their projects. Implementing agencies, where possible, are asked to support the reconstruction of buildings and structures that are as energy efficient and low greenhouse gas emitting as possible. This study serves as a reference.

1. References


