Reconstruction Design Guideline for Seismic Risk Reduction after Bam Earthquake Approaching Tourism Development; Case of Khajeh Murad

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Abstract

The occurrence of natural disasters often leaves destructive effects on human life and assets. Since Iran is prone to natural disasters, the risks can bring intolerable economic and social detriments. Obviously, primitive acts before the occurrence of disasters and compilation of guidelines in preparedness phase are among the most effective solutions. Regarding the catastrophic earthquake in 2004 and the only urban reconstructing experience in Bam, Iran needs planning to reduce the risks of future disasters. To this end, Khajeh Murad neighbourhood was selected as the case of the present study because of its proximity to Arg-e Bam monument and its crucial role in restoring the tourism business.

The descriptive method was used. First internet resources and documents were investigated to come to a comprehensive understanding of the city followed by travelling to Bam and using survey method to evaluate the status in strategic area. Restricting the case study to Khjeh Murad and using SWOT technique, the weaknesses and strengths, opportunities and threats were listed. In the next step, reconstruction goals and objectives and Policies for resilient reconstruction approaching tourism development were determined. As result, Reconstruction Vision and design guideline of Khajeh Murad neighbourhood against future disasters is represented.

Keywords: (Risk reduction, visioning, design guideline, truism development,)

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Introduction

Statistics From The United Nations Environment Program (UNEP, 2008) Show An Increase In The Number Of Natural Disasters Over Time Attributing To Growing Populations, Urban Growth In Risk-Prone Areas Due To Scarcity Of Land, And Global Warming. Along With Increasing Frequency, Recent Disasters Show An Increase In Magnitude And Resulting Destruction (Red Cross, 2010).

The 2003 Bam Catastrophe Damaged A Significant Part Of The Historical Areas Of City And Created An Opportunity For Developing A Resilient Community (Fallahi,2008). Reconstruction Should Give

Significant Direction For Long-Term Urban Developments And Focus On Basic Urban Services Such As Housing, Traffic Infrastructure Technical Supply, Commercial, Social And Administrative Facilities (Red Cross, 2012).This Paper Aims To Suggest Design Policies T At The Khajeh Murad Neighbourhood In The City Of Bam To Reduce The Risks Of Future Disasters In The Vision Of Restoring The Tourism Business.

Research Methodology

Method of this study is descriptive. Data for initial evaluation was gathered from internet resources, available document and field survey from interview and direct observation of the place in the 2014. (sholami2013) the method of data analyses is based on SWOT technique and visioning. Visioning is a planning process through which any community creates a shared Vision for its future and begins to make that vision a reality. It provides an overlay for local plans, Policies, and decisions, as well as a guide to concrete actions in the wider community. In this paper Oregon Model is selected for visioning. The Oregon Model (see Figure 1) represents a comprehensive approach to visioning framed by five simple questions (Journal of Futures Studies2010):

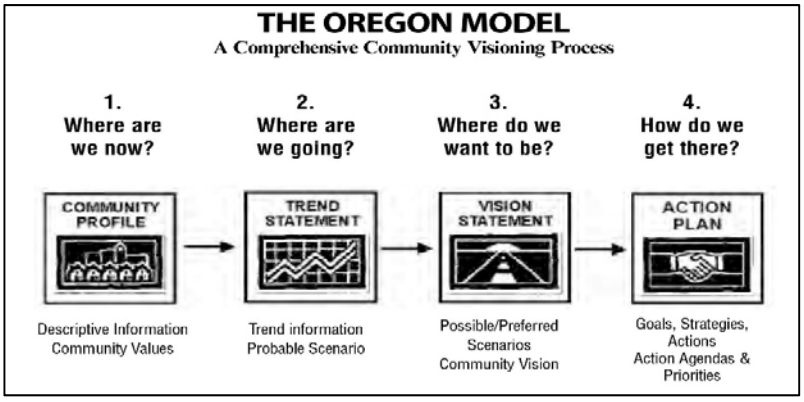

Figure 1: The Four Steps of the Oregon Model

In this study the main focus is on steps 1, 3 and 4. During the 1st step and in responding to the 1st question, situational analysis is performed. In second step the future ideal situation is presented in the form of a vision scenario. And by scoring the frame work alternatives the vision statement is formed and the 3rd question answered. In 3rd step and in response to the 4th question the action plan is defined by the goals, objectives and strategies in the form of guidelines.

1-Community Profile(Situational Analysis)

The first step is to profile the case study as it exists in the present. This involves identifying and describing key characteristics of the area in 5 layers: Land use, Physical Forms, Urban Perspective, Transportation and Accessibility and Public spaces. The district strategic plan is defined by overlaying of this 5 layer. The underlying intention of this step is to identify what is valuable in each layer, qualities that should be protected and enhanced; and along with identifying these, to

determine where negative factors could be removed or mitigated and to recognize where the opportunities for enhancement lie.(Green, et al 2000)

SWOT analysis can be considered as a useful tool for situational analysis of Khaje Murad historic Neighborhood(Center for Building Better Communities, 2007). SWOT technique is used to determine the strengths, weaknesses, opportunities, and threats of different layers such as aesthetic components (Physical Forms, urban perspective and public spaces layers) and functional components (land use, Transportation and Accessibility). Vulnerability is another component which affect the urban context through disasters and should be considered in this process.

Figure 2: District of Khaje Murad Neighborhood

Figure 3: Situational Analysis Plan

Summary of Swot

		Strengths	Weaknesses	Opportunities	Threats
aesthetic components	Physical Form	• Existence of large parcels • Existence of small blocks • Low occupation of buildings • Most of buildings have one story • Low density of buildings	• Existence of small parcels • Existence of large blocks • Abandoned prefabricated shelters • Existence of debris • unbalance façade • Some buildings height are beyond palm trees	• The chance of creating new architecture based on contextual identity	• New architecture will deprave the historic identity of the context

	urban perspective	• Existence of old tree • Existence of flower boxes beside the entrance of houses • Existence of palm trees • Corridor view to Arg_e_Bam • Corridor view to palm grove • Corridor view to main streets	• Creating infill architecture incompatible with the historical context • Lack of harmony in materials	• Connection of green areas with activities	• Demolished palm grove at the east of the context
	public spaces	• Existence of Khajeh Murad tomb • Existence of parks	• Unfavorable situation of Khajeh Murad tomb • Improper urban furniture • Lack of harmony in the feature of context	• Land with the potential of being public area	• unsuitable design of public spaces causing unsafe condition
functional components	land use	• Existence of mosque • Existence of school and clinic • Existence of palm grove • Existence of Arg_e_Bam	• vacant lands inside the context is the place for garbage • Inadequate commercial land use in the context	• proximity to Arg_e_Bam • Existence of stadium in the west of context • Palm grove leads to economic improvement and tourism attraction	• Demolishing of Arg_e_Bam • By disaster • Unsafe condition at palm grove
	Transportation and Accessibility	• Hierarchical system of accessibility • appropriate alley width • High permeability	• Lack of legibility in the system • Lack of signs for orientation • Low quality of roads • Not caring about elderly and disable people	• Appropriate width of the street and alley gives an opportunity for planting	Blind way as a threat at the time of disaster Recent constructed street are interfering with traditional structure of the context
disaster	Vulnerability	• Existence of clinic, school, open Space and vacant land • Existence of Arg_e_Bam as a focal point of the city	• Low quality of reconstruction • Insufficient open spaces • High density of residential buildings	• Existence of Arg_e_Bam in context increasing legibility • Using school and mosque as the secondary accommodation	• Demolishing of building will cause unlimited access into the site

Table 1: Summary Of Swot

2-Vision Statement

A "preferred scenario" is developed to describe what the community will look like if it responds to emerging trends and issues in a proactive manner. Ultimately, the community's formal vision statement is based on this scenario (Green, et all 2000). The scenario selected for Khaje Murad Neighbourhood is:

"Khaje Murad is one of the old neighborhoods situated in the west of Arge_e_Bam. Although this neighborhood is considered to be vulnerable, but vitality and the sense of cultural identity has been restored here and the aesthetical and functional aspects have been rehabilitated. And following a five years period, at minimum, has transformed into a resilient neighborhood. Accessibility, safety and climatic consideration have been contemplated through the neighborhood passages. And the walkways towards Arge_e_Bam have been improved in cultural and traditional aspects and renovated into touristic walkways. Proper combination of the facilities services, proportional to the development potential of neighborhood, has resulted in a dynamic community that not only is capable of satisfying its own necessities, but also is capable of providing services for other neighborhood communities. The dwellings have been constructed in the form of garden_house using local materials with acceptable quality and with an eye on traditional construction techniques. The palm groves have been revitalized and capacitated for traditional ceremonies."

3-Action Plan(Goals, Objectives, Policies, Guidelines)

The hierarchy of establishing the guideline is as follows: Goals will be derived from vision statement and the proposed framework plan, objectives will be elicited by goals and will dictated the policies. Guidelines for reconstruction towards a resilient touristic community are the final product of this process.

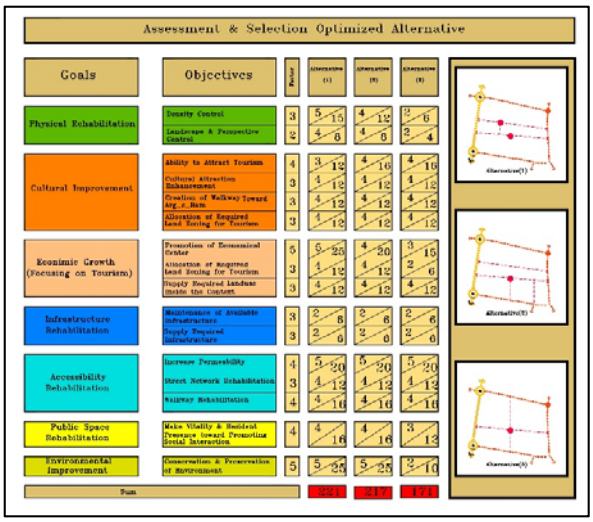

Figure 4: Assessment and Selection Optimized alternative

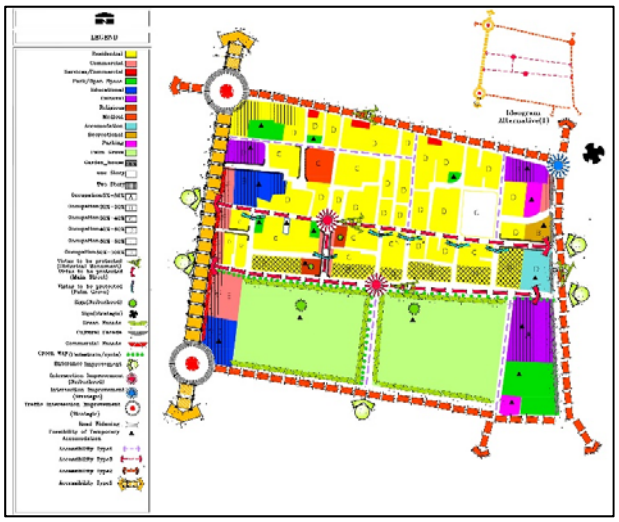

Figure 5: : Framework Plan

Policies

Goal 1: Physical Rehabilitation

policies	Limit number of building`s story Execute new building code Retrofit the available buildings Improve the people's knowledge by using the encouragement policies Enhancing people participation in the process of designing and implementation
Goal 2:Cultural Improvement	
policies	Designing livable focal points with special activities in order to improve identity Defining space boundaries physically/visually Designing urban public spaces around historical and local monument. Creating facades in order to make space enclosure Rehabilitation and restoration of historical places Designing local spaces to identify historical culture for new generations. Advertising and presenting the historical characteristics of the site to attract tourists Renovating Arg_e_Bam and Khaje Murad tomb Defining leisure activities to attract tourists to the district
Goal 3:Economical Growth (Focusing on tourism)	
policies	Holding seasonal festivals in public spaces in order to improve economic situation Consider commercial activities in the west of context for economical improvement Creating mixed use to have night life
Goal 4: Infrastructure Rehabilitation	
policies	Reducing energy usage by using solar energy
Goal 5: accessibility Rehabilitation	
policies	Using elements for reducing speed in pedestrian and vehicular routes or avoiding to design straight paths. Designing legible paths inside the local context. Caring about hierarchical process in designing accessibility Enhancing qualities of paths Emphasizing on pedestrian accessibility and limiting vehicular access into the site Designing path next to local symbols Enclosing dead ends alleys
Goal 6:Public Space Rehabilitation	
policies	Designing free activities (Cycling, local competition,…) to be able to attract all groups of people Using new focal point (refer to framework plan) as an important element to promote social interaction Designing attractive public spaces (in different scale) around the new focal point and Khaje Murad tomb in order to people participation
Goal 7:Environmental Improvement	
policies	Enhancing a quality of environment by limiting damage respecting biodiversity natural resources and reducing the use of non _renewable resources Regarding old trees in the process of regeneration Designing energy efficient buildings in order to use renewable resource Maintaining the existing palm grove and increasing green spaces and park Equipping path with natural and green elements. Designing climatical shelters

Table 2: Policies

Guidelines

Khaje Murad neighborhood guidelines are compiled in 6 layers including: Physical Forms, urban perspective, public spaces, land use, Transportation and Accessibility and at the end Vulnerability layer. This article briefly represent design details with seismic risk reduction approach in aspect of vulnerability.

Vulnerability

Access: prohibit using meandrous and blind alley, rehabilitate passages and evacuate debris, appropriate access for disable people such as ramp, consider suitable finishing such as tactility materials at the intersection of passages for blind people, possible access of vehicle besides pedestrians at the time of emergency phase, use speed bump in main street, consider distinct color for the speed bump, prepare safety of pedestrians by utilizing proper cover for underground canals. Use land marks for increasing the eligibility of alleys.

Public places: create safe and flexible open spaces, use green spaces and parks for emergency shelters, establish hooks in grass possible for erecting emergency tent, prepare concrete platform with wooden structure and palm leaf cover at the parks and palm grove for accommodation in the phase of disaster, provide public portable toilet and bathroom, locate fire hydrants in green spaces, rehabilitate the abandoned prefabricated shelters in vacant places, consider water supply and power generator and stockpiling.

Physical Form: consider regulations for building size and scale, blocks, parcels and plots such as: limitation of building height is 10 meters(2 or 3 floors) and occupation is 60%, forbid new architectural form that will destroy sky line in the future and deprave the historical identity of the context.

Safty: increase eligibility of lines at nights, appropriate lightening of outdoors.

Conclusion

The main incentive of this paper was to represent guidelines that leads to revitalizing historical context and reducing vulnerability khajeh murad neighbourhood after 2003 BAM earthquake. Describing the situational neighbourhood under SWOT approach, proposed vision scenario, golas will derive vision statement, objective will be elicited by goals and will dictated policies. Guidelines for reconstruction toward a resilient touristic community are the final product of this process, it can be used for local councils, developers, architectures and planners.as final advise this research can be useful for similar context where being faced natural disasters .

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