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Participatory Approach for Post-Earthquake Reconstruction in the Villages of Kachchh, India

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Synopsis

In 2001, an earthquake devastated the Kachchh region of Gujarat state, India. While responding to it, the rehabilitation and reconstruction policy taken by the Government of Gujarat unfold three emerging approaches of reconstruction process. In this paper, the extent and nature of community participation in these three different approaches has been evaluated in the light of 'Vitae System' paradigm. The end results help to understand how post- disasters response can be better made to relate to development to get a disaster resilient community.

Keywords: Kachchh earthquake reconstruction, participatory approach, vitae system.

1. Introduction

The progression of natural hazard towards a disaster is rooted in the prevailing or preset multivariable components of a society. Vulnerability is thus a potential reflexive outcome of various mal and unfit dyadic relations and growth between the structural and functional components of society or community. Thus, one of the major emerging trends in recent years is to view disaster management as a holistic task directly linked to the task of promoting development that creates resiliency toward all kinds of vulnerability (Okada and Misra, 2005) Rehabilitation and reconstruction strategy for a disaster affected community, in this sequence, is an opportunity set protecting this potential outcomes by securing the desirable growth of society. Participatory approach, involves people throughout development process in a way that empowers (Galena, 1998), is a means of strengthening this opportunity set. Thus, much of the thinking surrounding the relationship between disasters and development has been (and still is) about how post- disasters response can be better made to relate to development. (Cuny, 1983; James Lewis, 1999).

In this paper, the extent and nature of community participation has been evaluated in the light of 'Vitae System' perspective, developed by Okada and later modified by Okada and Misra (2005), to signify how post- disasters response can be better made to relate to development to get a disaster resilient community. Selected earthquake affected villages of Kachchh (Gujarat, India) have been taken for understanding of the issue. Extensive primary surveys as well as secondary sources are the methodological base of this study.

2. A conceptual understanding of 'Vitae System' paradigm

While accepting and arguing the objectivity of minimization of vulnerability toward disaster should be dovetailed into the very process of development, Okada and Misra (2005) proposed 'Vitae System' paradigm and its application to the development process which implies strengthening and enhancing power of the basic components of the development process within a workable paradigm that cuts vulnerability in a balanced way in all stages of the development process.

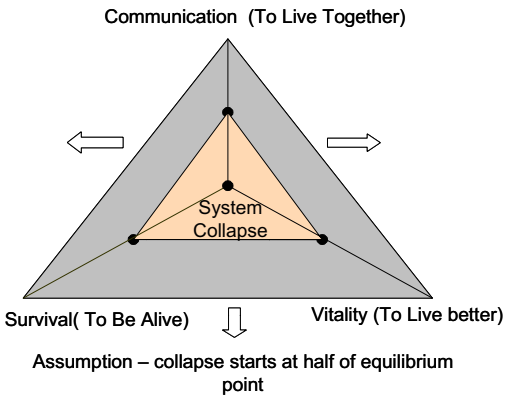

Fig. 1 Schema of Vitae System
(Source: Okada & Misra, 2005)

They proposed 'Vitae System' as essentially a 'techno-social network system' that aims to integrate the survival (to be alive) and communication (to live together) dimensions of the development process with its third basic and critical dimension vitality (to live better), together as a new paradigm (Fig.1).

They (Okada and Misra, 2005) intended to highlight three perceptions -

First, in the context of integrated disaster risk management, survival (to be alive), communication (to live together) and vitality (to live better) stand out as the basic and critical issues that require sensitive and realistic consideration.

Second, planning for a society that is resilient toward disasters essentially is a task to reduce vulnerability at all levels particularly in the development process.

Third, reduction of vulnerability to disaster is closely tied up with the enhancement of quality of life through increased access to all support systems for living that enhances economic strength and resiliency. In the proposed 'vitae system' we would relate the concept of quality of life to all the three dimensions. Thus, we discuss quality of vitality (QOV), quality of survival (QOS) and quality of communication (QOC).

3 Case Study

3.1 Background

Kachchh located in the western state Gujarat of India, is described as a "Museum of Environmental Hardships" and is one of the backward districts of the state. On January 26th, 2001 an earthquake recorded as 7.9 on the Richter scale struck Kachchh and other districts of Gujarat and its surrounding states. According to the estimation of the Government of Gujarat, around 20,083 people died, and approximately 167, 000 suffered injury. According to the official records, a total number of houses damaged are around 1.2 million out which 370,000 are totally destroyed and 650,000 are partially destroyed(http://www.gsdma.org/pdf/Earthquake%20Rehabilitation%20Policy.pdf). All the civic facilities – schools, hospitals, and health care and public buildings suffered massive destruction. More than 10,000 small and medium industrial units stopped production due to

Fig. 2 Earthquake Affected Areas in Kachchh, India
(Source: http://www.kcrcbhuj.org/maps.htm)

damage to plants, factories and machinery. (Asian Development Bank, 2001).

3.2 Post-Earthquake Rehabilitation and Reconstruction policy

In response to the disaster, the Government of Gujarat with the support of the World Bank, Asian Development Bank, United Nations, and other multilateral and bilateral agencies, has prepared the Gujarat Earthquake Rehabilitation and Reconstruction Policy by aiming at becoming a people's program. As far as our study is concerned, the two major reconstruction packages offered by the Gujarat Government (http://www.gsdma.org/pdf/Earthquake%20Rehabilitation%20Policy.pdf) are as follows.

Package No 1: Relocation of Village

(1). Relocation of Completely damaged villages where the damage is more than 70% will be taken up with full involvement of the villagers and with the consent of Gram Sabha (Village Council).
(2). The minimum contribution by NGOs and others will be 50% of the total cost.
(3). Earthquake resistant infra-structure facilities will be developed in the new village sites
(4). The state government through roads and buildings department will provide layout design, technical and composition of material ingredients for the reconstruction, building regulations and town planning rules will be strictly followed for construction of private and public buildings

The Package No. 2: In-Situ Rehabilitation

(1). In Case that the most affected villages are not coming forward for relocation, the package No. 2 (In-Situ Reconstruction) is applicable.
(2). The villagers either built their own house by getting financial and technical assistance from the government or if any agency (NGO) pertaining the village, will share 50% of the total cost of private housing as well as public infrastructure in that village.
(3). The government financial assistance will be available to owner of the property. In case of the villages, which are partnered by NGOs, this assistance will be canalized through the NGO.
(4). The financial assistance will be given on the basis of degree and extent of damage, subject to an upper financial assistance limit of Rs. 90,000 for one household.
(5). A local team consists of 'Gram Sarpanch' (village councilor), village engineer, revenue officer and a school headmaster will conduct damage survey for releasing financial assistance.
(6). The government/NGO will provide technical guidance; provide materials specification for earthquake resistant building
(7). All the building regulations and by-laws of appropriate authority and earthquake standards and norms have to be strictly followed.

4. Selection of Case- study Areas

The government thus provides villagers basically two different options for reconstruction, i.e., either going along with NGO for the reconstruction work or follows the Owner Driven approach. As a result, ultimately three different scenarios have emerged in Gujarat earthquake reconstruction:

(1). The NGO are engaged in the reconstruction for the villagers without the involvement of the people who got affected by the natural disaster, called Product Centric Approach
(2). The NGO are engaged in the reconstruction, involving the people into the process, called People Centric Approach.
(3). The People are opting to under take their own reconstruction and rehabilitation work taking the compensation from the Government, called Owner Driven Approach.

Thus three villagers are selected so that they are fit in the three scenarios of reconstruction process as mentioned above.

The village level information has been packed in the Table 1.

5. Extent of people's Participation in the light of Vitae System

Participatory approach in a post-disaster scenario is a means of achieving well being of the society. Subsequently, the reconstruction process must ensure people participation in a system that help the community being a disaster resilient community, which is a positive outcome of holistic development of society as argued in 'Vitae System' paradigm . "Participation implies empowering people to mobilize their own capacities, be

social actors, rather than passive subjects, manage the resources, make decisions, and control the activities that affect their lives"(Cernia: 1984). In consequence, the extent of people role and function in reconstruction process in three above mentioned villages have been evaluated by taking the components as mentioned in the Table 2.

The process of post-earthquake reconstruction in various approaches, packed in the Table 2, signify only distinctive degrees of community involvement and also imply that the people centric approach allows community to be a part of the reconstruction process in a higher degree through the process of constituting organization, using their skill, giving ownership etc. But, these simply categorization does not ensure or allow us putting degree or value on the direction of societal growth towards reducing vulnerability. The above analysis also does not confirm and identify any enviable approach for reconstruction process, unless and until the product of this process is appraised. The question can also arise that what way the involvement of people as well as reconstruction approach is more meaningful to make a community more resilient towards disaster. Priority setting of reconstruction process also can be possible only when the objective of development is viewed in more comprehensible way.

Table 1 Brief description of the village

	Type – 3 Product Centric Approach	**Type – 2 : People Centric Approach**	**Type – I: Owner Driven Approach**
Representative Village	**Hajapar**	**Ludiya**	**Bitta**
Location	Located in the Bhuj Taluka (Sub-District).	50 kms north of Bhuj city in Bhuj Taluka(Sub-District).	85 kms west from Bhuj city in Abdasa Taluka (Sub-District).
Area	3 sq.km	5sq.km	4 sq.km
Population	720	1800	1062
Impact of earthquake	More than 85% houses and all public building were damaged	More than 70% of the houses were fully collapsed	1 people died; individual houses, community buildings were damaged and collapsed.
Mode of Reconstruction	Relocation of the settlement.	Partially relocated	In-situ development

Source: Primary Survey, 2005; Hzapar Gram Panchayat, 2005; Bitta Gram Panchat, 2005; http://www.india-movement.org/national/gujarat/index.htm

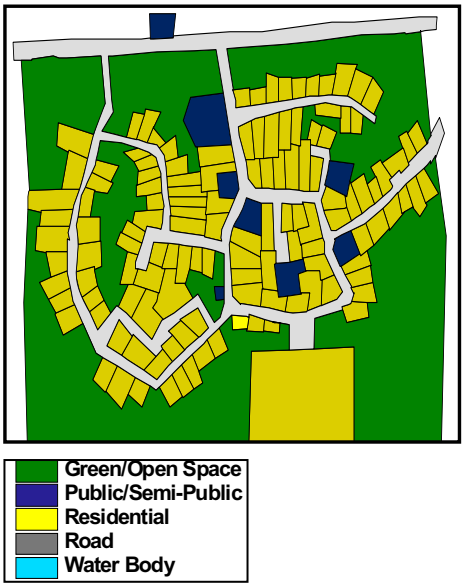

Fig. 3 Landuse map of old Hazapar
(Source: Hazapar Village Panchayat)

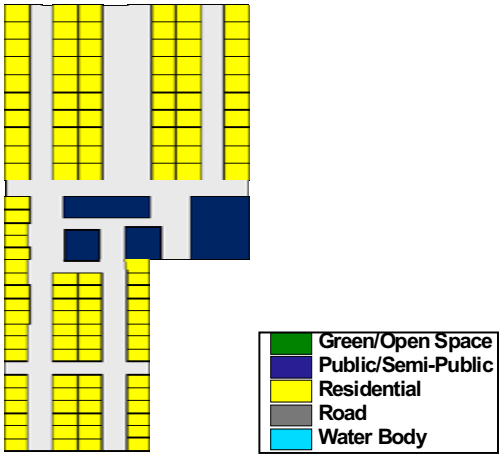

Fig. 4 Landuse map of Relocated Hazapar
(Source: Hazapar Village Panchayat; Primary Survey, 2005)

Table 2 Extent of people participation in various approaches

Extent of people's Participation	**Product Centric Approach (Village – Hajapar)**	**People Centric Approach (Village – Ludia)**	**Owner Driven Approach (Village - Bitta)**
Organizational set up	A village level organization was formed including only Gram Sarpanch (Village Council) and NGO.	Reconstruction process was guided by village organization consist of all community leaders, NGO and Gram Sarpach (Village Council).	Village level organization was mainly dominated by Village engineers and Upper class leader.
Design	NGO designed DU plan and village layout	Village lay layout and Dwelling units were designed with the active participation of all community members.	Owner designed their own house, but the community buildings were designed only by village engineer and upper caste leaders.
Using Local Resources (Knowledge, Labor, Skill, Building Materials)	NGO hired labor, building materials, technology everything from outside the village.	- Traditional Bhunja design was followed for dwelling unit plan. - Each household gave voluntary labor for 2 months	Though lower caste used their labor and traditional skill and local building materials, yet it is totally absent in case of upper caste.
Decision Making	NGO decided every aspects of reconstruction.	Villagers decided everything by consulting with NGO technician	The owners were free to decide every aspects of reconstruction of their own house, but in village level issue were decided only by a few dominated groups.
Training Programme	No training programme or village meeting was organized	Training programme and village meeting was organized frequently.	Training programme was organized, but the villagers did not participate. The decision in the village meeting was only decided by a dominant caste and village government officers.
Ownership	Villagers have got the new house in contact of lease.	Villagers have got the full ownership of the house.	Villagers have got the full ownership of the house
Maintenance	The new build house is poorly maintained, particularly the community facilities.	Individual houses as well community buildings and facilities are well maintained by the villagers.	Individual houses are well maintained by the owners, but the maintenance of common facilities is poor.
Monitoring	Absent	Village leaders and NGO technicians monitored the reconstruction.	People blamed the monitoring is biased and manipulative as because village engineer decided everything.

Source: Primary Survey, 2005; Hzapar Gram Panchayat, 2005; Bitta Gram Panchat, 2005; http://www.india-movement.org/national/gujarat/index.htm

It is often argued that participation means the meaningful involvement of the poor and voiceless in the development process, thus in a post-disaster reconstruction process, meaningful implies reducing vulnerability which 'Vitae System' like to see as a concomitant phenomena of holistic growth of society.

We are taking the privilege by putting the variables which emerged as endings due to differential reconstruction approaches, in the three qualitative aspects of vitae structure. (Table 3)

The consequences of differential reconstruction processes (Table 3) simplify that how the extent of community participation (Table 2) is strappingly related with the quality of three dimensional 'vitae' components (Table 3) and vis-à-vis. For example, in case product centric approach, the houses are earthquake resistant but people have rejected these as because the dwelling unit design and the village layout were planed by NGO without any consultation and involvement of people and thus unable to secure people's requirement. The new village layout is a threat to community social bondage, and also to their traditional social and economic activities (Fig 3 & 4). Thus, the reconstruction ensure the people's 'quality of survival' (QOS), but unable to cover the 'quality of communication' (QOC). Due to lack of communication and unity among different groups on the other hand, bound powerless people to stay in temporary house indicates the threats to 'quality of survival' (QOS). The health centre was reconstructed but people are unable to get access as because of expensiveness which is thus a threat to the community's 'quality of vitality' (QOV).

The owner driven approach shows a section of people got financial assistance, but used it for other purpose like using for daughter marriage, instead of reconstructing their house. Thus it can be argued that if the 'quality of survival' (QUS) is not secured then the 'quality of vitality' (QUV) can not be secured. The issues also like that weak organization structure and inappropriate monitoring mechanism are reflected in the community disputes, village level corruptions, which are the threats to 'quality of communication' (QUC). An undesirable 'quality of communication' (QUC) on the other hand become a threat for the 'quality of vitality' (QUV) as because due to dominance of upper caste, the socially and economically backward caste are unable to get proper financial assistance and bound to stay in damaged house.

People's involvement in the reconstruction process in the forms of taking part in village meeting, representing members in village organization, taking part in designing village layout etc , in case of people centric approach, help the villagers to achieve or fulfill 'quality of survival' (QUS) for example, getting shelter for all. The traditional village layout, dwelling unit plan, equitable distribution wealth also ensure the quality of communication (QUC). The balance growth of QUS and QUC consequently help the villagers to improve their Quality of vitality (QUV) like, enrollment of all children in school which was absent earlier.

Disaster is a potential threat in both ways i.e. a damager of existing components of a social system and also a creator of stumbling block for spontaneous positive growth of the social system. It is true that in a post-disaster situation a community re-socialized with new situation, but also by maintaining simultaneously a sequential relation with its generic growth. In our study, we found that in Hazapar village, after the severe damage of houses, people wanted house for the shelter but by not sacrificing or neglecting their socio cultural requirements. Since the newly built house is unable to fulfill their requirements, they rejected to be relocated. Thus, Post-disaster reconstruction is a process or a development attempt that helps the community not only to overcome damage happened directly due to the latest disaster, but also to help the community to upgrade its normal and spontaneous positive growth where the natural hazard is a present as well as potential threat. This development attempt which in other dimension is value assigned knowledge, when come into practice, again reassigned with value by the end users. The Participatory approach is thus a tool for helping any policy or planning to finding out this reassigning value in a manifested manner. People's involvement thus gives meaningful dimension to the addressed issues by making it more users friendly.

6. Conclusion

Inducing people involvement towards a meaningful development where reducing vulnerability is a major consideration, can only be achieved, if we have to have a guiding source to identify the nature and extent of people's re-socialization after disaster, in relation with its generic growth. Vitae system is such a distinctive paradigm which helps to manifesting this complexity of

Table 3 The evaluation of reconstruction results in the light of 'Vitae System' components

Quality of Survival (QOS)	Product Centric Approach (Village – Hajapar)	People Centric Approach (Village – Ludia)	Owner Driven Approach (Village - Bitta)
Shelter	- 15 % of the villagers are still staying in temporary house. - Only 40% of the new shelter have been occupied and accepted by the villagers.	Each household has been provided two Bhunga room (traditional dwelling unit).	- All the households have been covered under the programme - 9 household have been found whose reconstruction is not completed yet, due to lack financial assistance. - 5 case have been found that headman got the financial assistance but utilized it for other purpose like investing in daughters marriage (see picture- 1)
Quality of Vitality (QOV)			
Condition of House	The buildings are structurally earthquake resistant.	All the building are earthquake resistant	Local NGO survey reported that more than 30% new dwelling units are structurally vulnerable.
Social and Physical Infra-structure	Heath centre, School , panchayat (village council) office were reconstructed People are unable to get the benefit of health centre as because it is expensive.	All the village children are going to school now. People are using traditional water harvesting system by renovating their well and pond.	School was reconstructed and all the village children are enrolled. The villagers suffer due to inadequate water and electricity supply.
Quality of Communication (QOC).			
Village lay out and Dwelling Unit Plan	Out of 110 new Dwelling Unit, only 56 DU are presently occupied by the villagers as because the DU plan and village layout is unable to meet up local people requirements. (Fig 1 & 2)	All the individual houses were built in a Bhunga (traditional building) style. The kinship and community bondage are followed while making village layout.	This is an in-situ development. Dwelling unit is highly accepted as because it is designed by the owner.
Social equality and disparity	8 households of the village are still staying in temporary shelter.	All the households have got same dwelling unit.	The cost of dwelling unit not only varied between different groups, but at least 7 households are still unable to complete their house due monetary problem. Higher castes constitute 30% of the village population, but got 65% share of the total government financial assistance.
Intra-village relationship	Conflict emerged between various groups due to reconstruction issue.	The relation between different communities is very well. The Harijan gave their labor to constructing houses of Muslim and in return got land from them. for construction	Conflict and violence took place several times between different communities in relation to reconstruction issue

Source: Primary Survey, 2005; Hzapar Gram Panchayat, 2005; Bitta Gram Panchat, 2005; http://www.india-movement.org/national/gujarat/index.htm

social system in a post disaster scenario, that helps the implementation technology to have a viable ground for operation. As our research shows that after a devastating housing damage, reconstructing houses with proper engineering mechanism can not reduce the venerability as because people have rejected this due to its incompatibility to capture the importance of village layout and dwelling unit plan in maintaining kinship and

community bondage, maintaining wave of interactions and performing socio economic activities. Contrary, the reconstruction process by securing peoples social bondage, community power equality through creating village level organization, following traditional village layout in Ludiya village, built up confidence among villagers that help for the enrollment of all village children in school after disaster. If in scenario first, the lack of 'quality of communication' (QUC) adversely affect the 'quality of vitality' (QUV) and make the community more vulnerable due to imbalanced growth of 'vitae structure'; then in scenario second, improving the 'quality of communication' (QUS) helps to improve and maintain 'quality of vitality' (QUV) and this balanced structural growth ensure the vitae structure being away from collapsed, ultimately helping to get a more disaster resilient community. People's participation is thus required in such a way where the people will get opportunity to be involved to make decision in all aspects of the vitae structure namely survival, vitality and communication.

A locally calibrated implementation technology ensures a more disaster resilient community. The evidence of best practices all over the world in the field of disaster mitigation and management reestablished this reality. Transformation of knowledge into practice in a locally calibrated process passes through all the stages which are comprised with beliefs, values, rituals, habits, customs, and dogmas of that particular local social system. In other sense, Local calibration takes place where the interaction of local individuals is more face to face or primary relation. This generic bond may help to construct an objective reality through the amalgamation of various subjective realities. The subjective reality of the owner of knowledge and subjective reality of action maker is thus quite similar or may say same as because the primary relation help them to pass through same societal ambulation. Participation in a development process is thus ultimately a process which intensifies the primary relation and ultimately helps to transfer the various subjective realities into a more common objective reality. Understanding of locally calibrated knowledge in this way helps to understand us how local people internalize knowledge which was calibrated due to fulfilling the requirements of quality of all the components of vitae structure or the social system. Thus it is positively intuitive that learning from locally calibrated knowledge can strengthen implantation science by understanding the process of formation of vitae structure in connotation with natural hazards. An in-depth study on it helps and gives positive and meaningful direction for the implementation science of integrated disaster risk management

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インド・カチュ村における震災復興のための参加型アプローチに関する研究

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要旨

2001 年の地震により、インド・グジャラート州カチュ地域は壊滅的な被害を受けた。これを受けグジャラート州政府によって立てられた再建復興計画は、３つの異なるアプローチで展開された。本稿では、これら３つのアプローチにおけるコミュニティの参加の質的・量的な評価を、「生命体システム(Vitae System)」の考え方に基づいて行う。本研究の結果は、災害からの回復力(Resiliency)に富むコミュニティの形成に関して、有用な知識を供する。

キーワード： Kachchh地震からの復興，参加型アプローチ，生命体システム