PalArch's Journal of Archaeology of Egypt / Egyptology

KASHMIR POST-QUAKE RECONSTRUCTION: ANALYSING INTERDEPENDENCE OF CULTURE AND POLICY

Syeda Raaeha-Tuz-Zahra Abidi[1], Nida Jawad[2]

[1]Assistant Professor School of Art, Design and Architecture NUST, Islamabad, Pakistan

[2]Assistant Professor Department of Architecture COMSATS University Islamabad

Email : [1]zahra.abidi@sada.nust.edu.pk [2]nidajawad@comsats.edu.pk

[2]Jawad.nida@gmail.com

Syeda Raaeha-Tuz-Zahra Abidi, Nida Jawad. Kashmir Post-Quake Reconstruction: Analysing Interdependence of Culture and Policy -- Palarch's Journal of Archaeology of Egypt/Egyptology 19(3), 805-823. ISSN 1567-214x

Keywords: Policy, Odr, Reconstruction, Indigenous Practices, Family System, Tower Roof.

ABSTRACT

This paper examines the complex interdependence of culture and policies in post 2005 Kashmir earthquake reconstruction and highlights the innovative steps taken by community and ERRA (Earthquake Reconstruction and Rehabilitation Authority) Pakistan. Centering the results of surveys of the area, the intricate relationship of policy and culture is categorized as **(1) Reconstruction policies focused upon socio-cultural requirements**: ERRA must be admired for adopting the policy of Owner Driven Reconstruction (ODR) with financial and technical assistance. This approach respected "self-reliance", a known cultural characteristic of rural Kashmir. **(2) Reconstruction policies changed socio-cultural characteristic**: the policies of ERRA have influenced the "family structure" of Kashmir. Numerous extended families in pre-quake state have become nuclear families in post-quake situation. **(3) Socio-cultural characteristic affected reconstruction policies**: reconstruction of Kashmir is an interesting case where authorities were compelled by the community to include traditional construction practices into construction policies. As "Building" is one of the most important cultural expressions of any society, ERRA strengthened this aspect by certifying Dhajji-dewari and Leepa as earthquake resistant indigenous construction techniques. **(4) Socio-cultural characteristics and policies went side by side, without affecting each other**: this phenomenon is predominant in Tower Roof construction. Tower roof is the attic space in single storey houses and was rarely practiced before earthquake. Kashmiris have the culture of "living in large spaces". As ERRA did not provide guidelines for double-storey houses earlier, people adopted tower roof to overcome space deficiency. ERRA could not make any objection on this

novelty. The paper concludes that cultural stability after any disaster depends upon the policies to great extent. The paper also stresses upon investigative studies to reduce vulnerability and enhance capacity of any society.

THE DISCUSSION

Culture has multifaceted aspects forming the identity of any society. Disasters can affect, diminish, damage, or sometimes enhance these aspects making the society more vulnerable to another catastrophe. Post disaster reconstruction programs focusing on reducing vulnerability and enhancing the capacity of community if overlook the target community, reconstruction itself becomes worse than disasters and affects the culture negatively. It is essential to understand the culture of a community and to promote the disaster reducing aspects particular to that culture. Doing so, authorities can elevate the resilience of population where disasters become a gateway for changing adversity into opportunity. They may provide maximum zest to any community to regain its strength and to overcome its wrong practices. In many countries, post disaster reconstruction has generated the culture of safe construction practices which now seems to be part of their identity from day one.

This paper will discuss the reconstruction program of Kashmir focusing that culture and policy have strong interdependence. Through field surveys of two districts and reviewing recent researches, the paper examines reconstruction of Azad Jammu and Kashmir (AJK) Pakistan in the light of socio-cultural characteristics. Different relations of culture and policy observed in Kashmir are categorized into four points which elaborate the changing trends of reconstruction approaches.

INTRODUCTION

Kashmir is an area with diverse socio-cultural characteristics. The region of Kashmir which is administered by Pakistan is called Pakistan Administered Kashmir (PAK) or Azad Jammu & Kashmir (AJK). Geographically it has many barriers, and it covers plains, glaciers, mountains and lakes, forested foothills and high ranges such as the Himalayas and the Karakoram, stretching up to K2, the second highest peak in the world (Bowers, P., 2004).

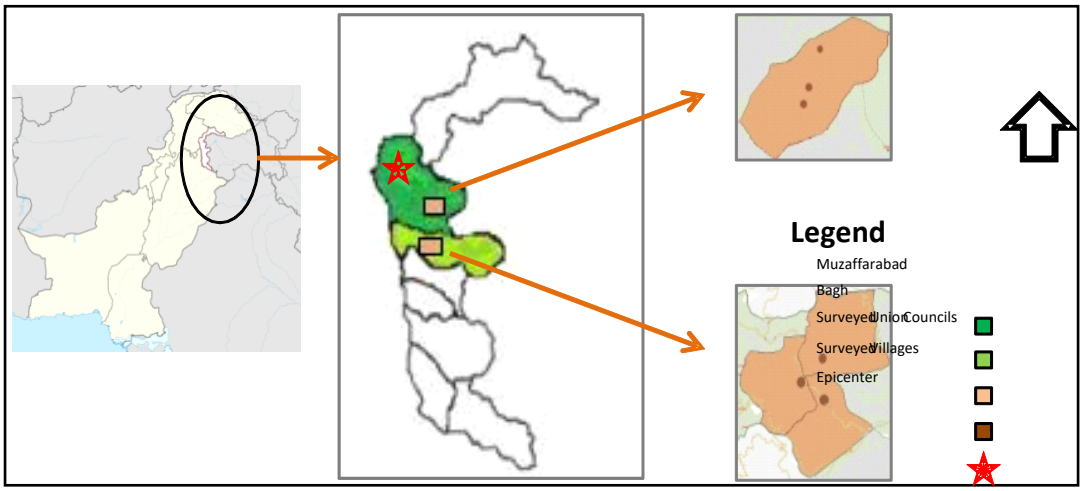

Figure 1: Location of AJK in Pakistan. Surveyed villages in two districts are also mentioned. (Courtesy: Google maps)

Devastating Kashmir Earthquake

On 8th October 2005, northern province of Pakistan named Khayber Pakhtunkhwa, and Azad Jammu & Kashmir (AJK) experienced the most devastating earthquake in the history of the country. The magnitude was recorded 7.6 on the Richter scale which affected an area of 30,000 sq. km. 86,000 people died (USGS) and 128,304 got injured in this event. The earthquake rendered 3.5 million people homeless as around 600,000 houses were destroyed (ERRA, M&E Report, 2011) among which 463,243 were completely destroyed rural houses (ERRA official website).

The earthquake also destroyed or damaged health facilities, education centers and government sector buildings. Infrastructure destruction caused severe interruption in the supply of aid to needy communities. Damages to telecom and power created chaos in the hour of emergency (ERRA, M&E Report, 2011).
A majority of the deaths during the earthquake occurred due to near instantaneous collapse of poorly constructed buildings and homes. 80 percent of all the buildings that collapsed were katcha (temporary) houses in rural areas which had been built without any element of seismic resistance. (ERRA, 2007)

Kashmir Post-Quake Reconstruction

Unlike many other neighboring countries Pakistan did not face a seismic devastation since its existence in 1947 (USGS). This fact was a major reason for not preparing disaster plans in the country. At the time of earthquake there was no authority exclusively responsible to handle this emergency. Earthquake Reconstruction & Rehabilitation Authority (ERRA) was formulated quickly after the event. This authority was responsible to take decisions from relief to reconstruction phases and was a nucleus for donors, NGOs, technical experts and the community. ERRA's mandate included restoration and reconstruction of physical assets and infrastructure as well as revival of livelihoods that were lost in the massive earthquake. The reconstruction program that took off in April 2006 (ERRA, 2007) went through many changes in policies with time. These changes will be discussed in this paper just under the focus of study.

ERRA launched Rural Housing Reconstruction Program (RHRP) to reconstruct the rural areas of earthquake hit regions. As 314,474 housing units were damaged only in Kashmir (SERRA official website), it was not an easy task to rebuild seismically resistant houses scattered far away from the access routes. Another issue reported was that no census was conducted in the region after 1998 so it was a big challenge to approach every single house (AJK official website). It was also difficult to attract the community towards new techniques and materials and to change their mind set (ERRA, 2007).
ERRA however is acknowledged worldwide for its transparent, efficient and effective program. 92% reconstructed houses are claimed to be seismically resistant (ERRA website).

METHODOLOGY

This article reveals the state of two districts of AJK; Muzaffarabad and Bagh, after reconstruction phase and is primarily based upon the results of surveys conducted in the region during doctorate studies. Qualitative research was carried out to have detailed view-point of the community. The authors recorded the vernacular houses state and an observation-based study led the results of this research. Eighty households were surveyed to investigate the future of Kashmir reconstruction in the light of socio-cultural characteristics. A pre-earthquake house plan for each house, as memorized by house owners, was also sketched. This aspect helped determine the relation of physical changes to psychological changes hence generating new cultures and norms. Semi structured interviews were carried out with the masons and social mobilizers. This article does not provide a quantified analysis of culture-policy relation rather a generic trend is depicted under four aspects.

The paper also uses the results of previous research works conducted by scholars and different organizations. One to one interviews with policy makers and implementers are also focused to formulize the discussion.

Relationship between Culture and Policy

The paper unveils four types of relations between culture and policies as:

Reconstruction Policies Focused upon Socio-Cultural Requirements:

ERRA announced several policies which were focusing upon cultural requirements of the community. One of the biggest challenges was to make people confident for reconstruction. Under this discussion the paper concentrates upon the cultural characteristic- self reliance and the policy focusing upon it as ODR.

Cultural Characteristic: Self Reliance

Kashmiris have faced an era of unrest for centuries. These people not only strived for liberty, they also faced hard climatic conditions and access issues in daily life. In these circumstances they have learnt to overcome the depressing past and hopeless present. These people are self reliant and know to cope with every sort of issues. This characteristic was extremely evident when people of Kashmir started reconstruction without waiting for policies and financial support by external agencies (Mumtaz et al, 2008). However people needed to know the safer construction techniques to avoid future disaster threats. They were in the state of trauma after disaster and needed to recover from this condition to start a normal life. Authorities were responsible to rebuild their confidence through launching user friendly policies.

ERRA Policy

During recent researches Owner Driven Reconstruction (ODR) is found to be the most effective reconstruction approach in different parts of the world (Bothara et al, 2016, Vahanvati, M. 2018). Through this approach house owner

reconstructs his house according to his own priorities. It was the post-earthquake Gujarat reconstruction that pioneered this practice in reconstruction phase (Barenstein, J., 2006). After that it is continuously carried out for post-disaster reconstruction in other regions. During past few reconstruction drives in Asia, ODR confirmed several advantages that include (i) Lower administrative burden, (ii) Higher social adaptability and acceptability, (iii) Speed and quality in reconstruction, and (iv) 'Penetration' of improved construction techniques into the local culture of construction. (Abidi, S.R. et al, 2011)

From day one ERRA announced the reconstruction approach to be owner driven with financial and technical assistance. This was the first ever case when this approach was applied for the reconstruction of such huge area. As ODR shows exceptional results when united with financial and technical assistance (Jha, K.A., 2010), Kashmir reconstruction confirmed excellent results in housing sector (IRIN, 2010).

Detail Of Assistance

The Rural Housing Reconstruction Program was targeted to provide financial and technical assistance to earthquake affected home-owners in both Khayber Pakhtunkhwa and AJK in reconstructing and retrofitting their damaged houses, using a home-owner driven, assisted and inspected construction regime (ERRA, M&E Report, 2011). To the extent possible the authority discouraged relocation of houses; hence in situ reconstruction was promoted. Sub-components of this principle covered the operational measures necessary to ensure appropriate pace of construction while ensuring seismic safety (ERRA, M&E Report, 2011). These included:

Housing Grants:

Financial assistance was aimed to facilitate the owners of both katcha (temporary) and pucca (permanent) houses, by disbursing money, directly into the accounts of eligible beneficiaries, with the condition that the houses are constructed in compliance with ERRA standards, with a "core house" between 250 to 400 square feet. Below is a breakdown showing how the financial assistance was disbursed.

For destroyed houses or houses with structural damage beyond economic repair, an initial payment of * PKR 25,000 was provided to cover immediate shelter needs. The balance of PKR 150,000 was provided for permanent house construction. These payments were made in three installments:

- PKR 75,000 for mobilization;
- PKR 25,000 upon completion of plinth level;
- PKR 50,000 upon completion of the walls.

For structurally damaged houses within economic repair, an initial payment of PKR 25,000 was made to cover immediate shelter needs, while only one installment of PKR 50,000 was paid for restoration and/or retrofitting.

i. Technical Assistance:

Technical assistance was targeted at local authorities and partner organizations in the implementation of rural housing strategy, covering:

- Hazard risk mapping;
- Damage and eligibility assessment;
- Earthquake-resistant housing solutions;
- Facilitating building material market;
- Land and property-related issues.

Offering this sort of technical aid, ERRA generated an organized system for reconstruction. It shows that reconstruction was not just aimed to rebuild a house; it was to strengthen the society. If technical assistance was not provided with financial aid, it was difficult for people to reach such an extent of excellence.

Capacity Building:

Capacity building was ensured through formal and informal trainings, as well as information dissemination campaigns in the following areas:

- ERRA policies and procedures;
- Social mobilization;
- Specialized modules on land adjudication, relocation and re-planning;
- Environmental degradation reduction;
- Housing reconstruction training;
- Skilled labor training;
- Compliance training

The trainings offered by the authorities had remarkable effects on reconstruction. During 2008 Quetta earthquake reconstruction ODR with financial assistance was adopted but without any technical assistance. This much smaller reconstruction (less than 10,000 residential units) was overwhelmed with an extremely slow rate, construction of vulnerable building types, and misuse of financial aid. Sixteen months after the event, only 2 % of houses were reconstructed despite a financial package almost twice that of the Kashmir earthquake. Older vulnerable construction practices including unsafe foundations were reported as well as self-devised innovations some of which were assessed as likely to increase the vulnerability of the structures rather than decreasing it (UNHABITAT, 2010).

The above mentioned sub policies under RHRP had positive results as

*1US dollar was equivalent to PKR 60 in 2005.

- People reconstructed on the pre-earthquake locations by which they did not feel dethatched from their roots. (The relocation chosen by household himself shall be discussed under point 4.2)
- Tranche system accelerated the pace of reconstruction. People kept on rebuilding to get another tranche. The moment tranches were all transferred, people stopped consulting ERRA officials for further progress. (This aspect shall be discussed in detail under point 4.4 of this paper.)
- People selected the type of construction according to their own requirements and priorities. This resulted into a better acceptability by people for reconstructed houses. This case is opposite to Contractor/NGO Driven Reconstruction where people do not like to live in reconstructed houses (Jigyasu, R., 2000)
- Many people constructed their houses themselves. This approach helped people come out of the feeling of loss and trauma.
- Women were equally involved in the reconstruction process. Kashmiris have a culture to work outside their region to avail more opportunities. This way women and children are left behind. The authority promoted training of males as well as females. Through this way women could supervise the construction of their homes even in the absence of male members.
- More than 700,000 human resource was trained for seismically resistant construction (ERRA website). ERRA policies created awareness among every group of society. Masons, labors and house owners, all got trainings to rebuild better.

Figure 2: Women also participated in reconstruction activities. Source: left (ERRA) right (UNHABITAT, 2007)

In A Glance

Reconstruction if not generates safe culture in the society; it gets plagued within few years hence making the society more vulnerable to future hazards. ODR provided an opportunity to the authorities and the society to endorse safer construction techniques. All of the eighty households in our surveys showed satisfaction for this approach. The respondents were aware of what they constructed, how they constructed and why they had adapted any specific

technique. Amazingly women of Kashmir appeared to be equally aware about construction details as were the men.

Reconstruction Policies Changed Socio-Cultural Characteristic:

Under this argument we shall focus on just one cultural characteristic which is *family structure.* While forming policies decision makers sometimes can not foresee the way which community will select for moving forward. Rules are made with set parameters and it is expected that people will follow them according to pre decided patterns but it does not happen so. Here we analyze the cultural aspect affected by a particular policy of ERRA.

Cultural characteristic: Family Structure

In pre-earthquake scenario Kashmiris had a tradition of living in extended family system. If extended family was split, the nuclear families were mostly settled in close proximity. Average family size was 7.2 (AJK website). Culturally it was a norm that when elder son got married, he resided with the family for few years and afterwards got separated. Similarly other sons separated from parents after marriage. The parents hence resided with the youngest son even though he got married. In many cases, if the parents had grand houses, their sons resided with them for long time. The situation became bit different if houses were multi storey. In this case every son occupied one floor with his family.

With extended families people not only resided together, they equally shared all the responsibilities. For financial assistance, mostly everyone shared same amount for monthly expenditure. The yield was also equally distributed among all family members.

Policy of ERRA

None of ERRA policy *changed* the family system rather it produced room for this change. The policy of ERRA which influenced family structure of AJK most is one stove-one compensation. In Rural Housing Reconstruction Program (RHRP) ERRA had the policy of giving PKR 175,000 to one completely destroyed (CD) house. This amount was not sufficient to rebuild grand houses for extended families. Ultimately a shift towards nuclear family system was a better solution for earthquake victims. Generally people gathered salvaged material on agricultural land where they did not have any house before earthquake. The surveyors from authorities considered it as CD and approved it for financial assistance.

As stated by an ex-official of UNHABITAT, “Prior to earthquake, authorities had the record of 200,000 houses to be completely destroyed but when we carried out household and livelihood surveys to substantiate damage assessment, the figure turned to 600,000”. Almost same statement was delivered by Asian Development Bank (ADB) official in a conference (Conference proceedings, 2012). It is therefore obvious that number of housing units was increased during post-quake reconstruction.

Why people went for nuclear families?

Besides aforementioned policy-oriented reason, two main factors are found under this study for rejecting extended family system and adapting nuclear family structure:

Deprivation

In an interview a seismic expert highlighted this fact. He said, "If a nation has experienced centuries of slavery, it does not behave the same manner as free nations do. As Sub-Continent was ruled by different emperors and suffered from colonialism, deprivation has become its cultural part. Owing to this, no matter people need money or not, they will try to avail every possibility of financial assistance. In the aftermath of earthquake, people exploited ERRA policy. They made fake cases of CDs to avail maximum funding from the authority. Just to acquire more money, they did not consider the consequences. Hence even if the family members wanted to live together, they were split in the form of nuclear families."

This aspect was never mentioned in any of our surveys conducted in both districts. People never said they made a fake case of CD.

Disputes Among Family Members

During surveys most of the respondents told that they had issues in extended families prior to earthquake. Generally the differences between personalities of family members aggravated when they got married. More problems were experienced when disputes were transferred to youngest generation. The same feature was also mentioned by few policy makers.

Positive aspects of nuclear family structure

In our surveys the most satisfied group of people for nuclear family system was young women. The positive aspects of this system revealed by every young lady were

1. *We have lesser responsibilities than before.* It was observed that young people are a bit reluctant in looking after elders. Similarly women do not like to be responsible of other couples' children.
2. *We can bring up our children as our own will.* In joint family system often the grand parents look after children and parents do the work of house. Consequently children are more influenced by grand parent's personalities. Parents, especially mothers, want to raise their children according to their priorities, which is somewhat impossible in extended families.
3. *We have liberty.* In joint families everyone is answerable to all. Women have to be too careful in shopping, outing and spending money.
4. *We can stop extravagancy.* The couples who earn more sometimes have to spend more in extended families. Most of the women appreciated new lifestyle after earthquake as they could save the income of their husbands for the future of their children.

Issues created by nuclear family system

This shift in family structure also generated several issues among families. The major drawbacks revealed by people of different age groups were:

1. *More responsibilities.* Though nuclear family system has reduced the responsibilities in some cases, it has enhanced many others. Respondents told that before earthquake every person had a specific task to accomplish. In this way everyone could select his favorite job and had nothing else to do whole day. Rest of the time could be utilized to meet neighbors, see parents (of married women), do embroidery (a renowned feature of Kashmiri women) or any other preferred activity could be carried out. In split families one woman has to do all jobs without any help.

2. *More financial burden.* The couples who had low income before earthquake could easily manage basic needs of their children in extended families. They had to share a little for the meals and monthly expenditures. In case there was a financial problem with them, they could enjoy food prepared for all. In nuclear families no one can go to others home for every meal. The couple has to manage basic required items in any case.

Few respondents mentioned that in pre-earthquake life style they had to share a particular amount. But these days they spend money in their homes as well as they have to give a handsome amount to their parents. This way, financially they are more stretched in post-quake situation.

3. *Insecurity.* This demerit was mentioned by every woman, even though she preferred split family. In Kashmir there are limited ways of earning. People either go to other parts of Pakistan or they go abroad for work. There is no tradition of taking the families along hence women and children have to live in native land. In extended families one or more male members were always present to look after rest of the family. If the family had no young male member, father or father in law was considered to be a support for the family. In new family system women have become insecure. They not only have to do work at home they also have to perform outside-home tasks. Many respondents mentioned that the worst situation is when there is a medical emergency.

4. *Changed position of wadairas (elders).* In pre-earthquake scenario extended families were governed by a wadaira which was the eldest person of family. All the disputes and matters were presented in front of him and he had the right to give decisions. Nobody could dare to argue or disrespect. Wadairas were present on village level too. Elder people of the village were given respect in all matters. In post-earthquake situation when the families became nuclear, these people became a secondary person. Consequently families now have no option for resolving small disputes which by time become large disputes.

5. *Diminishing agricultural land.* Most of the nuclear families are settled on the land which was used for agriculture before earthquake. Kashmir was already deficient in plain lands. During reconstruction people have reduced their cultivation area.

Figure 3: In many cases people constructed new houses on their agricultural land. Source: Author

In A Glance

Shifting from one culture to another is not bizarre for societies. This is the symbol showing they are alive. If these changes are gradual, they are more absorbed in the society. In case of a hazard these changes are often reckless which intensify the impact of disasters. People not only lose their loved ones, property, livelihood and basic facilities, they are compelled (either through policies or because of their own decisions) to pass a life which is entirely different from pre-event situation. Extended to nuclear family system is not less than a disaster for Kashmir rural society. As one of the respondents of age around 90 years told us, "Earthquake scenario is ended since long, we still feel this disaster every moment by living in the changed family system, in a changed house."

Socio-Cultural Characteristic Affected Reconstruction Policies:

Research has continuously been conducted to stress upon the need of community involvement in decision/policy making (Building Back Better, 2010). It is obvious from many examples that cultural compatibility of solutions is essential for sustainable development. In case of Kashmir, traditional construction techniques were not allowed to be practiced under initial policies. However community demands forced the authorities to respect indigenous construction techniques.

Cultural characteristic: Indigenous construction practices

Building is the most explicit cultural aspect of any society which can fabricate its identity around the world. The architecture of an area is not just the cultural expression in a specific time; it keeps the culture alive for decades or in many cases for centuries. This is the characteristic which reveals the history of any society just like the written history.

Kashmir has two major construction techniques which are seismically resistant (though pre earthquake Kashmir was neglecting these practices and was more

inclined towards latest construction techniques). Here is a brief description of these indigenous styles.

Dhajji Dewari

Dhajji dewari is timber frame construction with stone and mud infill. This is the light weight construction where main wooden frames are divided into sub frames. Small pieces of stone are mixed with mud mortar to fill the gaps between sub frames. Generally the walls are plastered with mud mortar (UNHABITAT, 2012).

Pre-quake dhajji houses survived the earthquake and became an attraction for community to practice this technique in future.

Figure 4: Typical two room houses in Dhajji dewari found near Muzaffarabad. Source: Author

Figure 5: Pre-quake dhajji-built market in Bagh which survived the M 7.6 earthquake. Dhajji is not visible in right view as walls are covered with mud plaster on rear side of the building. Source: Author

Leepa

Leepa is the timber post and beam construction. Leepa and Neelum valleys with extreme winters, close to the line of control (beside Indian Administered Kashmir) represent the greatest concentration of traditional 'Kashmiri' timber construction, with small numbers of similar practice in other remote areas of Kashmir. Knowledge of this technology was only local and not well documented prior to earthquake (UNHABITAT, 2012).

ERRA Policy

For post-quake reconstruction ERRA was reluctant in accepting timber based construction techniques as earthquake resistant building practices. Initially it considered only reinforced masonry construction (RMC) suitable to cope with future disasters.

Figure 6: Leepa construction. Left: near Bagh. Source: Author; Right: Leepa Valley. Source: (UNHABITAT, 2012)

According to UNHABITAT document of 2012:

While examples of seismically resistant local technologies existed in small numbers and isolated locations, there was extensive use of traditional unreinforced masonry with heavy timber and mud roofs. This construction technique is highly vulnerable to earthquakes as it is very heavy, masonry wythes and walls are not well connected to each other, the roof is also heavy and not connected to the walls. These buildings generally performed badly in the earthquake and caused high levels of destruction and fatalities. The simple categorization of all buildings using similar materials as 'katcha' (temporary) led to a simple perception of traditional or local materials as inherently weak and vulnerable rather than discriminating between different construction traditions and techniques using the same materials but with different structural principles and seismic performance. ERRA, technical experts and all implementing partners needed to identify and confirm the performance of better traditional techniques rigorously and try to clarify the difference between vulnerable and safer traditional techniques to ensure people could better

understand their option to build more safely even with the same materials or salvage. ERRA had to communicate the risk of previous traditional unreinforced masonry. The message was therefore not as simplistic as old= weak, new= strong.

As Kashmir is a mountainous region with housing units scattered on high altitudes and difficult terrains, it was almost impossible to take the building materials of reinforced masonry construction to far away lands. It was estimated that the construction cost could increase many folds and progress could be extremely slow if only RMC was adopted by the community. Traditional practices were an ideal solution in these conditions.

Delay in policies

The weather during November to February remains extremely cold in the region. Monsoon period of June, July and August hinders the construction too. In such harsh climatic conditions only few months are left for construction. As the timeline below shows the policy announcing period ranging from May 2006 to April 2008, people had to wait for several months to start reconstruction. This factor produced chaos, confusion and deviation from given guidelines (Mumtaz et al, 2008)

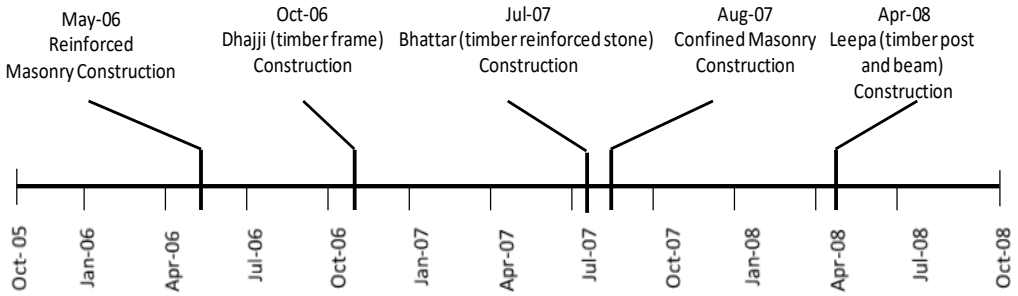

Figure 7: Timeline of Approved Construction Styles by ERRA; based on Progress Reports of UN HABITAT (Leersum, A., 2009)

In A Glance

When people noticed that dhajji and Leepa houses survived the huge earthquake magnitude, they started building their houses in traditional way of construction. Though initially ERRA was unwilling to approve these construction styles, it truly strengthened indigenous architecture of AJK afterwards. Research on traditional architectural practices of Kashmir conducted by different organizations was an enormous step to revive these practices.

People have adopted traditional construction to face future earthquakes but most of the respondents told us that they had the issue of thermal insulation. Dhajji was not found as warm during winter as the stone masonry houses of pre-quake situation were.

Culture and Policy Go Alongside:

Analyzing Kashmir reconstruction we found that in one case socio-cultural characteristics and policies went side by side, without affecting each other. This phenomenon is explicit through the spread of tower roof.

Tower Roof

In surveyed areas of Kashmir, *Tower Roof* is the name given to attic. The structure is made of CGI sheets and light weight timber. In most of the cases windows are present in walls and a separate door is provided from outside to directly enter this space. Tower roof is used as dinning, living or storage.

This construction technique was not novel in the region but it was rarely found in rural Kashmir before 2005 earthquake. People either used it for storage or it was left as dead space. Such type of construction was good for thermal insulation.

Figure 8: Left is the front view of tower roof house; right is the rear view of another housing unit. Source: Author

Cultural characteristic: Living in Large Spaces

During surveys, most of the respondents claimed that before earthquake they used to live in bigger houses than now. They had larger rooms which were several in number and the houses were multi storey. They had a culture to get together during major events of festivity and bereavement. Consequently larger spaces were required in houses. Every respondent gave the main reason of practicing tower roof to gain more space for different activities.

ERRA Policy for Tower Roof

ERRA had no policies for building tower roof. Here we shall analyze the issues of policy making and implementation which promoted this type of construction during and after reconstruction.

1. ERRA provided guidelines just for small scale single storey houses.

This is the major reason which compelled people to practice tower roof. ERRA did not prohibit second storey construction but it did not give any manual to the community for this floor initially. It is claimed by the authority that it gave the rules, not the designs, so people could construct their houses according to their own will. Hence people found a way of vertical expansion which was neither single storey nor double.

2. The system of ERRA inspection gave the community room for tower roof.

Under Rural Housing Reconstruction Program (RHRP), ERRA had the policy of Owner Driven Reconstruction (ODR) with financial and technical assistance. This support was linked with construction progress and compliance and was assessed by Assistance & Inspection (AI) teams. The last tranche of funds was delivered on lintel compliance. Initially ERRA had the policy to evaluate reconstruction up to roofs but this was not done. UNHABITAT conducted roof surveys but this was on minor scale. If ERRA had included roofs in disbursement system, people would have strictly followed the guidelines of making single storey houses and tower roof would have finished at early stages.

3. The system of financial assistance also played a role to accelerate tower roof construction.

ERRA had provided an assistance of PKR 175,000 for completely destroyed houses (CDs). This support was not enough to build large houses. One stove-one compensation was another issue for the families with more members as they needed large space but had to be confined in small one. With this volume of assistance people could not afford horizontal or vertical expansion but they could manage a *quasi* second storey named tower roof.

4. Site supervision did not provide individual solutions for space deficiency.

As these guidelines of ERRA were for single storey houses, site supervisors discouraged the community to build another floor. Though we found double storey houses in the region but these were rare and generally belonged to wealthy families. For tower roof, the site supervisors found no issues as this was basically single storey construction and the extension was made of light weight timber and CGI sheets according to guidelines. Largely site supervisors evaluated the construction up to lintel level and offered remedial measures till walls. They had no solutions to overcome shortage of space.

5. Implementing latest information material is poor in the region.

ERRA must be admired to provide technical training to the masons but still masons are not up to date as far as latest research material is concerned. Different organizations under the umbrella of United Nations prepared a manual for one/two storey dhajji construction in 2010. It was found during surveys that masons were unaware of this manual. Owing to this reason people continued practicing tower roof instead of two storey houses for new house construction. One of the main reasons for this ignorance is that decision makers and implementers had rolled the reconstruction program back and there was no agency to deal with community for their construction affairs.

Figure 9: Practice of tower roof in an under-construction house in Kaimanja, Muzaffarabad. Source: Author

In A Glance

We can infer that the idea of tower roof was accelerated in the society mainly to overcome space deficiency created by policies. And at the same time this construction did not face any objection from authorities. In this way culture and policies both went alongside, without affecting each other.

Our surveys concluded that if they were given a choice, people would have preferred double storey house than tower roof construction. All of the respondents mentioned that they had adopted this practice unwillingly during initial phase of reconstruction but now this construction has profoundly penetrated in their culture. And even if they construct second storey in new houses, they will build tower roof upon it.

CONCLUSION AND RECOMMENDATIONS

Policies are appreciated, adopted and acted upon if they are compatible with culture. If not, they are either rejected or they create adverse effects on the society; sometimes more than disasters. Reconstruction policies might reduce the physical vulnerability of any society, but ignoring culture can enhance its social vulnerability. ERRA is a world wide appreciated authority which has taken enormous steps to build back better. It not only strengthened the society with its policies, it also revived the lost traditional architecture of Kashmir.

Major issues which intensify the vulnerability must be focused upon before earthquake occurs. These may include

- Absence/ Non implementation of building byelaws in pre-earthquake situation

This leads to major building destruction. If people have the culture of building unsafely, authorities must control them through byelaws. Building improvements must be gradual and policies must be implemented on regular basis.

- Absence of resilience policies

Every region of the country must be evaluated for its resilience for each disaster. This vital job must not be done in the hour of emergency when nothing appears normal. Culture, traditions, demographics, public motivations and different social aspects must be analyzed in the time of peace. Policies for reconstruction must be well prepared and revised from time to time before a hazard occurs. By doing so, no major social aspect can be overlooked by decision makers while making reconstruction policies.

- Non documented architectural heritage

Dhajji dewari and Leepa were the earthquake resistant building practices present in the region of Kashmir before earthquake but no substantial documents were available on this heritage. Though different organizations have worked tremendously to research upon these styles after earthquake but this would have far better if the research work was conducted before the disaster.

- Absence of record of location

There was no up-to-date record of rural houses prior to earthquake. This factor made it difficult to approach far away scattered houses. Surveyors were dependent on the local people who knew every resident of the area and could guide authorities. GIS database must be prepared for every house describing its location and other necessary information.

For post-event reconstruction although culture and policies are major elements, investigative studies have played a pivotal role for capacity building. Researchers can bring forward hidden strengths of any culture to reduce disaster vulnerability. This will help decision makers in devising community-friendly policies, academia in assessing different building structures, social scientists in evaluating the cultural trends of a society and community in getting more awareness.

ACKNOWLEDGEMENTS

People of Kashmir are accredited to accomplish this research. The author is grateful to Dr. Siddiq Akbar and the Department of Architecture UET Lahore, Pakistan for their dedicated support. Continuous guidance from Prof Frédéric Bioret and UNHABITAT officials is also acknowledged. The surveys were conducted with financial assistance provided by UEB-CDI, France.

REFERENCES

Abidi, S.R. et al, (2011) *Post-Event Reconstruction in Asia since 1999: An Overview Focusing on the Social and Cultural Characteristics of Asian Countries*, Proceedings of ICEES 2011, NUST, Islamabad, Pakistan, http://halshs.archives-ouvertes.fr/docs/00/74/03/65/PDF/ICEES_47.pdf

AJK Official Website, http://www.ajk.gov.pk

Barenstein, J., (2006) *Housing Reconstruction in Post Earthquake Gujarat- A comparative Analysis,* HPN, http://www.odihpn.org/documents/networkpaper054.pdf

Book, (2010) *Building Back Better*, http://practicalaction.org/access-to-services/docs/ia3/building-back-better-lyons-schilderman.pdf

Bothara, Jitendra K., et al. "The challenges of housing reconstruction after the April 2015 Gorkha, Nepal earthquake." *Technical Journal of Nepal Engineers' Association, Special Issue on Gorkha Earthquake 2015, XLIII-EC30* 1 (2016): 121-134.

Bowers, P. (2004), *Kashmir,* International Affairs and Defense House of Commons Library, http://www.parliament.uk/documents/commons/lib/research/rp2004/rp04-028.pdf

Conference proceedings (2012), Initial draft of "Learning from Disasters", Islamabad, Pakistan

ERRA: *M&E Annual Report January 2010 June 2011,* http://www.erra.pk/Reports/Publications/M&E%20Annual%20Report%202010-11.pdf

ERRA Official Website, http://www.erra.pk/sectors/housing.asp

ERRA, (2007), *Principles, Themes and Lessons Learnt: Design and Implementation of ERRA's Rural Housing Programme,* http://www.recoveryplatform.org/assets/publication/Pakistan%20Earthquake%20Recovery/ERRA%20Rural%20Housing.pdf

Google maps, https://maps.google.fr/maps?hl=en&tab=wl

Integrated Regional Information Networks (IRIN), (2010), *Pakistan: 'Building back better' in quake zone*

Jha, K. A., et al, (2010), *Safer Homes Stronger Communities,* World Bank Publication.

Jigyasu, R., (2000), *From Natural to Cultural Disaster, Consequences of Post-earthquake Rehabilitation Process on Cultural Heritage in Marathwada Region, India.* International Conference on the Seismic Performance of Traditional Buildings, Istanbul, Turkey

Mumtaz, H., et al, (2008), *The Challenges of Reconstruction after the October 2005 Kashmir Earthquake,* Conference Proceedings of NZSEE 2008.

Leersum, A., (2009), *Implementing Seismic Resistant Construction in Post-Disaster Settings,* MS Thesis.

SERRA Official Website, http://www.serra.gov.pk/showpage.asp?HousingCompensations

UNHABITAT, (2007), *Beyond Bricks and Mortar: community driven rebuilding in northern Pakistan,* http://www.fukuoka.unhabitat.org/docs/hpress/pdf/PAK_Pages_2-3.pdf

UNHABITAT, (2010), *Housing Reconstruction Field Assessment, Balochistan Earthquake Affected Areas.* http://www.unhabitat.org.pk/newweb/Latest%20Reports/Baluchistan/HRFA%20Baluchistan-April%202010%20_Rev%2018-06-2010.pdf

UNHABITAT, (2012), *Chapter 11 Cultural Heritage Conservation,* http://hadg.unhabitat.org.pk/docs/Chapter-11%20Cultural%20Heritage%20Conservation%20Volume%20II.pdf

USGS, http://earthquake.usgs.gov/earthquakes/world/world_deaths.php

Vahanvati, M. (2018), "A novel framework for owner driven reconstruction projects to enhance disaster resilience in the long term", *Disaster Prevention and Management*, Vol. 27 No. 4, pp. 421-446. https://doi.org/10.1108/DPM-11-2017-0285