FROM MARATHWADA TO GUJARAT – EMERGING CHALLENGES IN POST-EARTHQUAKE REHABILITATION FOR SUSTAINABLE ECO-DEVELOPMENT IN SOUTH ASIA

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Abstract

The link between disasters and development is very critical. Not only disasters are consequences of existing 'development' processes; they can also serve to provide new opportunities for development through post-disaster rehabilitation. However, development does not have a universal frame of reference. It is determined by different 'world-views' and 'perceptions' on what development implies for a particular community or group of people. Moreover it must take into account the implications in reducing disaster vulnerability in the long term. The paper will investigate the consequences of post-disaster rehabilitation on development understood broadly for South Asia in general and India in particular through detailed investigation of the cases of Marathwada (Latur) and Gujarat in India. In the aftermath of devastating earthquakes in Marathwada (in 1993) and in Gujarat (in 2001), massive rehabilitation programmes have been undertaken in these regions, which are unprecedented in terms of their nature and scope. The approach followed in each of these cases has been quite different. Also in many ways, the latter has tried to build on the experiences of the former. It is interesting to review the way things have taken their course in both of these cases and analyse to what extent they have managed to reduce the existing vulnerability and to build on local knowledge, skills and resources.

The paper will bring forward the challenges common to both the cases, relating to long term sustainability, effective governance and creation of civic society, especially when the good intentions of those in charge of rehabilitation are tested against the grassroots social, economic and political realities.

post earthquake rehabilitation; relocation; adoption; technology transfer; repairs and retrofitting; vulnerability; sustainability; local governance; community participation

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INTRODUCTION

The existing relationship between disaster and development is crucial for post-disaster rehabilitation. While on the one hand, rehabilitation can provide new opportunities for development, on the other hand, the existing development patterns may form the context in which the rehabilitation process actually takes shape on the ground and influences long-term impacts. Also, development does not have a universal frame of reference. It is determined by different 'world-views' and 'perceptions' on what development implies for a particular organisation, group of people or community at large. In fact, these set the context within which post-disaster rehabilitation takes place.

The paper investigates the impact of post-disaster rehabilitation on rural communities in India through detailed investigation of two cases, namely the rehabilitation process following the 1993 earthquake in the Marathwada region and the more recent one, which is currently underway after a destructive earthquake hit Gujarat in 2001. Both of these are unprecedented in terms of many aspects of their nature and scope.

At present the rehabilitation process in Marathwada has already been completed while Gujarat is still in its initial phase. The paper reviews the way things have taken their course in both of these cases and analyses how post disaster rehabilitation has affected existing vulnerabilities and capacities. The assessment focuses primarily on the physical aspects of reconstruction, though their links to the socio-cultural, economic and political aspects are not overlooked.

These cases throw significant light on the paradigmatic shift in post-disaster rehabilitation, which has taken place in recent years in India. In many ways, the approach in the latter case has been developed on the basis of the experience gained in the former. While there are essential differences between the two studies, at the same time they demonstrate some striking similarities. The discussion of these cases brings us to an evaluation of some core issues that emerge when the two approaches are tested against the realities on the ground, pointing to the challenges confronting post disaster rehabilitation in developing countries like India.

CASE I - MARATHWADA EARTHQUAKE REHABILITATION

A devastating earthquake hit Marathwada in the early morning hours of September 30, 1993. Its magnitude was 6.3 on the Richter scale and it left nearly 9,000 villagers dead and around 16,000 injured. In the 52 villages that were most severely affected, some 30,000 houses were destroyed or badly damaged.

The loss of life and property was particularly high in rural areas since traditional construction, which had already become weak and vulnerable, could not withstand the shock of the earthquake.

The Rehabilitation Programme

The initial phase of emergency rescue and relief lasted until December 1993. In the next phase, the government evolved a rather comprehensive rehabilitation programme called Maharashtra Earthquake Emergency Rehabilitation Programme (MEERP). This was the first of its kind in India and was conceived and executed with the help of a soft loan from the World Bank. The programme had five main components namely housing, infrastructure development, economic rehabilitation, social rehabilitation, community rehabilitation and technical assistance, training and equipment.

Here we focus on the housing component, under which the construction or reconstruction of permanent housing was financed.

The villages were divided into three categories based on pre-defined criteria[1] namely:

i. Villages to be relocated- type 'A' villages
ii. Villages to be reconstructed in-situ– type 'B' villages
iii. Villages where repairs and seismic strengthening and retrofitting programme would be implemented – type 'C' villages.

The houses were again divided into three categories, on the basis of land tenure in the hands of a particular family[2]

Among all other components, housing was given the first priority in the rehabilitation process. Accordingly, 52 villages were to be relocated with essential services and infrastructure. New standards were set for housing construction that advocated the use of 'earthquake resistant technology'. The government managed to arrange the participation of a large number of non-governmental agencies in the programme including commercial firms, international donor agencies, religious groups, political parties' etc. These agencies came up with a variety of building technologies to demonstrate seismic resistance[3]. The entire reconstruction activity was primarily contractor driven where contractors and labour were hired by donor agencies from outside the region to undertake reconstruction.

Since the commencement of MEERP, the World Bank insisted on the complete participation of the population affected by the earthquake in the rehabilitation process. This feature, the first of its kind on any government project so far, projected MEERP as a classic model for resettlement and rehabilitation of large groups of communities with provision of housing, infrastructure and other socio-economic facilities. To act as interface between the Government and local communities, Community Participation Consultants (CPCs) were hired from leading social organisations [4.]

Impact of the Rehabilitation Process - eight years after

Let us discuss the status and impact of Marathwada rehabilitation eight years after it was formulated (Year 2001). By then, rehabilitation had already been completed and most of the people had moved into the reconstructed villages, some of them as early as in 1995. Therefore, it is interesting to assess the impact of relocation and adoption by various donor agencies [5] on these villages. Also, regarding the status of 'C' category villages, it is worth evaluating the success of 'strengthening and retrofitting measures'.

Impact of relocation

First of all, let us consider the status of relocated villages. In most of them, it is fascinating to see how villagers on their own have initiated changes and additions to the physical fabric that was tailor-made for them. We notice different changes in reconstructed houses like addition of rooms, outdoor kitchen, courtyards and access points. However, the most noteworthy is the change in materials. While some have used bricks, most others have used corrugated metal sheets and even bamboos and twigs. Hardly anyone has used reinforced concrete. In many of these houses, people have used salvaged materials from their old houses. These include beautiful front doorways, dressed stone masonry and in some places, wooden beams and columns. Most interestingly, after initial hesitation, many have reverted back to traditional techniques, especially stone masonry. However all these new additions hardly employ the earthquake resistant features that were followed so stringently in initial reconstruction.

Figure: Additions done to relocated villages in Marathwada

In spite of the processes of settling into their new habitat, relocated people have no dearth of problems, most of which are the result of relocation itself. Traditionally,

agricultural land surrounds villages, and the whole rural ecology is sustained on this delicate relationship of people to the natural resources around them, which also form their sustainable livelihood source. However, the relocation was done on agricultural land acquired from other villages. As a result, some of the relocated villagers either lost their land to relocation for other villages (thus becoming landless forever, even though some financial compensation was offered to them) or were themselves located far off from their own agricultural lands, sometimes more than 5 kilometres away.

Besides this, the spatial plans for the relocated villages were totally incompatible with the 'way of life' of the villagers. Traditional settlements were characterised by narrow streets, a hierarchy of public and private open spaces used for religious as well as other activities, clusters of housing with distinct typologies influenced by traditional occupation patterns etc. However, what was designed for them was a complete 'city-like' plan with wide streets forming a grid pattern and row housing. The 'designers' sitting in the town planning office thought that 'city-like' planning would ensure 'development' of 'backward' rural areas. Ironically, many local people, for whom they represented the beginning of modernity, also shared this view. People had strong aspirations for urban life and accompanying civic amenities. The house designs were also very urban with no link to people's traditional life-style.

The new villages were many-fold larger in area than the old ones (up to 10 times larger). This meant expensive infrastructure, which was again 'provided' by the government. What was not thought of was the lack of the village committees' financial resources to maintain this huge infrastructure in the future. This has been a source of great difficulty since the local village committee had to increase taxes to cover the costs of maintenance of this infrastructure, which the poor villagers are unable to afford.

The criteria of house allocation on the basis of the size of land-holdings has created new economic disparities and has completely destroyed the traditional social system based on 'neighbourhood units and dependencies that ensured mutual sustainability'. In some cases, people vacated their allotted houses and moved back to their family members or neighbours by initiating house-extensions.

The appreciable efforts of some agencies/individuals towards incorporating traditional patterns in the new village-plan need to be mentioned [6]. However, in all these efforts there was little or no involvement of the local population in the whole process. The whole attitude was that of 'adoption and provision' rather than 'facilitation' which made villagers dependent, besides raising their expectations.

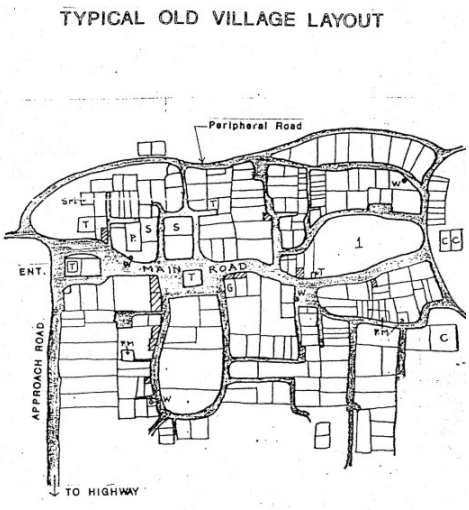

Figure: A Traditional Village Layout in Marathwada
(Source – ASAG, 1996)

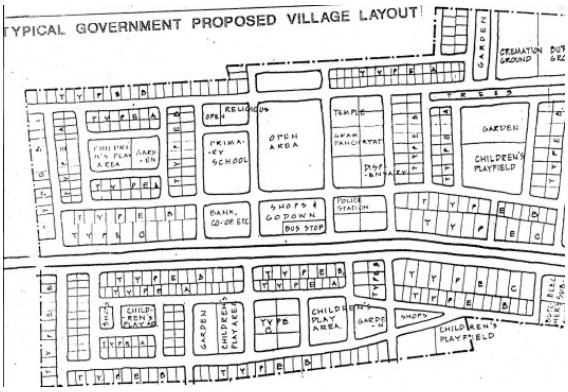

Figure: A Government Proposed Layout for Reconstructed Village in Marathwada
(Source – ASAG, 1996)

Comment is needed on the quality of new 'earthquake resistant' construction in these villages. In most of them, water penetration and dampness was occurring through porous concrete blocks without proper pointing. However, the most serious was the development of 'through cracks' in some houses due to a recent earthquake of mild intensity of Richter Magnitude 4 in June 2000 [7].

As a consequence of the above-mentioned issues confronted by relocated villagers, another very interesting trend is now being seen. In some villages like Sayyed *Hipparga*, people have decided to vacate the relocated village and move back to their old site. In fact, they have started to clear the old site of vegetation and re-construct their old houses employing traditional techniques in their entirety. Unfortunately, they are again not employing any 'earthquake-resistant' features in their new 'traditional' constructions. In this way, all the efforts of the Government and various NGOs towards 'information dissemination' and 'technology transfer' are wasted. We are back to square one.

Figure: Cracks in the newly reconstructed villages from a mild earthquake.

Figure: Model House to demonstrate earthquake safe construction lying in ruins.

Interestingly, in-situ reconstruction ('B' category villages) never took place. In fact, all 15 villages, which were supposed to be reconstructed in-situ, demanded relocation [8]. This was mainly due to misperceptions in the local communities that their sites were unsafe from earthquakes. This in turn was because of wrong signals sent out through the decision to relocate some people, immediately after the earthquake, when local people had not yet recovered from psychological trauma.

Status of Repairs, Reconstruction and Strengthening (RRS) Programme

Let us look at what happened in 'C' category villages, where strengthening and retrofitting of existing houses were to take place. As a matter of fact, no one died and not much physical destruction happened in most of these villages. As the government was so much involved with new construction, measures such as repairs, strengthening and retrofitting, which were in fact the major component of the programme, got sidelined.

There was little technical assistance forthcoming and these people were simply provided with money and were expected to carry out these measures on their own. For each village the government allocated two junior engineers to provide technical assistance.

From the inception of the RRS programme, it was apparent that retrofitting and strengthening was not a preferred technology package for the beneficiaries [9]. There were several reasons for this.

First, these engineers who had received and what may be called a 'western' education perceived the traditional housing to be 'outdated' and 'weak' and strongly advocated local people to vacate them and build 'modern' housing in brick and concrete. Poor villagers who had suffered great trauma were too scared to risk their lives in any way and thus submitted to the 'expert' views of these engineers who also played an important role in strengthening the scepticism of local people against the

use of stones and wood. Ironically, 'wood' was perceived to be unsuitable for construction, while in reality; wood-framed structures behave much better in earthquakes. As a result, most of these villages were slowly vacated and people demolished their own houses and sold well-dressed stone blocks and wooden beams and columns at petty prices. Secondly, most beneficiaries were not convinced about the effectiveness of repairs and strengthening of existing houses. They looked upon this assistance as an opportunity of adding to their living space and ‘improving’ their houses.

Figure Above: Traditional Malwad construction in wood withstood the impact of earthquake quite effectively.

Figure Right: Traditonal stone constructions failed due to poor random rubble masonry

As a consequence of this, local people started settling down just outside the old village and used the money allocated by the government to construct new houses. With the little money that they got, they could just afford to construct one or two rooms in poor quality bricks in mud mortar and corrugated metal sheets for roofing. These constructions are totally unsuitable for the local climate. Besides, they did not employ earthquake resistant features.

Technology transfer – How sustainable?

The Housing and Urban Development Corporation (HUDCO), with assistance from the Government of India, set up ten 'Building Centres’ in Marathwada to promote construction activity and generate employment through training programmes for construction artisans, labour and unemployed youth on earthquake-safe construction methods. Unfortunately, all these centres have been shut down for three to four years. Today they appear like ruins, with unfinished concrete blocks, dry tanks and rusted machines.

Besides, a large number of vocational training programmes were organised to train the local masons in earthquake resistant construction. Initially, this helped in providing cheap labour for the reconstruction process. However, one wonders if these training programmes have been able to generate sustainable livelihood options for these workers. It is unlikely, considering their present status [10].

There are several reasons for this. First, the technology, which was supposed to be inculcated, was alien and unsustainable. Secondly, the centres were established through outside financial resources without a proper management plan for internalising the whole process with the local community. Thirdly, there was considerably less involvement of traditional artisans, who were induced to neglect their existing skills and made to learn something totally alien. 'Earthquake resistant technology' was taught as rigid design packages, without any scope for experimentation. As a result, most of the 'Model Houses' that in fact were supposed to educate people in the use of such technology are today in ruins.

Figure: Building Centres set up to inculcate earthquake safe building practises are now in ruins.

Figure: Many new earthquake safe constructions, which were introduced by various NGOs, using RCC bands are still lying unfinished.

As mentioned before, community participation was projected as one of the highlights of MEERP programme at the insistence of the World Bank. It seems doubtful how much community participation actually took place, considering the nature of the consultants and the social and economic conditions on the ground[11].

CASE 2 - GUJARAT EARTHQUAKE REHABILITATION

A devastating earthquake struck Kutch region of Gujarat on January 26, 2001. This proved to be the most damaging earthquake in the last fifty years in India. According

to official figures, 20,083 people were reported dead and 166836 were injured. 7,633 of the 18,356 villages of the state were affected, out of which 450 were totally flattened. Official records put the total number of houses damaged to be around 1.2 million.

The Rehabilitation Programme

The Gujarat government was eager to bring some concrete plans to the people, before it was criticised for its lack of response. Accordingly, as early as 14th February 2001, the government embarked on a large-scale rehabilitation package, which had the following main components:

i. Relocation for the most affected villages.
ii. Assistance in the Zone 4 & 5 [12]and severely affected area for in-situ reconstruction.
iii. Assistance in the areas other than zone 4 & 5 for repairs and in-situ reconstruction
iv. Assistance for modern buildings in urban areas.

Ironically, 'relocation' and full-scale 'village-adoption' were the main highlights of this package, very much like the case of Marathwada. Even the criteria for relocation [13] and that of house-size are strikingly similar to the earlier case [14].

'Adoption' of villages was encouraged through public-private partnership programme. Accordingly, voluntary organizations, industrial enterprises and public sector undertakings could adopt villages or contribute towards their rehabilitation. The State Government would contribute 50% of total cost. Any organization wishing to fully adopt a village could do so in consultation with the Government by adhering to certain laws. However, in case any organization did not feel motivated to contribute or adopt a village, the State Government promised to undertake complete reconstruction.

The other two components of the package suggested financial assistance for repairs and in-situ reconstruction in areas, which are outside the most affected area. Based on the extent of the damage, the villagers could take advantage of the State Government's financial assistance or that provided by voluntary organisations, enterprises, public undertakings and other state and international organizations.

As such, the Gujarat package, in its initial conception, was similar to the Marathwada one in many respects. However things were to take a different course in the next few months as a result of which rehabilitation here has turned out to be strikingly different from Marathwada.

In contrast to the earlier case, here the Government's plan for relocation was met with stiff resistance from the local people who did not want to be uprooted [15]. As a result, even by the end of March, the rehabilitation process was still stuck as the Gujarat government was finding it tough to finalise a relocation policy. Finally, the

Government decided not to press for relocation and advocated 'owner-driven' reconstruction as its primary approach in contrast to the 'contractor-driven' approach that was followed in Marathwada. The Government agreed to provide financial assistance to all those who did not want relocation and full scale 'adoption'. Such beneficiaries were supposed to undertake reconstruction on their own.

Meanwhile, a number of voluntary organisations came forward to adopt the villages. Large numbers of corporate and donor organisations started visiting these villages and started promising different kinds of packages, which promised 'ready-made' villages with all the facilities. The villagers listened to everyone. However, they became confused with the number of promises being made by a large number of donor agencies. The villagers were left with two options – either to choose financial compensation offered by the government, or to let the donor agencies undertake full-fledged adoption and reconstruction. Finally, the majority of people decided to go for financial compensation and expressed their desire to undertake construction on their own.

As a consequence of all this, many NGOs have come forward to help local communities in deciding the design layout and structural system of new construction. Most of them are promoting self-help construction by providing the beneficiaries with construction materials like wood, bamboo spread sheets or concrete blocks, reinforcement bars etc. according to the structural design advocated by the concerned NGO[16]. The local communities are involved in providing labour for tasks such as curing, block-laying etc. Junior engineers are being hired from other areas to coordinate the construction activity. As part of public-private partnership policy, the government has made available the building materials in a subsidised way. In spite of some problems, construction activity is going on in full swing.

Meanwhile UNDP has initiated 'transition recovery concept'[17] through partnership with NGOs like *Abhiyan*[18] . Owner-driven reconstruction at such a large scale is certainly a pioneering attempt towards post earthquake reconstruction in India. However its implications are now being observed in the light of existing realities on the ground.

Figure: Bhungas (traditional housing form) reconstructed using compressed soil blocks by Abhiyan

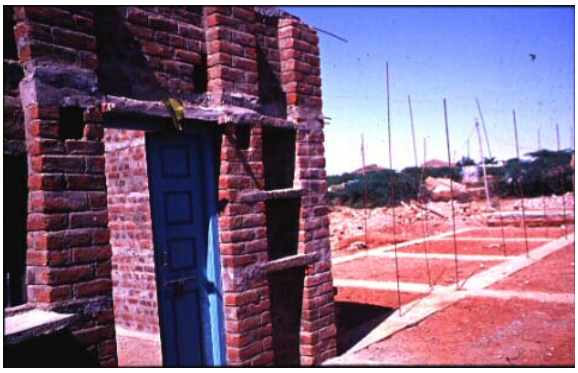

Figure: House designed and constructed through involvement of local people by Unnati, an NGO
In village Lundwa.

Social Implications

Under the 'owner-driven approach', these villagers were supposed to mutually determine, whether they want to be relocated to get compensation. However the villagers could not come to a univocal conclusion, thanks to the existing social segregation [19] and break up of traditional inter-dependencies [20]. What happened as a consequence of this was that 'socially and economically powerful castes' got together and purchased their own land and in this way, decided to get relocated. The weaker groups were left with no option but to stay back [21]. This is happening in many villages.

In many cases, a single village is getting split into as many as four parts, at safe distances from each other. This is very serious, as physical segregation will further deepen the social polarisation. Moreover, due to 'good political connections', in many cases the powerful castes have even managed to attract infrastructure and investment, while the poor and the marginalized are now left as 'abandoned hamlets' devoid of even basic facilities. Ironically, this is increasing the social vulnerability of the people at stake.

Rehabilitation or compensation!

Another striking issue is that the whole approach is getting heavily centred on financial compensation, without working out and facilitating actual ways and means to achieve earthquake resistant features in physical reconstruction. There are widespread complaints regarding corruption, inequitable or no compensation paid to the victims. In many cases, people getting the money do not really know how to

make optimum use of it (from the first instalment) for making safe structures. This is due to general ignorance and misperceptions, which will be discussed later.

Since the condition for getting compensation is incorporation of earthquake resistant features, many of the villagers became ineligible to get the second instalment. This is an odd situation since after inspection by 'official' engineers, many of them are already supposed to retrofit 'new' constructions. Forget about retrofitting existing constructions!

Another issue had been the ways and means of getting compensation based on a number of documents, such as ration cards, and papers showing house ownership. One wonders about those living in huts (they do not need to get legal sanction), those living as tenants for 50 to 60 years, those whose papers have got buried in rubble and those who are illiterate. Evidently corruption is also evident in securing 'compensation'. Needless to say, many of them are left out of this compensation package, especially those who are already weak and vulnerable.

'Adopted' villages – culturally compatible?

While the owner-driven approach is now on the main agenda of the Government, it has also paved the way for 'full-fledged adoption of villages' through contractor driven reconstruction programmes. In these villages, the labour is essentially hired from outside and local villagers have no say or role in the reconstruction process.

In many of these villages, the 'city-like' layout and the government criteria of house-size brings out the issue of 'cultural incompatibility' very much like in Marathwada. Besides the sustainability of the introduced 'earthquake resistant technology' employing heavy use of external and expensive resources is put into question, as in the earlier case.

In fact, several such villages have already been completed in much haste and inaugurated by some well-known politicians. However, in many cases, the quality of construction was compromised in structural design or improper curing to achieve fast reconstruction. [22].

Figure: Contractor built housing in ‘adopted’ village Chandrani

Figure: Contractor built housing in ‘adopted’ village Bocha.

From ‘semi-permanent’ to ‘permanent’ shelter

The government and some NGOs advocated the concept of semi-permanent shelters as an intermediate solution, mainly to protect the victims from monsoons. However, this did not materialise in time. As a result, by the time these could be erected, people had already started initiating permanent constructions. In many cases, one family ended up with three types of constructions – temporary, semi-permanent as well as permanent. One wonders what will be their future use as lots of resources had been pumped into these. However, some had combined the three types of constructions very innovatively.

Figure: Semi permanent shelters are already getting permanent by raising walls in stone, without consideration to earthquake safety

Figure: Local people have innovatively combined temporary, semi permanent and permanent constructions.

'Alternate' technology – how sustainable?

Besides the 'modern' techniques, NGOs like Abhiyan are also exploring various options for 'alternative' design and technology for earthquake resistant construction. Abhiyan is promoting construction of traditional structures called *'Bhungas'*[23] using precast 'compressed soil blocks[24] with or without interlocking dry stacked masonry system, ring reinforcement and wooden rafters. It has also set up a laboratory to experiment and test 'new' technologies.

However, such alternate methods also require strict quality control and proper curing. Right now, they are taking care of this but there are questions regarding 'internalising' these technologies within the local community, once these NGOs withdraw from the scene. Will such technologies take roots with the building culture of the area…? There are some doubts regarding this, based on prior experience in Marathwada[25] !

Here also, wrong perceptions on the issues of appropriate technology are evident on the part of official engineers as well as local people. The reinforced concrete block is thought to be the only safe option. Most of the people are changing over to these techniques, though their quality is indeed very poor in many cases. Moreover, due to shortage of water (this is drought prone area!), concrete is probably not properly dosed and cured.

Figure: Compressed soil blocks used by Abhiyan for reconstruction

Figure: Pre-cast concrete blocks are used mainly for contractor built constructions.

No matter how NGOs and to some extent the Government are facilitating reconstruction, earthquake safe features are not being employed in many of the self-help constructions, thanks to the general ignorance regarding them. Unsafe practices are even seen in the semi-permanent shelters [26], which were built by people by using their own materials or those being paid by NGOs[27]. In fact, the Government and some NGOs conceived this concept as an attempt to provide intermediate shelter before people could move into their permanent houses. Even in those structures being provided by NGOs, unsafe additions and alterations are found.

Figure Above: Poor self-help construction using combination of materials in Bhachao

Figure Right: Pillars with improper reinforcement, caste without even basic understanding of reinforced concrete construction in Nani Cherai

Repairs, Strengthening and Retrofitting – continuing misperceptions

Wrong repairs are seen everywhere. People have filled up 'through cracks' with cement grout and then moved back to their houses. Some difficulties are experienced in implementing strengthening and retrofitting programme here like in Marathwada. In fact the same misperceptions discourage people from undertaking these measures [28]. The emphasis of decision-makers seems to be on the number of new houses being reconstructed. Wrong perceptions are also evident in the way traditional structures are being pulled down, even where they are still standing to make way for 'modern' structures, especially in historic towns such as Anjar, Bhuj and Morbi. Ironically, in most cases the new structures are not better, thanks to poor workmanship and undue costs.

Figure: Wrong repairs by filling through cracks with cement grout in Village Nani Cherai.

Figure: Some traditional constructions in wood and masonry survived due to special construction techniques – in Anjar.

Challenges in bringing together community, NGOs and the government

UNDP has sponsored and set up earthquake rehabilitation support centres (also known as '*Setus*', which are village level information and coordination units. These are meant to serve as a bridge between NGOs, community and the government and are set up through *Abhiyan*[29]. These are supposed to collect data at the grass root level regarding the extent of damage, the kind of compensation and the needs of marginalized sections of the population. This information is then passed on to the Government to initiate actions for grass root development along with rehabilitation.

However the challenges relating to long-term sustainability, governance and creating civic society are only beginning to unfold, when these good intentions are tested against the social, economic and political realities. It seems that these *Setus* have in fact served to strengthen the link between the community and NGOs. However the link between the community and the Government is structurally so weak that effective action and communication on behalf of the government, based on community feedback, is missing. There seems to be lack of trust (from the community) and accountability (of the government). When the community does not see concrete actions based on what it demands, it simply refuses to cooperate. This is also related to the fact that upto now, grass root governance has not been given any roles and responsibilities in the rehabilitation process.

TRANSVERSE ISSUES

The assessment of the rehabilitation processes in Marathwada and Gujarat raises certain common issues, which are summarised below.

Firstly, both the cases point towards growing misperceptions among local people as well as decision-makers, who undermine indigenous knowledge and capacity and

favour the use of ‘modern’ technology and spatial planning for post-disaster rehabilitation in rural areas, without looking into the questions of cultural compatibility and long term sustainability. This is clearly linked to an increasing loss of civic pride, the reasons for which are linked to the current notions of development and modernisation. Each society needs to develop on its own terms and not blindly follow a yearning that is not comprehended in reality.

Secondly, both Marathwada and Gujarat cases show how existing vulnerabilities determined by social, economic and political realities get reinforced in the rehabilitation process that is subsequently initiated. While some of these are rooted in the traditional social and cultural weaknesses, others are a negative consequence of the development process itself. This in fact points to certain pre-conditions for the rehabilitation process to produce desired results, no matter what the basic approach towards rehabilitation is. It also shows that disaster management and normal development are inextricably interlinked, the former taking shape in the context of the latter and the latter influencing the former in many ways.

The third issue relates to the question of long-term sustainability especially with regards to ‘reconstructing’ shelter. Housing in general and ‘earthquake resistant technology’ in particular are introduced as rigid design packages by outsiders to be implemented as end products. There is a need to internalise this knowledge with the local community and leave scope for further experimentation.

In both the cases, ‘Community participation’ is the key word in the rehabilitation process. In fact the Gujarat case has emphasised self-help reconstruction at a much greater scale then ever before. However in reality the participation of the villagers is limited to assisting in the process of rebuilding by providing labour, skills and resources. Mere ‘involvement’ of the community may not evoke their true participation. True participation will emerge only if these communities are empowered in ‘decision making’ regarding various aspects of rehabilitation. And needless to say, the concept of ‘communities’ means equitable participation of every section within the community, which is sadly lacking in socially and economically segregated rural communities in India.

Last but not the least is the issue of governance. Rejuvenating and empowering local governance is crucial for effective grass root actions. In the rehabilitation that has been initiated both in Marathwada and in Kutch, the grass root organisation at village level has been silent and has not been delegated responsibility. This is a big loss for sustaining today’s efforts towards rehabilitation for the future, as it is the grass root organisation where real people-centred actions can take place and where the concerns and issues of the inhabitants will be highlighted, where their capacities will be utilised and weaknesses addressed. Most importantly, the processes of positive change towards local development that are initiated through rehabilitation can be sustained only if their responsibility is finally passed on to the local governance.

END NOTES

[1] The villages to be relocated were those where more than 70% of the houses were damaged, where a certain number of deaths were reported and where the ground had black cotton soil up to a depth of 2 metres. Where the damage was more than 70% but strata was good i.e. soil is less than 2 metres depth, it was decided to reconstruct those villages in-situ. The 'C' category villages were decided on the basis of a detailed 'technical' survey by a team of government engineers.

[2] Accordingly 'A' category houses had a carpet area of 250 sq. ft. These were to be provided to farmers who were landless or had land up to 1 hectare. 'B' category housing of 400 sq. ft. carpet area was provided to those having land-holding between 1 hectare and 7 hectares and all bigger landlords having more than 7 hectares of land-holding got 'C' category houses of 750 sq. ft. The built up area for these houses was about 10% more than the carpet area to allow for future expansion.

[3] These included pre-cast concrete panels, geodesic domes with Ferro cement, in-situ reinforced concrete, hollow concrete blocks etc. It is worth noting that almost all the agencies advocated the use of concrete.

[4] The CPCs were involved in a wide range of activities, from building a strong enabling presence in the field, demonstrating the community participation process, building the capacities of the government and village level committees, organising a massive information dissemination campaign as well as monitoring and assessing the rehabilitation programme on an on going basis. The CPCs were active in a cyclical process of gathering people's views on the various rehabilitation packages, clarified issues of concern to them, made periodic recommendations to the government and actively assisted the state authority in conflict resolution in the villages.

[5] 'Village' Adoption is a strange term used by official agencies for those villages where the whole task of physical reconstruction is taken up by the donor agencies. In this respect, Bhatt (2001) has made an interesting remark; "Orphans can be adopted, not villages" in 'The Times of India', a National Daily Newspaper.

[6] Worth mentioning here is the role of HUDCO (Housing and Urban Development Corporation Ltd., India). HUDCO adopted four villages and incorporated a number of traditional features like cluster planning in the new plans. Particularly interesting is the case of one village, *Tembhe*, where for the first time in-site-reconstruction was done on the foundations of old houses. So the whole village was recreated as it was before. Even the front facades of houses used stones salvaged from old houses. However, there are some problems with this approach. Except for front facades, the rest of the building technology comprised 'cement blocks', and in this way were not suitable for future changes. Moreover, the whole re-construction was tailor-made to meet existing requirements.

[7] In village *Rebe Chincholi*, people have vacated some of these houses out of fear. If such a moderate intensity earthquake can do such damage, then one can imagine the consequences of an earthquake equal to the intensity of 1993 quake.

[8] According to the rehabilitation policy, the Government of Maharashtra was to provide Rs. 62,000 each to all the households in these villages to reconstruct houses. The participants would organize the reconstruction themselves. However, so strong was the urge to get relocated, that in addition to these 16 villages, there were six other villages that demanded 'A' category assistance and relocation. These villages were not included in category 'A' on the basis of damage assessment. They went to court, and there was protracted litigation for three years.

[9] According to the Quality Assurance and Technical Audit consultants, only 0.1 percent of the beneficiaries decided to repair and strengthen their houses (Vatsa 2001).

[10] Since the training focussed largely on 'modern' techniques of 'earthquake resistant construction', these masons could not really make use of these techniques for indigenous construction. Once reconstruction activity was over, many of them had to migrate out to nearby cities in search of jobs. This is ironical since these trained masons were no longer available for the local rural people for whom they were supposed to have been trained. Already prior to the earthquake, many of these artisans had left their traditional occupations and this dealt a severe blow to those who were left.

[11] The rural societies in Marathwada are socially segregated. Marathas and Patils are the rich and powerful castes, socially, economically as well as politically. They also mainly control the local *gram sabha* (village committee). When 'community participation programmes' were initiated by the hired consultants, these powerful groups managed to voice their opinions at the cost of many others who were weak and marginalized. According to one respondent, "In practice, there was no consultation, rather these were just shown to the local *gram sabha* and sought their consent for the name-sake." This also could be done due to the fact that these consultants were hired from outside and had no understanding of local realities and above all, lacked the trust and confidence of the local people .

[12] These zones were decided on the basis of the degree of damage and the distance from the epicentre of the earthquake.

[13] Accordingly, the villages where more than 70% houses collapsed were to be relocated. The Government identified 256 such villages. The State Government would arrange for land if the Gram Sabha (local village committee) of each such village decides by majority and makes a formal demand . 12 hectares was assessed as the land requirement for a village of 200 households. Wherever a village was to be relocated, the old land would have to be surrendered to the Government. An important clause of this package was that wherever a village was to be relocated, all infrastructures would be made available at the new site only. The selection of village site was to be made with the involvement of local village committee (Gram samiti) of the concerned village and the NGO/agency involved. If some people did not wish to shift, they would not be entitled to get any Government assistance for construction at the old site.

[14] Accordingly, the greater is the size of land holding, greater is the plot and house area. Landless farm labourers are being allotted a plot area of 100 sq. metres (30 sq. metres built up area), marginal farmers owning up to 1 hectare land are allotted 150 sq. metres, small farmers, small businessmen, workers and others owning between 1 and 4 hectares land are being given 250 sq. metres while farmers owning more than 4 hectare land, 400 sq. metres (50 sq. metres built up area).

[15] An unofficial survey showed that 90% villagers have already rejected the relocation plans of the government. There were several practical reasons for this. First, there was no government policy about legal rights of owners of destroyed houses and this created problems and even made many who earlier agreed to relocate to reverse their views. Other than the issue of land rights, the main reason for people refusing to shift was economic. For instance, goldsmiths have been traditionally living above the shop they owned besides; the cultural association of people to their land also played a role in this. (The Times of India, 28-02-01)

[16] Though most of the people expressed interest in self-help reconstruction, some well-meant interventions actually shifted the focus away from self-help. One example of this was the supply of so many tents. "With tents coming in, people kept waiting for tents and stopped the process of self-rehabilitation," said Sushma Iyengar from Abhiyan, an NGO.

[17] The key project aspects of 'transition recovery concept' are vulnerability reduction and disaster mitigation initiatives through community-driven programmes. As part of this concept, the principal objectives of the shelter programme are to reduce vulnerability, build capacity, promote sustainable

recovery, demonstrate seismic safety in housing and provide alternative accommodation for the rural displaced. (UNDP, 2001).

[18] Abhiyan came into being as a network of 22 grassroots NGOs in response to the devastating cyclone that swept through Kutch district in May 1998. The individual groups came together to ensure greater coordination and better impact in relief and rehabilitation. Since then, Abhiyan has established itself as a network of NGOs in Kutch engaged as a collective in coordinated planning, advocacy and capacity-building activities in a range of development concerns. Following the earthquake, Abhiyan, now a 29-member network supports the work of member organizations in 300 villages in shelter reconstruction, dam repairs, livelihoods and community-driven rehabilitation.

[19] 'Social stratification' is quite strong in Kutch. While some castes are rich and politically powerful, there are others who are weak and marginalized (socially and economically). The middle class is not very strong here. With the gradual breaking of mutual interdependencies, the 'social polarisation' already existed at the time of the earthquake.

[20] In a famous craft village*, Dhamadka*, internationally known for block printing, the Khatri community, who owned work-sheds and were economically well off, decided to relocate themselves, the poor labourers, who used to work in those sheds, were left behind…wondering how to cope!

[21] However in some cases, certain more fortunate 'weaker' groups are able to get their houses reconstructed through support of NGO or voluntary organisations.

[22] One such village visited by the author was *Dudhai*, which was renamed as 'Indraprastha' after the ancient name of Delhi. The name carries much importance, as the main person who adopted this village was a prominent politician from Delhi (name withheld). However, shockingly the author found that the quality of construction in this village was very poor and some of the houses had even suffered cracks within a month after they were constructed from the minor aftershocks that hit the region.

[23] *'Bhungas'* are the typical and most recognisable traditional dwelling of the Kutch region in Gujarat. Its typical features are circular plan, low plinth and compound walls. Such a dwelling unit is made of several components; notably the primary living space and a small rectangular building called chowki used for cooking. These bhungas demonstrate several various in the building technologies in the area, namely, wattle and daub, lumps of clay (or in-situ) and mud block construction. These have performed remarkably well during earthquakes due to their circular plan and monolithic construction techniques.

[24] Abhiyan advocates the use of compressed soil blocks by mixing 90-95% soil and 5-10% cement, dried in the shade for 3 days and then cured for 20 days. The composition of the soil is nearly 15% gravel, 50% sand, 15% silt and 20% clay. These blocks may or may not be interlocking. Special machines for interlocking blocks are brought from Auroville (south India). These blocks are not to be confused with 'mud blocks', as the author discovered in many places.

[25] However a positive aspect related to this is that due to the enterprising nature of local people, the manufacture of pre-cast concrete and soil blocks had become a small-scale industry providing livelihood opportunities. However, it was another issue that the villagers did not have the knowledge of making these so that they achieve optimum strength. Many of them were heavily economising on cement at the cost of strength to achieve more profit.

[26] Some NGOs and the Government as an intermediate solution advocated the concept of semi-permanent shelters, mainly to protect the victims from monsoons. However, this did not materialise in time. As a result, by the time these could be erected, people had already started initiating permanent

constructions. In many cases, one family ended up with three types of constructions – temporary, semi-permanent as well as permanent. One wonders what will be their future use as lot of resources had been pumped into these. However, some had combined the three types of constructions very innovatively.

[27] In villages like *Bita Valariya*, villagers were using materials paid for by the UK, organised by Save the Children and a local network, Abhiyan. The villagers were meant to be rebuilding earthquake-proof houses, with low stonewall and the top half made of bamboo and thatch. But many of the houses now going up were in the traditional style with high stonewalls. "We didn't get proper guidance," said village headman Govinder Ayer, "so we started building houses our own way. The monsoon is just around the corner and we have got to get on with it and provide shelter for everyone."

[28] In spite of various odds, NGOs like CPDP are trying hard to implement seismic retrofitting programme in rural areas. In fact most of these volunteers have prior experience of Latur. Though this approach is officially much more accepted here unlike in Marathwada, still the actual knowledge of indigenous, simple and low cost techniques is lacking with most of the Government engineers.

[29] For collective village level information and for coordination, Abhiyan has directed its collective efforts towards facilitating the implementation of people-controlled, equitable rehabilitation policies and creating transparent mechanisms for judicious use of resources (UNDP, 2001). More than 20 Setus were created in the whole Kutch region, each catering to a group of villages. Each Setu has a group of trained social workers and engineers. This is indeed a pioneering concept to introduce development as part of rehabilitation process, thanks to the efforts of Sushma and Sandeep Virmani of Abhiyan, the local consortium of NGOs.