



## **SOCIAL CAPITAL AND DISASTER RECOVERY: A COMPARATIVE CASE STUDY OF KOBE AND GUJARAT EARTHQUAKE**

**Yuko Nakagawa<sup>1</sup> and Rajib Shaw<sup>2</sup>**

### **SUMMARY**

Although earthquake disasters are often termed as a 'natural' disaster, a critical analysis reveals that most of them are in fact man-made, and caused by the human activities that are related to poor construction practices in both developed and developing countries. Damage scenarios of recent earthquakes show ample examples in support of this statement. While risk perception is an important issue in pre-disaster mitigation initiatives, social capital is considered as an important element in post-disaster recovery processes.

Social Capital generally refers to the trust, networks and norms of a group, which influences its social, political and economic performance. Social Capital is used as an indicator to understand the recovery process, comparing the Kobe and Gujarat Earthquake of 1995 and 2001 respectively.

After the Kobe earthquake, during the town planning processes, consultative meetings were conducted in designated areas, and it was found to be very effective in facilitating collective decision-making. The decision-making process was related to bonding social capital (factors related to community cohesion), linking social capital (links with government decision making), and bridging social capital (through multi-sector networks). It was observed that leadership played an important role in the use of social capital for creating a common voice, which was an essential feature of the post-disaster planning processes.

In Bhuj, Gujarat, four case studies in different communities showed that trust in community leaders, networks, norms, and collective actions in the community, were related to higher social capital of the group, thus enhancing smoother and faster decision-making. Comparative studies of Kobe and Bhuj show that higher the social capital, faster the recovery rate, leading to a holistic rehabilitation process. In spite of the economic, cultural and social differences, the process of rehabilitation and its key elements for success are same in Kobe and Bhuj, viz. high social capital and strong leadership in community.

---

<sup>1</sup> United Nations Centre of Regional Development (UNCRD), Kobe, JAPAN  
([nakagawa@hyogo.uncrd.or.jp](mailto:nakagawa@hyogo.uncrd.or.jp))

<sup>2</sup> Graduate School of Global Environmental Studies, Kyoto University, Kyoto, JAPAN (from April 1, 2004). United Nations Centre of Regional Development (UNCRD), Kobe, JAPAN  
([shaw@hyogo.uncrd.or.jp](mailto:shaw@hyogo.uncrd.or.jp))

## INTRODUCTION

### **Natural Disasters and its effects**

Natural disasters occur every year in the world and cause tremendous loss of life, and physical and economic loss. It sometimes even creates political upheavals. In recent years, natural disasters have changed in character and the risk of being affected by natural disasters has significantly increased, especially in developing countries. It can be said that what we have witnessed in the last decade is obviously not natural; rather, it is more or less 'man-made' disasters, as a consequence of human activities and practices. Many scientists pointed out that global warming is one of the major factors responsible for the increase in weather related disasters such as flood and drought. Other factors include socio-economic or demographic reason, such as increase in world population. The increase in population, especially in the developing countries, also leads to an increase in domestic and international migration, forcing many poor people to live in areas that are highly vulnerable to natural disasters.

It should be noted that, by region, Asia is the most disaster-affected area. It is listed at the top of all aspects such as numbers of disasters, people affected, casualties, economic loss caused by natural disasters et al. (Data book [1]). This phenomenon can be explained by the increase in numbers of natural disasters due to environmental change, particularly rapid urbanization and migration of people from rural to urban areas due to steep economic growth and change in the economic structure in Asia since 1980s. Needless to say, this change in economic structure is closely linked to the world economic situation. Rapid urbanization is especially causing serious problems in cities where many houses are built on dangerous and 'unsuitable' land to absorb the migrating population. These newly constructed houses in many cases do not follow local construction codes and as a consequence, it creates a very vulnerable environment. Studies suggest that although the population growth is gradually decreasing in Southeast Asia, in many slums in mega cities such as Bangkok and Manila, the growth rate is still very high (see for example, Niitsu [2] and Aratame [3]) and it makes living environments more challenging for poor people (Blaikie [4]).

For developing countries, natural disasters have been a heavy burden on development processes. One disastrous calamity can be a curse for years against healthy economic growth. To mitigate such natural disasters, various efforts have been made at different levels. United Nations called for the decade from 1990 to 1999, to be celebrated as the 'International Decade for Natural Disaster Reduction (IDNDR)' and many initiatives were conducted during the period. It should be noted that it was during the IDNDR that the focus area on disaster management started to change from post-disaster to pre-disaster mitigation. Local governments as well as NGOs also conduct various disaster mitigation programmes. As more research on development were conducted in various fields in recent years, the approach to disaster mitigation is becoming more and more community-based, and much more effort is being placed in incorporating disaster management aspects in the overall development of communities.

As Maskrey rightly pointed out, disaster management should not be treated as a single issue, but should be incorporated in the overall socio-economic activities of local people (Maskrey [5]). As mentioned earlier, the effects of natural disasters are complex, and is related to economic, political and environmental factors of communities and its people. If the community itself is not benefited directly, concerted efforts of governments and NGOs in disaster mitigation will most probably fail.

### **Earthquake Rehabilitation: Objective and Structure of the Paper**

There are as many rehabilitation programmes, as there are numbers of natural disasters. Each disaster has a different characteristic, and disasters such as earthquakes can be quite destructive and affect the entire region. The affected are not only the low-income groups, as in the case of flooding, but include all income groups. When a city or urbanized area is affected, as seen in Kobe, massive re-planning of city will also be necessary.

Two major issues related to earthquake disasters pose a real challenge to earthquake professionals. The first one is the nature of the event, which, unlike floods or typhoons, cannot be predicted in advance. The other issue is its frequency, which again, unlike other events, occurs once in ten or 50 or even 100 years. Thus, the priority to prepare for earthquake disasters in advance is relatively low in many countries. For the developing countries, while the post-disaster reconstruction exercise provides an opportunity for development, pre-disaster preparedness and mitigation measures are the only solution for in-depth earthquake risk reduction (Shaw [6]). However, the critical challenge is to motivate an individual and/or a community to take pre-disaster risk reduction actions. In this connection, post-disaster reconstruction processes provides a unique opportunity to involve people and communities for a sustainable recovery, and to promote a culture of preparedness for the next event and beyond.

In the process of earthquake rehabilitation, governments (national, state and local) and NGOs (international and local) put tremendous effort in mitigating vulnerability and to develop better rehabilitation programmes. Such efforts are usually supported by people at the macro level, but when it comes to the micro (or individual) level, implementation can be very difficult. These cases occur when personal interests might be restricted to a community, in order to achieve successful rehabilitation.

The issue however, is that even though similar initiatives are carried out for disaster mitigation/rehabilitation programmes, and the each community faces similar difficulties, some communities have carried out successful and smooth rehabilitation and other have not. Why do such differences occur? In this paper, a unique approach of social capital is used to understand the key elements of successful rehabilitation.

### **SOCIAL CAPITAL AND ITS IMPORTANCE**

Social capital, in general, refers to trust, norms, and networks, which affect social and economic activities. Although it is not a quite new idea that trust and networks help make transactions easier and reduce costs, recent arguments on the role of trust is quite significant. Supporters of this new concept believe that the level of trust, norms and networks can be measured, and high accumulation of social capital contributes significantly to social, political and even economic performance, positively or negatively. Obviously, the term 'social capital', which is now popular in the field of social sciences and in the practical world of international development, plays a significant role in accelerating further discussion.

It is interesting to study the inclusion of modern forms of trust and network in social capital formulation. One of the earliest researches on this new topic is the work of James Coleman. In his analysis on the educational performance of high school students, he argued that obligations and expectations, information and norms, accompanied by sanctions, are the three forms of social capital that is needed both inside and outside the family for better outcomes. It was also noted that the 'closure' of social networks (vertical hierarchical bond between parents and children, horizontal networks between children, and also horizontal ties among the parents of those children) is crucial for greater affect. In general, he tried to account for different outputs of individuals and mechanisms of collective action, by focusing on the motivation of rational individuals. He described social capital by its function. "It is not a single entity, but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors – whether persons or corporate actors - within the structure." (Coleman [7]).

There are different opinions and definitions of social capital, as it developed over the last several years. Some argued on the positive impact of social capital, while others argued on its negative impact (Putnam [8], Serageldin [9], Woolcock [10], Schuller [11], Fine [12], Portes [13], Browning [14]). A detail analysis of social capital, and emergence of the concept, is provided in Nakagawa and Shaw [15]. Many critics, of course, do not deny the existence of trust and its importance. As human capital was not recognized as a capital good until recently, it will need further study and analysis in making it a concrete

and acceptable concept. Many empirical studies have been conducted to shape the concept and methodology. For instance, a recent work of Anirudh Krishna analyzed democracy using social capital. According to Putnam, social capital can only be accumulated over time. This means that the future of communities with low social capital is rather gloomy. Krishna studied the level of participation in democratic processes in rural communities of India. Instead of using sports/cultural associations or voluntary groups (as done by Putnam in his study), which are rarely found in rural areas of India, Krishna measured social capital using six local activities, and found that social capital has maximum impact at the meso-level (that is, groups or small communities) and by enhancing bonding at this level, higher social capital can be generated. Also, in his agency hypotheses, Krishna argues that social capital provides the 'glue', and to gear up collective action for democracy, capable agencies are particularly required (Krishna [16]).

As more detailed analysis was conducted, many categorizations of social capital emerged. The following two explorations are the basic and most important to understand social capital. The firstly relates to the work of Woolcock, who divided it into three according to its function as follows:

- Bonding social capital (strong ties between immediate family members, neighbors, close friends, and business associates sharing similar demographic characteristics)
- Bridging social capital (weaker ties between people from different ethnic, geographical, and occupational backgrounds but with similar economic status and political influence)
- Linking social capital (ties between poor people and those in positions of influence in formal organizations such as banks, agricultural extension offices, schools, housing authorities, or the police).

The second categorization was made by Norman Uphoff. He views two categories in social capital: structural and cognitive. Included in the structural social capital are 'roles, rules, precedents and procedures as well as a wide variety of networks that contribute to cooperation, and specifically to mutually beneficial collective action'. The cognitive category refers to 'mental processes and resulting ideas, reinforced by culture and ideology, specifically norms, values, attitudes, and beliefs that contribute cooperative behavior and mutually beneficial collective action' (Uphoff [17]). He argues that while the structural category 'facilitates' the collective action, cognitive ones 'predisposes' people toward it. Of course, they are closely connected to each other. For instance, although networks are categorized as structural in the above taxonomy, they can only be actively maintained by expectations (that is, norms) of reciprocity. In addition to exchanging contents, the cognitive category also makes a huge impact on sustainability of the networks.

In the above scenario, it is difficult to choose the right definition of social capital. In our analysis, we define social capital as a function of mutual trust, as social networks of both individuals and groups, and as social norms such as obligation and willingness toward mutually beneficial collective action, which in this paper, relates to post-disaster recovery processes. This definition of social capital is facilitated and/or enforced by trust in the community leader and also by political maturity of the community. Political maturity means that the community is accustomed to consensus-building by having meetings and discussions among community members.

## **EARTHQUAKE REHABILITATION OF KOBE, JAPAN**

### **The Kobe Earthquake**

The Great Hanshin Awaji Earthquake (popularly know as the Kobe Earthquake) that struck on 17 January 1995 caused loss of more than 6,400 lives, and over 40,000 people were injured. The earthquake damaged three adjoining prefectures of Hyogo, Osaka, and Kyoto in Japan. The most severely damaged

was Hyogo, where out of the total 6,433 casualties, 6,401 were citizens of Hyogo. There is more startling data on the damage – according to the offices of the Hyogo Prefecture, financial loss caused by the earthquake was estimated to be approximately JPY 9.93 trillion. Physical damages were also serious - 240,954 houses were completely or partially collapsed and 7,456 houses were destroyed by fire (Hyogo Prefecture homepage ([www.hyogo.pref.jp](http://www.hyogo.pref.jp)) as of 15 January 2003).

### **Post-Earthquake Planning in Kobe**

The rehabilitation of Kobe started from March 17, 1995 with the announcement from the Kobe Governor on the “Designation of Land Readjustment and Redevelopment Areas (*Toshi Keikaku Kettei*)”. The designation was open to public inspection for two weeks and residents and concerned persons could object to the plan with written documents. City of Kobe designated six readjustment areas and two redevelopment areas, but soon after the announcement was made, many heated arguments took place among residents of those designated areas in the plan.

The designation was controversial in many ways. The decision was made without any consultation with the residents. Although it was open to public inspection, little flexibility was shown by the city administration for changing the plan. Naturally, negotiations between residents and the administration got bogged down in some areas, and the rehabilitation was delayed as a result.

In the earthquake-affected areas, those designated for land readjustment and redevelopment were termed as 'black zones' and other areas were called 'white zones' among the stakeholders. The division depended on the level of commitment and involvement of public agencies toward the rehabilitation. Naturally, there were many differences in the official support for rehabilitation in these two zones. In black zones, property owners needed to make some sacrifices for land adjustment or redevelopment. However, the physical rehabilitation, such as building wider roads and parks, were carried out by the government resulting in a better environment for disaster management. But in white zones, narrow roads remained narrow and some illegal construction during the times of confusion made the environment even worse than it was earlier. Also, practically no financial support was given by the government. In addition, some special preferences were given in black zones, for instance selling of land for up to JPY 50 million without taxes, and also not taxing the land exchange process. However, most important difference was that in every black zones, *Machizukuri* organizations (*Machizukuri*, in Japanese, is literally, city or town building process ) were formed for the purpose of discussion among the community on rehabilitation issues. *Machizukuri* organizations also acted as focal points with city officials and city planning consultants. There also existed areas called 'Gray zones' where *Machizukuri* organizations had existed before the earthquake and/or self-simulative projects for development in congested urban areas. However, as in white zones, gray zones area were not entitled to special preferences mentioned earlier and the situation was quite similar to white zones.

### **Machizukuri (city/town building) Organizations**

*Machizukuri* organization is an organization consisting of residents, private agencies and others with an interest in the area's restoration. Kobe has a long history of *Machizukuri* organizations and even before the earthquake, 12 such organizations existed under the 1981 Kobe City *Machizukuri* Ordinance. In Kobe, most of the *Machizukuri* organizations are formed based on the existing community organizations such as neighbors associations<sup>3</sup> In black zones and gray zones, *Machizukuri* organizations were formed in

---

<sup>3</sup> *Jichikai* (neighbors association) has its origin in Edo-period. The purpose of the group back then was to control and secure the livelihood of rural people by the administrator. Although its form has been changed from time to time, it continued to exist until the end of the World War Two. Due to the democratic atmosphere after the war, *Jichikai* was officially dissolved. However, it soon revived since the government as well as people needed them for the coordination between people and the administration for

every community and played very important role in the process of rehabilitation. Most of the board members were voluntarily working on community restoration. Although many were dissolved after the projects completed, some organizations continue to work even now on further community development.

Forming a Machizukuri organizations was mandatory in black and gray zone communities. Machizukuri organizations provide a very important opportunity for community members to discuss about future city planning, and it was the first step towards community participatory rehabilitation. However, the situation was totally different in white zones, where literally all rehabilitations were left in the hands of the community and its members. In white zones, forming Machizukuri organizations was not mandatory, since the areas were not designated as 'official' projects. Each individual could restore his/her property as they wished. Many sufferers however were preoccupied with their own livelihoods, and it was difficult to even form organizations for community restoration. In spite of such difficulties, several Machizukuri organizations were formed in white zones. However, many of them were not an officially designated organization under the city ordinance.

Consultants and advisors also played a big role in the rehabilitation. Consultants were dispatched to each Machizukuri organizations and provided technical and professional knowledge of city planning. It can be said that Kobe rehabilitation is the product of the collaboration between communities, the government, and consultants.

Every Machizukuri organization faced various difficulties in the process of restoration. However, there are obvious differences in the speed of implementation, and people's involvement within communities. In some areas, negotiation between residents and government prolonged for a long time on various issues (such as the amount of land that owners in land-readjustment districts should contribute for public improvement) and in some cases, resulted in a split of Machizukuri organizations into several residents groups. In the following section, detailed rehabilitation processes will be examined and possible causes of community performance in the rehabilitation programme will be analyzed.

### **Mano: Example of Gray Zone Rehabilitation**

Mano is located southeast of Nagata-ward in Kobe city, and about five kilometers west from downtown Kobe. Mano is a typical inner city area where factories, residences, and small shops exist in a mixed zone. As of 1 October 1995, the population and household numbers were 4,534 and 1,803 respectively. These numbers are almost one third that of 1962, which was about 13,400. As a typical phenomena of the inner city of Kobe, population of aged people accounts 19.4 percent, which is much higher than that of the average for Kobe city. Mano also has a housing problem. Population density of residential area is very high and many are old wooden houses. This environmental condition has prevented new comers to settle in this area, which has resulted in a gradual decline of the population.

Mano has a long history of community development, which started back in 1960s. Amidst the high-growth period of the Japanese economy, people of Mano suffered from environmental pollution from factories in the area. Residents fought against it and succeeded in removing some of the polluting factories. Then this movement changed its character to focusing on greening and well-being of the community. It should be noted that while Mano is the first district that was designated under Kobe City Machizukuri Ordinance in 1981, its community activities started long before this designation.

### **Self-Help Reconstruction Efforts in Mano After the Earthquake**

The earthquake resulted in 19 casualties and 23 percent of houses completely collapsed or were burnt, and 44 percent of the houses partially collapsed. Mano was not destroyed during the last World War

---

such as ration. Also, it was necessary for someone to keep an eye on community safety. In Japan, Jichikai has existed as the safety net for poor people. Source: 21C Hyogo Sozo Kyokai [18])

II, and many houses were old, and not rebuilt – as in the case of other regions and cities in Japan. Right after the earthquake, about 1,400 people were forced to stay in emergency shelters. About two thirds left the emergency shelters when aftershocks ended, but rest of the people stayed on until August 1995.

From the very beginning of the earthquake, many activities were conducted by the Mano community as shown in Table 1. One of the most remarkable activities done by the community was extinguishing fires in Mano. On the day of the earthquake, fires broke out and kept burning for more than ten hours. The efforts of residents as well as fire teams of local businesses helped stop the fire and minimized damage (0.35ha, and 43 houses were however burnt). In contrast, in other part of Nagata, called Chitose, all the residents left the community as the fire approached and none of them attempted to extinguish the fires. As the result most of Chitose area was burnt down (Morizaki [19]). In addition, Mano community members themselves rescued ten people from the collapsed buildings in the first three days. Professional rescue teams reached Mano on the third day, but could not help in the rescue.

Activities during the rehabilitation period were also impressive. During the 15 years of experiences in Machizukuri, the Mano community had accumulated vast knowledge and network resources for rehabilitation. Also, the community and Kobe city had obtained adequate land for community development. These areas were fully utilized after the earthquake for construction of community facilities, such as a community welfare center.

**Table 1: Activities done by the Mano community** (Source: Konno [20])

1. Immediately after the earthquake (January-March, 1995)	Search and rescue; extinguish fires; establish community-based emergency disaster countermeasures office in elementary schools; food distribution to all houses; coordinating outdoor community kitchen; night guard by each block; self building inspection survey; consultation on building; confirmation of residents safety survey (Restoration of Lifeline: February-March 1995)
2. Relief and the beginning of rehabilitation (April-August, 1995)	Publication and distribution of weekly community newsletters; management of emergency shelter; support for retrofitting houses (introducing masons etc.); support construction of corporative houses; petition local government for the construction of temporary houses within Mano district; and priority move-in of Mano people (Dissolution of the emergency shelter: August, 1995)
3. Rehabilitation (September 1995 and after)	Establishment of Mano Rehabilitation Machizukuri office; construction of Machizukuri center; establishment of 'Manokko (private limited company)' for community development, formation of Fureai Machizukuri Organization; signature collection campaign to Nagata ward administration for the construction of public houses for disaster affected people; construction of Kobe city public houses, and special houses for elderly; model house for 'collective houses'; joint housing projects, regional welfare center, day-care centers etc.

It should be noted that Mano is in a Gray Zone, and unless the community motivated themselves and undertook action from their end, no public support would have been forthcoming. As mentioned earlier, in many communities in white zones, it was quite difficult even to form a community organization to discuss rehabilitation. In many communities where there were no daily communication among residents, and no community groups existed earlier, people were confused about what they should do, and very few activities for helping community members were conducted in the early stages of the post-disaster period. The success of Mano owes much to its people's efforts and strong community networks.

## **Leadership in Mano: The Driving Force Behind Successful Rehabilitation**

When we talk about the success of Mano, it is critical to mention community leaders. The first community leader of Mano, late Mr. Mouri influenced the district in many ways. His leadership first brought the community together during the pollution suite activities back in 1960s. He succeeded in organizing the movement and mobilizing many residents. After the successfully ousting the pollution causing company from the district, he continued to mobilize resident's powers for community development in the reuse of the vacated plot of the company. It is important to note that he was the chairman of two main community groups, and he introduced a democratic system in the both groups. Trust in this leader was very high among community people.

He also played a crucial role when negotiating with Kobe city administration. He almost always conducted the liaison with Kobe city. However, his approach to the administration was not traditional, that is, through members of Kobe Municipality Council. He usually went to the concerned section in the city hall directly, and addressed and consulted with the person in charge. During more than 30 years of community activities of this outstanding leader, many other leaders also emerged. It is these leaders who are currently involved in the rehabilitation and community development programs.

## **Social Capital and its Impacts on the Rehabilitation of Mano**

From the case study in Kobe, social capital in Mano can be summarized as follows.

- Bonding Social Capital:
  - o Strong trust among community members
  - o Strong trust to community leaders
  - o High level of participation of people in community activities
  - o Norms (high participation of community activities)
  - o Norms (accustomed to democratic decision making)
  - o Mechanism of participating in collective action
  - o Democratic system of those community groups
  - o Various community based groups and their loosely connected network
- Linking Social Capital
  - o Interaction with government officials through community development activities
- Bridging Social Capital
  - o Interaction with various stakeholders during community development such as town-planning consultants, academicians, other community activity groups, other neighbors associations, etc.
  - o Individual networks

In the case of Mano, it should be noted that social capital alone did not lead to successful rehabilitation. Social capital was an important seed, but to facilitate and to make it grow into a successful movement, the existence of strong leadership was essential. Krishna used agency hypothesis for his analysis of the collective action for democratic movement. However, we would like to stress that leadership is most important to gear and facilitate the movement.

## **EARTHQUAKE REHABILITATION IN GUJARAT, INDIA**

### **The Gujarat Earthquake and its Aftermath**

The Gujarat Earthquake struck on 26 January 2001 at 8:46 in the morning. It was the 52<sup>nd</sup> Republic Day of India and many people were staying at home on this holiday. The earthquake caused tremendous damages to the entire state. The district called Kutch where the epicenter was located, was one of the most devastated area and four major towns in Kutch were totally destroyed.

In February 2001, the State government established the Gujarat State Disaster Management Authority (GSDMA) to coordinate the total rehabilitation of the earthquake. GSDMA initiated 28 rehabilitation packages for housing, rural artisans, handicraft artisans, agriculture, tourism, capacity buildings, orphans and women, industries and services. The programme for house reconstruction was particularly impressive. There were five special packages which varied by geographical area, extent of damage, and structural types. Four out of the five packages were announced by GSDMA on 23 February 2001, which was just 29 days after the earthquake. The package was aimed to be owner-driven reconstruction, and the programme was quite successful in rural areas where massive reconstruction was quickly conducted with the combined efforts of the government, private sector (including NGOs) and international organizations.

While the rehabilitation under the package 1 to 4 (which was for rural areas) was relatively smooth and fast, the situation was complicated and different in the four devastated towns in Kutch.

### **Rehabilitation of Bhuj: One of the Hardest-Hit Towns**

Bhuj is one of ten towns in Kutch and is also the district headquarters. Bhuj city expanded towards its outskirts with the population increasing multifold. In 1961, the total population of Bhuj urban area was 38,953. But the numbers almost tripled by 1991 and reached 102,176. The old city of Bhuj was surrounded by stone walls and therefore called the Walled City. The Walled City had many historical heritage sites, most of which were destroyed by the earthquake. Like other old cities in Kutch, the Walled City was quite congested and the population density was quite high. Much of damage and casualties were due to these factors. To reconstruct the city with safety measures against possible future disasters, town planning incorporating disaster mitigation feature were applied to the area. Town planning was made upon intensive consultation with consultants and city planning experts.

In Bhuj, town planning was discussed and coordinated among Bhuj Area Development Authority (BHADA), the District office, consultants, communities and NGOs. Due to the complexity of urban total rehabilitation, NGOs involvement in the urban rehabilitation was limited, compared to their massive involvement in rural areas.

In urban areas, 'Samaj' groups or community groups were the first to support during the emergency period. Samaj groups like Jain Samaj, Mistri Samaj, Khatri, Soni pooled resources generated from their community members and used it to undertake tasks such as provision of immediate relief and temporary shelters. There were about 25 such groups in Bhuj and were actively involved during the relief period in provision of temporary and permanent houses. There were also groups formed by citizens, primarily professionals, involved in the development of the city. One such group in Bhuj was called "The Bhuj Development Council (BDC)". BDC was a dormant organization established in 1992, which was basically a social get-together group before the earthquake. However, BDC became the mediator between community and government officials, and coordinated various community meetings with community members, government officials and consultants. Besides the intensive involvement in the effort of community participation and information dissemination, BDC also engaged in the rehabilitation of slums and informal sector enterprises. Members of BDC are volunteers, working for the people of Bhuj. For example, two members who are actively engaged in the rehabilitation are retired engineers.

## **Questionnaires Survey in Bhuj: Effects of Social Capital in Rehabilitation Process**

A questionnaire survey, which was used to gather information on social capital, was conducted at four communities in Bhuj namely Lohana, Soni, Khatri, and Rajput. Details of the analysis can be seen in Nakagawa [21]. The result of the questionnaires can be summarized as follows:

### *Bonding Social Capital:*

- Trust: It was observed that Soni has the highest trust in community members and their leaders, while Lohana has the lowest trust. General trust is relatively higher in other groups too.
- Social norm: Most of the members of Lohana and Soni belong to groups whose decision-making process is done through discussion and meeting. Although only small numbers of Lohana people belongs to groups, these groups seem to have the most democratic system (consensus building by meeting and discussion or voting) in selecting leaders and decision-making. Social norm inside the community aiming to facilitate collective action is relatively high among Soni.
- Participation: Soni and Khatri have the highest participation rate for collective action. Khatri has the highest preference for business partnership, and Soni is second. In community participation, Soni has the highest level of participation.
- Networks: Soni has the highest community business network, while Khatri has the highest individual network. Networking is found to be lowest in Rajput. Khatri are connected to larger numbers of groups/associations. However, they seem to belong to groups based on individual interest. Soni community members are also connected to many groups.

### *Bridging Social Capital:*

- Multidisciplinary: Soni and Lohana have the highest involvement in multidisciplinary actions.
- Networks: Soni and Lohana have the highest number of networks outside their own communities. It was observed that while Khatri had the highest number of individual networks, however, in terms of inter-community networks, they have relatively lower numbers.

### *Linking Social Capital:*

- Soni and Lohana have the highest formal collaboration with the government sectors through their leaders.

The field survey and interviews with the stakeholders indicated that Soni was the community that recovered fastest in Bhuj city, despite their lower income levels, compared to other groups. The survey suggests that speedy recovery and satisfaction rate for the reconstruction plan of Soni is attributed to the high level of social capital. In contrast, Lohana has relatively lower rate of participation in community activities, in spite of the high economic levels within the chosen communities. Lohana had a number of top-level businessmen such as hotel owners, and also lower-income people who depended on street vending for their livelihood. Lohana community is mainly organized and operated by the higher-income people, who offered resources for the construction of temporary housing outside the city. However, those resources were not fully utilized, as evidenced from the vacant shelters constructed by the Lohana community. Rajputs, on the other hand, are constrained by both financial capital and social capital, and is suffering from severe recovery problems. Therefore, it can be said that financial resources alone cannot solve the recovery problems, and social capital plays a critical role.

The questionnaire results also show that Lohana has the largest percentage of people who are dissatisfied with the town planning, in contrast to Soni, which has the highest satisfaction rate. This can possibly be attributed to their collective decision-making, trust in their leaders, and the numbers of networks with government agencies. The same elements as in the Mano community, were found to be useful in terms of speed and satisfaction of rehabilitation.

## **APPLICATION OF SOCIAL CAPITAL TO EARTHQUAKE REHABILITATION**

The two case studies of Kobe and Gujarat Earthquakes show that although the local socio-economic and cultural backgrounds are different in these two areas, the recovery process of urban areas is quite similar. At every stage of the disaster cycle (rescue, relief and rehabilitation), the communities played very critical roles among other concerned stakeholders. In both cases, the communities with high social capital were found to be efficient in rescue and relief. The most challenging part was during the actual reconstruction, where town planning and rezoning was applied, and collective decision-making was needed. In Hyogo, as municipal governments submitted the town planning plans without any consultation to the local community, it took from several months to a few years to finalize the reconstruction plans in the Black Zone areas. In Bhuj, after finalizing the town planning in November 2002, massive protests from the property owner against the plan also took place. Reacting to this, people who were living in temporary shelters and wished for the earliest reconstruction of the city became frustrated at further delays and demonstrated strongly against those who were opposed to the town planning (Iyenger [22]). As of December 2003, negotiations were still ongoing in certain areas of the Walled City.

As the Mano and Soni community cases show, even in the challenging situation of rehabilitation, communities with social capital can perform well. But the social capital is not the sole factor determining speedy and satisfying recovery. As the Mano case indicated, strong leadership inside the community is also essential for any collective action. Also, from various interviews conducted during the field survey in Gujarat, many NGO members commented that community leadership was the most essential aspect of the successful rehabilitation in both urban and rural areas. The results of the questionnaires conducted in Bhuj show that the Soni community has the highest trust in its community leader. It is the trust of the community in their leaders, which helped Soni to take collective decisions in the time of emergency. It should be therefore be re-emphasized that leadership is an important issue in any community-based activity and in development projects, including post-disaster reconstruction.

Each country has its own culture and socio-economic context. The importance of local cultural issues has been emphasized over the last several years. However, community activity is connected to certain basic issues and norms, which are widely applicable without any geographic limitations. The current study shows that social capital and leadership in the community are basic attributes that are universal in nature, irrespective of the development stage of the country. Needless to say, there are several other factors that affect rehabilitation, such as government policy or intervention of NGOs or consultants, which were quite different in Kobe and Gujarat. Further studies in this direction will help in understanding the increasing importance of social capital in the modern world.

### **ACKNOWLEDGEMENTS**

This study was made possible with the generous guidance and assistance of Professor Y. Katayama of Kobe University. For the survey in Japan, discussions were made with Professor Y. Murosaki of Kobe University and Mr. M. Murai of NGOs Kobe. For the survey in India, assistance from GSDMA (Mr. V. Thiruppugazh and Ms. N. Tewari) and Abhiyan (Ms. S. Iyenger, Ms. M. Anand and their team) are highly appreciated. Special thanks are due to Dr. Hari Srinivas for brushing up the language Local people in both the case study areas cooperated wholeheartedly during the questionnaire survey, interview and discussion sessions.

## REFERENCES

1. Data Book 2002. *Data Book on Asian Natural Disasters in the 20<sup>th</sup> Century, Natural Disasters in India*. Kobe: Asian Disaster Reduction Center.
2. Niitsu, K. "Asia no Toshika to Jinko Shuchu" CEL June 1997 (in Japanese)
3. Aratame, N. "Jinko Bakuhatu to Kajo Toshika" *Kokusai Kaihatsu-gaku II*, Toyo-Keizai-Shinpo-sha, 2000 (in Japanese)
4. Blaikie, P., Cannon T., Davis I., Wisner B. *At Risk – Natural hazards, people's vulnerability, and disasters*. London: Routledge, 1994.
5. Maskrey, A. *Disaster Mitigation – A community based approach*, London: Oxfam. 1989.
6. Shaw R. *Attitudinal change for risk reduction actions*: In WSSI Workshop in Bangkok, Thailand, December 2003
7. Coleman, J. "Social Capital in the Creation of Human Capital." *American Journal of Sociology*, 1988; 94: 95-120.
8. Putnam, R., Leonardi, R., and Nanetti, R. *Making Democracy Work*. Princeton: Princeton University Press. 1993.
9. Serageldin, I. and Grootaert, C. "Definition of Social Capital: An integrated View", in *Social Capital: A Multifaceted Perspective*, edited by P. Dasgupta and I. Serageldin. Washington D.C.: The World Bank. 2000.
10. Woolcock, M. "Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework", *Theory and Society* 1998; 27(2): 151-208.
11. Schuller T., Baron S., and Field J. 'Social Capital: A Review and Critique', "Social Capital: Critical Perspectives", 1-38. Oxford: Oxford University Press, 2000.
12. Fine B., Green F. 'Economics, Social Capital, and the Colonization of the Social Science', in *Social Capital: Critical Perspectives*. Oxford: Oxford University Press, 2000
13. Portes, A. and Landolt, P. "The Downside of Social Capital", *The American Prospect* 1996; 26: 18-21
14. Browning, C.R., Dietz, R., Feinberg, S.L., *Negative" Social Capital and Urban Crime: A Negotiated Coexistence Perspective*, URAI Working Paper 00-07, Columbus: The Ohio State University, 2000
15. Nakagawa, Y., Shaw, R. "Social Capital: A Missing Link to Disaster Recovery", *International Journal of Mass Emergencies and Disasters* 2004, forthcoming
16. Krishna, A. "Enhancing Political Participation in Democracies: What is the Role of Social Capital?" *Comparative Political Studies*, 2002; 35 (4): 437-460.
17. Uphoff, N. "Understanding Social Capital: Learning from the Analysis and Experience of Participation." In *Social Capital: A Multifaceted Perspective*, edited by P. Dasgupta and I. Serageldin. Washington D.C.: The World Bank. 2000, pp 215-249
18. 21century Sozo Hyogo Kyokai "Chiiki Soshiki niokeru NPO no Yakuwari to sono Kanosei ni Kansuru Kenkyu", March 1995 (in Japanese)
19. Morizaki, T. "Community ga machi wo sukuu", *Kenchiku, Toshi, Ningen*, Kobe University (in Japanese), 1995.
20. Konno, H. "Community Formation in Inner City Area: Community Planning of Mano People in Kobe" (in Japanese). Kobe: Toshindo. 2001.
21. Nakagawa, Y. "Disaster and development, applying social capital in disaster recovery." Master Thesis. Kobe: Kobe University. 2003.
22. Iyenger, S. *Community leadership*, Personal communication. 2003.