How Construct the Disaster Management Plan in a Remote and Isolated Area Among Mountains? (The Lessons Learned from the 2004 Mid-Niigata Prefecture Earthquake)

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Abstract

In Oct 2004 the mid-sized earthquake disaster hit the rural area of Niigata Prefecture in Japan, caused the damage of 34 casualties and over 340,000 damaged housings. The recovery process has been proceeding in the impacted area, but there is the different pattern how victims acknowledge the achievement of the recovery process based on the area where they live. We conducted the random social surveys in the impacted area, and found that 50% of the victims who live in the ground in the urban area believed 'they thought they are not victims any more' after 24 months, while 35% of victims who live in the area of remote and isolated area did.

The disaster management plans in Japan were basically followed to the experiences learned from the urban disaster, the 1995 Kobe Earthquake model. The Niigata Prefecture government and local governments have been struggling with constructing recovery policies applying to the remote and isolated areas among mountains hit by the Earthquake. The big question about how they should have constructed the disaster management plan in those areas before the disasters is arisen because policymakers are so much concerned about it that over 80% of the national land is categorized the areas of 'a remote and isolated area among mountains' in Japan.

We conducted the interviewing survey on 34 key persons or leaders in communities in those areas to clarify the factors constructed the potentiality against the disasters. Several negative factors were clarified: 1) disaster prone areas are increasing, 2) lack of the knowledge about the expected disasters in the community is observed 3) possible community disaster

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responders are dispersed over large areas, 4) possible bases of disaster management are losing, 5) the power of mutual assistance is growing weaker.

Keyword: *Disaster Management Plan, a Remote and Isolated Area Among Mountains,*

1. Introduction

The society has a potential power of cope with disasters. Any society has a certain ability to handle the emergency situations and restore the damaged society. The severity of the damage is determined by the difference between the ability of the society and the intensity of the earthquake motion. The 1995 Hanshin-Awaji Earthquake is known by the disaster, which stroke the big city. The 2004 Mid-Niigata Earthquake is known by one, which occurred in the remote and isolated area among mountains. The impacted area of the Mid-Niigata Earthquake has low population density, where 17 people were killed, while 6,437 people were killed by the Hanshin-Awaji Earthquake. On the other hand agricultural and forest areas were heavily damaged and huge mudslide occurred in the area at the time of Mid-Niigata Earthquake. The 2004 Mid-Niigata Earthquake reminded us of the importance of those areas, which play the great role of conserving national lands at high risk, and the danger of those areas, which are vulnerable to disasters.

2. Method of Survey

In order to realize sustainable development and conservation of the society we should think how to ensure remote and isolated areas among mountains against possible risks. This research tried to clarify basic framework how to improve the ability of the areas preventing disasters and recovering from damages. We chose three survey points from Niigata Prefecture and found several key players from each point, who promote community activities and restore vitality to the local areas. The procedures of the research are 1) conduct the interviews with each key player, 2) summarize those interviews, 3) categorize the results of the summarization, 4) analyze the result of the research using SWOT analysis.

3. Survey Results

3.1 Subjects of Interviews

We interviewed 43 key players in the community in Niigata Prefecture but not the impacted area of the 2004 Mid-Niigata Earthquake. We summarized the content of interviews and categorized the results of the summarization and found 770 important subjects from those interviews. We also divided 770 subjects into 43 concepts in order to review the whole picture of issues in remote and isolated areas among mountains (Table 1).

Table 1 43 concepts of the interview results

Category ID	Categories	Frequences	%	Accumulated %
1	Disaster Management	65	8.4	
2	Snow Disaster	57	7.4	15.8
3	Agriculture	45	5.8	21.7
4	Community Ties	43	5.6	27.3
5	community integration	40	5.2	32.5
6	Social Work Service	38	4.9	37.4
7	Characteristics of Region	36	4.7	42.1
8	Dwellings	30	3.9	46.0
9	Transportation	27	3.5	49.5
10	Disaster Response	27	3.5	53.0
11	New Business	27	3.5	56.5
12	2005 Heavy Snow	27	3.5	60.0
13	Temples	24	3.1	63.1
14	Fire Comapany	24	3.1	66.2
15	Industry	23	3.0	69.2
16	Settlement	20	2.6	71.8
17	Construction Industry	19	2.5	74.3
18	General Overview	16	2.1	76.4
19	Mud Slides	16	2.1	78.4
20	Emotional Attachment	15	1.9	80.4
21	Isolation	15	1.9	82.3
22	Japan Agricultural Cooperatives	14	1.8	84.2
23	Roads	14	1.8	86.0
24	Schools	13	1.7	87.7
25	Tourism	13	1.7	89.4
26	Healthcare	10	1.3	90.6
27	Elderly Population	9	1.2	91.8
28	Successor	9	1.2	93.0
29	Local Social Worker	7	0.9	93.9
30	Confirmation of One's Safety	6	0.8	94.7
31	Disaster Assistance	6	0.8	95.5
32	Floods	6	0.8	96.2
33	Earthquake	5	0.6	96.9
34	Mass Media	4	0.5	97.4
35	Community Activities	4	0.5	97.9
36	Sewer System	3	0.4	98.3
37	Personal Data	3	0.4	98.7
38	NPO	2	0.3	99.0
39	Standard	2	0.3	99.2
40	Future Vision	2	0.3	99.5
41	Community Leaders	2	0.3	99.7
42	Fires	1	0.1	99.9
43	Others	1	0.1	100.0
	Sums	770	100.0	

3.2 SWOT Analysis

SWOT Analysis, is a strategic planning tool used to assess the Strengths, Weaknesses, Opportunities, and Threats. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieving that objective. Using this method make it possible to get a deep insight into issues or problems in the organization. We use this method to analyze the result of the interviews in 43 concepts in order to clarify the internal and external factors that are favorable and unfavorable to achieving the goal of disaster management. We are going to show the major result of the SWOT analysis, which is about the issue of “disaster

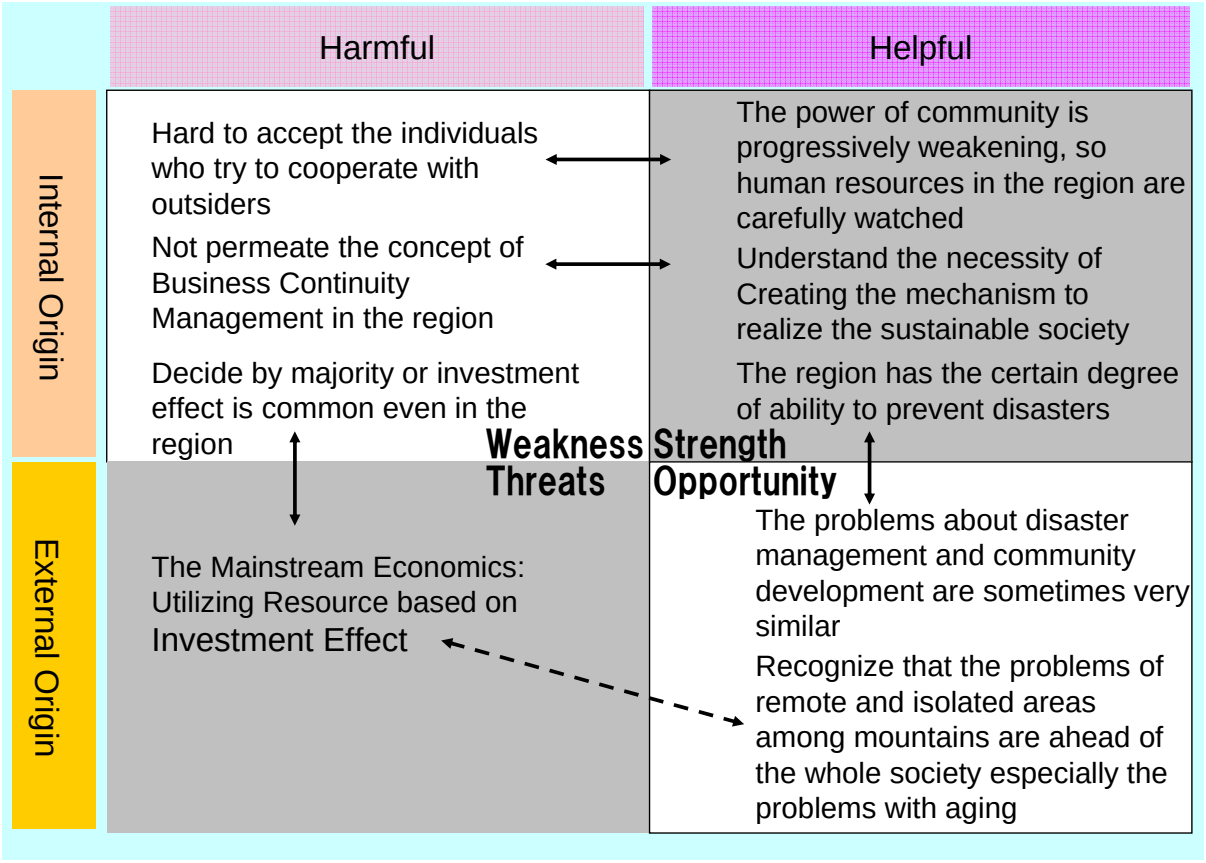

Figure 1 Result of the SWOT analysis

management" (Figure 1).

3.3 Way of Thinking about Disaster Management in the Remote and Isolated Areas Among Mountains

3.3.1 "Strength: The region has the certain degree of ability to prevent disasters." Versus "Opportunity: The problems about disaster management and community development are sometimes very similar"

The residents of the remote and isolated areas among mountains believe that the region has the certain degree of ability to prevent disasters. The concrete content of the ability would be found in other 42 categories of the topics in the interviews; however, most of the interviewees thought it is hard to clarify how to plan the effective disaster management. On the other hand they thought that the problems about disaster management and community development are sometimes very similar. Nowadays protecting the environment of the region in order to conserve national land is caught people's attention, so at the same time people are interested in thinking about the disaster management in those rural areas. This trend keeps people to think the necessity of the strategic planning in those areas.

3.3.2 ”Strength: Understand the necessity of creating the mechanism to realize the sustainable society” Versus “Weakness: Not permeate the concept of Business Continuity Management in the region”

The concentration of the population into urban areas for many years decrease the numbers of community leaders, who work for protecting the remote and isolated areas among mountains, so in consequence many lands are already desolated. Many authorities and community leaders believe the necessity of creating the mechanism to realize the sustainable society in the remote and isolated areas among mountains; however, community leaders have no idea and knowledge of the basic idea about Business Continuity Management.

3.3.3 “Strength: The power of community is progressively weakening, so human resources in the region are carefully watched” Versus “Weakness: Hard to accept the individuals who try to cooperate with outsiders”

The numbers of human resources are decreasing in the remote and isolated areas among mountains, so the ones, who work for the community staying in the region or coming from the outside of the region, are caught the positive attention by the community members; however, the community member, who tries to cooperate with the people, who lives in the outside of the community are underestimated by the community members because of the remnant from old days of the exclusionary regionalism.

3.3.4 “Threat: The Mainstream Economics: Utilizing Resource based on Investment Effect” Versus “Weakness: Decide by majority or investment effect is common even in the region” Versus “Opportunity: Recognize that the problems of remote and isolated areas among mountains are ahead of the whole society especially the problems with aging”

When the economics is getting slow in Japan, utilizing resource based on investment effect becomes very common in the society. This idea create the hard situation around the region because investing resources in the remote and isolated areas among mountains is generally less effective than in the urban areas, however, even in the region this idea becomes the mainstream and when people try to decide, people decide by majority or investment effect. If the effective model of how to get good result on the investment in the rural areas is invented, it would throw new light on the problems of the aging not only in the rural areas but also in the urban areas.

4. Conclusion

This research clarified the elements constructing the basic framework in order to strengthen the society against the disasters. The tasks ahead are creating the prototype of the disaster management plan in the remote and isolated areas among mountains, and provide clear-cut guidelines governments to proceed the measures in those areas.

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