

## The Neighborfood Community-training Program for Post-disaster Recovery : Toward Preparing Community-based Recovery Management

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### ABSTRACT

Considering immense damage by great earthquake, pre-disaster planning for post-disaster recovery is vital for the disaster-resilient community. From this point of view, we designed neighborhood community-training program for post-disaster recovery applied of the participation method for community-based development (Machidukuri). Our team were involved to develop and manage one program held in Shinkoiwa (Katsushika ward, Tokyo) during November 2004 to April 2005.

In this paper, backgrounds of target neighborhood community and implemented program were explained. After that, questionnaire survey to participants who contained residents, civil servants and practitioners was analyzed to measure the impact of this program. Finally, a position of the program among disaster reduction policies were discussed.

### 1. RESEARCH BACKGROUND AND PURPOSE

One lesson learned from the Hanshin-Awaji Earthquake is the concept of "pre-disaster planning." Its development and perspective is shown by Nakabayashi (2005)<sup>(1)</sup>. Nakabayashi classified pre-disaster activities in Tokyo Metropolitan into the following: 1. Prior consideration of "recovery procedure," 2. Promotion of prior establishment and consideration of "recovery system," 3. Prior consideration of "recovering the town image," 4. Proposition of prior development of "recovery activity system," 5. Technology acquisition and staff training by "recovery manual training," 6. Fostering of personnel and local organizations by "neighborhood community-training program for post-disaster recovery." In particular, he pointed out that activity 6 was a "new trial" developed from the "5 objectives and significances of pre-disaster planning issued by the National Land Agency (1998)."

The "neighborhood community-training program for post-disaster recovery" is part of the "citizen-fostering activities for town recovery" of Tokyo Metropolitan that started in fiscal year 2003, and Kita-ku conducted an "urban recovery workshop" prior to Tokyo Metropolitan's activities. **Figure 1** shows the locations of 7 sites where citizen-fostering activities for town recovery were conducted in fiscal years 2003 and 2004. The development of a training program in the Nukui district, one of two sites where the activities were conducted in fiscal year 2003, was reported<sup>(2,3)</sup>. Ichiko claimed<sup>(3)</sup> that "now is the time to design and administer a neighborhood community-training program for post-disaster recovery," although he did not quantitatively evaluate the program itself.

In Shin-koiwa, Katsushika-ku, training was conducted from November 2004 to April 2005 following the activity method of the Nukui district. As for the training in the Shin-koiwa district, Aiba (2005) reported some problems from the viewpoint of planning, but did not quantitatively discuss people's awareness and the effect of the training.

In our study, we examined the neighborhood community-training program for post-disaster recovery, based on a questionnaire survey given to the program participants and analysis of the achievement of the program. We then discussed the program's possibility as a pre-disaster planning measure that residents, governments, companies, experts, and NPOs could work on collaboratively on a district scale.

In this article, we conducted our analysis from the following viewpoints: 1. Characteristics of participant residents, 2. Acceptance level of the training, and 3. Resident's evaluation of the training method. This article is organized as follows. In Section 2, we summarize the characteristics of the local community in the target district of Shin-koiwa in comparison with those of the Nukui district studied in 2003. Section 3 is devoted to the analysis of the method of the training program, based on the achievement of the training and on the questionnaire survey given to the participants that was conducted in each training session. In Section 4, we analyzed the resident's awareness of the training method such as large maps or role playing, and in Section 5, we analyzed the evaluation of the participant experts on the training in Shin-koiwa. Discussion is given in Section 6 with a summary of the knowledge obtained.

**Table 1.** Area characteristics of the Shin-koiwa district: Comparison with the Nukui district in 2003

	Shin-koiwa, Katsushika-ku	Nukui, Nerima-ku
Location	1 to 4-chome, Shin-koiwa; 1 and 2-chome, Nishi Shin-koiwa; 1 and 2-chome, Higashi Shin-koiwa	1 to 5-chome, Nukui
Area, Number of buildings, Population density	166ha, 4,867, 124/ha	108ha, About 4,700, 165/ha
Population, Number of households, Average age (Census 2000)	20,496, 10,117, 42.6	17,827, 7,973, 40.9
Youth population ratio, Aging population ratio	8.3%, 17.6%	11.2%, 16.5%
Development of town area	<p>After the Great Kanto Earthquake, factories were built on the north side of the railway around Shin-koiwa Station on the Sobu Line, and residential houses on the south side. The residential area was developed from farmland in the 1930s, and the town has a large grid structure. Hence residential areas with many houses are now formed in part of the district.</p> <p>In the early 1970s, a large factory on the north side was moved and municipally-owned housings were constructed in the vacant lot.</p> <p>The district contains one of the largest commercial areas in Katsushika-ku. In recent years, condominiums have been built mostly along the main streets.</p> <p>2-4 34%</p>	<p>Residential areas were gradually developed from farmlands in the 1960s with no infrastructure development such as land readjustment and residential road networks were constructed on farm roads. City planning streets such as Mejiro-dori, Senkawa-dori, and Ring road 8 were developed, along which condominiums were built.</p> <p>The district contains two stations of a private railway and has a small commercial area.</p>
(General) Risk level	-Shin-koiwa Community Union	2-3
Ratio of house owners	-South Shin-koiwa Town Development	48%
Major local organizations for the training	Association	-Nukui Community Association -Evacuation Base Management Network



**Fig. 1** Areas where Tokyo Metropolitan’s “citizen-fostering activities for town recovery” were conducted

**2. DEVELOPMENT OF NERGHBORHOOD COMMUNITY-TRAINING PROGRAM FOR POST-DIASTER RCOVERY IN SHIN-KOIWA DISTRICT**

As Aiba<sup>(4)</sup> reported, the program in Shin-koiwa followed the one conducted in Nukui, Nerima-ku in fiscal year 2003. In com-

parison with Nukui, we summarize the area characteristics and participant's attributes of the Shin-koiwa district. This is a prerequisite for the establishment of the training program.

**2.1 Area characteristics of Shin-koiwa district: Prerequisite for the training program**

**Table 1** shows a summary of the area characteristics of Shin-koiwa and Nukui. The average number of people per household is smaller in Shin-koiwa than in Nukui (2.0 in Shin-koiwa and 2.2 in Nukui). The youth population ratio is smaller and the aging population ratio is higher in Shin-koiwa. The population density is higher in Nukui partly because, in Shin-koiwa, there are large non-residential areas such as the Arakawa floodway, JR railways, and Shin-koiwa park that is one of Tokyo’s large evacuation areas. The risk level, determined by Tokyo Metropolitan in 2003 for the fifth time, is higher in Shin-koiwa than in Nukui, and in particular, the risk level of building destruction in 3 and 4-chome, Shin-koiwa, is 5, the highest relatively in all of Tokyo. An area along Arakawa River has now been designated as a development district in the “Promotion program of urban disaster-prevention development” with a development target of increasing the fireproof area ratio to 70% by fiscal year 2025 from 56% as of fiscal year 2001. The district contains two Tokyo Metropolitan planning streets: Kuramae-dori (Hosha 14) running east to west along the JR Sobu Line and

Heiwabashi-dori (Hojo 140) running north to south.

JR Shin-koiwa Station has been developed in recent years as a traffic center. The development of the Shin-koiwa north access way, station plaza, and access roads were determined as a city planning program in March 2004 and is scheduled for completion in 2008.

## 2.2 Process to the training

The training was mostly supported by the Shin-koiwa Community Union and South Shin-koiwa Town Development Association. The Shin-koiwa Community Union is one of 19 community unions in Katsushika-ku, and consists of 11 community associations. The South Shin-koiwa Town Development Association started in 1988 with 17 groups including community associations and shop street promotion associations on the south side of the station, taking advantage of the area development around JR Shin-koiwa Station, and has conducted activities such as cultural exhibitions and the proposition of the "Basic plan of town development" as part of the master plan of Katsushika city planning (1997 through 2001).

Prior to the training, 11 community associations, 4 shop street promotion associations, the Youth Development Shin-koiwa Local Committee (Note 1), South Shin-koiwa Town Development Association, and Japanese Red Cross Shin-koiwa Branch were invited by Katsushika-ku, upon consultation with the Community Union, to the training sessions.

The head office consisted of Tokyo Metropolitan, Katsushika-ku, Tokyo Town Development Center for Disaster Prevention and Construction, and Tokyo Metropolitan University, and lawyers, judicial scriveners, architects, small and medium enterprise man-

agement consultants, city planners, other experts and university students offered support voluntarily. A total of 138 individuals in addition to the local residents participated in the training.

## 2.3 Participant's attributes

A 10-minute questionnaire survey of local participants was conducted at each training session. **Table 3** presents the collection ratio and participant's sex and **Table 4** shows the age distribution. The average age was 65 at the first training session. This high average is probably due to the fact that the Community Union and the Town development Association that consists mainly of store owners joined the training session as local support organizations. The average could be lowered by inviting younger generations to the training session, just as in the Nukui district where the PTA was invited.

**Table 5** summarizes the numbers of the local participants who participated except for the fifth training session that was devoted to the result representation. The cumulative number of the participants in the four training sessions was 219. 84 residents participated in the training sessions once or more, among which 25 residents, about 30%, participated in all the training sessions. As in **Table 6**, the data on the residential period showed relatively high percentages at 30 years or less and 50 years or more. A typical case of the former is a person who got a job when he/she was young, lived in Shin-koiwa, retired from a company, and participated in local activities. A typical case of the latter is a person who was born and has been living in Shin-koiwa. Both types can be major supporters of local community activities. In fact, as seen in **Table 7** that summarizes the answers to the question, "What is your role in local community activities?" asked in the first training

**Table 2.** Overview of neighborhood community-training program for post-disaster recovery in Shin-koiwa district

Date	Participants (individuals)					Name of training	Content	Method used
	Residents	Government staff	Experts	Students	Total			
1st 12. 27, 2004	58	24	15	13	110	Town walking and town examination	Estimation of local disaster damage through town walking and map training	Town walking, Making 1/1500-scale maps
2nd 1. 30, 2004	57	19	21	12	109	Considering recovery from the perspective of life as an evacuee	Image training of 1-week evacuation life and support activities after an earthquake	Role playing
3rd 2. 19, 2004	53	21	22	10	106	Considering ideal temporary housings and towns	Design game of temporary housings and towns using a model	Design game with a model, Training on a map
4th 3. 19, 2004	51	17	17	11	96	Considering town development for recovery	Space imaging and procedure examination of town recovery	Photo language, Training on a map
5th 4. 10, 2004	About 30	About 15	About 10	About 7	About 62	Result representation		

session, about 60% of the residents selected “As a central member of community associations” or “I participate in town development associations or community associations with a strong consciousness.” **Table 8** is the result of the question about intent of town recovery in the event of a disaster. 69% answered positive intents toward town recovery.

**Table 9** shows the result of the question about disaster prevention measures that the participants themselves take. The results of the Tokyo Metropolitan survey(Note 2), Nukui district, and Shin-koiwa district differed in the initial fire control measure, and seismic capacity evaluation and seismic retrofitting of residential houses. The percentage of people who have earthquake insurance is about the same in Shin-koiwa and Nukui. These data indicate that the training participants in Shin-koiwa were community leaders but took insufficient measures for their houses against earthquake.

The difference between the local participants in Nukui and Shin-koiwa lies in the acknowledgement of disaster-prevention activities and disaster-response training in the communities. **Table 10** is the result of recognition of school evacuation sites in Katsushika-ku and the evacuation center in Nerima-ku. People in both districts showed a similar level of knowledge about the school

evacuation sites, although 44% of people in Nukui and 29% in Shin-koiwa know about the organization that manages the evacuation sites. This may be because, in Nukui, not only the community associations, but also the school evacuation site management committee were invited to the training sessions. On the contrary, as in **Table 11** that presents knowledge about the recovery process of housings and towns, more people in Shin-koiwa than in Nukui have knowledge about the recovery process of housings as well as towns. This is because the town development activities have been conducted in Shin-koiwa and the activity members were included in the training participants. From the above, we conclude that the activity characteristics of local participants are “development of livable towns” in Shin-koiwa and “prevention of and response to disasters” in Nukui.

### 3. MANNER OF THE TRAINING SESSIONS

In this section we analyze the manner of the four training sessions in addition to the result representation, and group work in particular, based on the training results and the questionnaire given to the participants. In every training session, a group was formed by about 6 local participants, 2 government staff, 1 facilitator, 1

**Table 3.** Sex of local participants

	Female		Male		No answer	Number of respondents (Ratio)
1st training session	8	17.8%	32	71.1%	5	45 (78%)
2nd training session	18	31.6%	36	63.2%	3	57 (100%)
3rd training session	14	26.9%	37	71.2%	1	53 (100%)
4th training session	12	25.5%	34	72.3%	1	47 (93%)

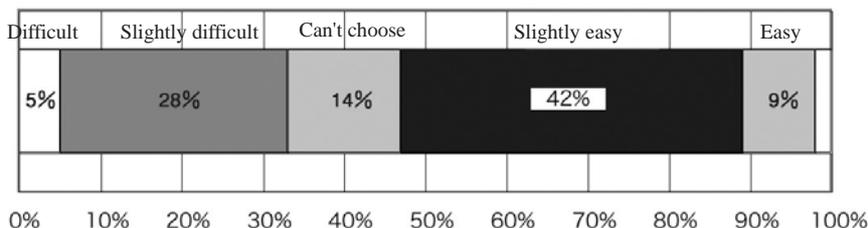
**Table 4.** Age distribution of local participants

	30s	40s	50s	60	70s or above	No answer
1st training session	0	4	7	12	16	6
2nd training session	0	3	7	18	24	5
4th training session	0	1	5	18	22	1

**Table 5.** Number of participations of the participants

Number of participations (in a total of 4 training sessions)	Number of participants	Ratio
1	19	22.6%
2	19	22.6%
3	21	25.0%
4	25	29.8%
Total	84	100.0%

From the list of participants



**Fig. 2** Easiness of the second role-playing

marker (mostly students), and 1 expert.

### 3.2 The first training session: Town walking and town examination

The aim of the town examination was: 1. Imaging of damaged town (this aim was also adopted in the training in Nukui), 2. Check

of school evacuation sites, and 3. Examination of temporary housing sites. Several groups were assigned to each aim, and a total of 9 groups examined the town. In the examination of school evacuation sites, access to the schools and their equipment and facilities were checked. In the examination of temporary housing sites, the site size and the access methods from neighboring areas were examined. Each local participant had a role such as group leader, record clerk, or photographer. Detailed information materials for the training sessions were provided to all the participants to show the checkpoints and explanation was given on how to put the results together according to each aim.

Disaster damage is determined as a function of external forces and vulnerability. The vulnerability in the local communities and the resources that cover it were observed in the "Town walking and town examination." In other words, the participants confirmed that the house damage could vary due to the vulnerability even with the same external forces and examined facilities in the school evacuation sites as a resource for covering the vulnerability.

**Table 6.** Residential years of local participants  
(From the questionnaire at the 1st training session)

10 years or less	7	15.6%
10-19 years	4	8.9%
20-29 years	9	20.0%
30-39 years	4	8.9%
40-49 years	4	8.9%
50 years or more	11	24.4%
No answer	6	13.3%
	45	100.0%

**Table 7.** Participant's consciousness on the role in local community

1. As a central member of community associations	16	36%
2. As a central member of town development associations or other organizations	7	16%
3. As a central member of expert organizations or NPOs	3	7%
4. I participate in town development associations or community associations with a strong consciousness.	11	24%
5. I know there are town development associations or community associations, but I do not actively participate in them.	3	7%
999. No answer	5	11%
	45	100%

**Table 8.** Intent toward town recovery in Shin-koiwa  
(From the questionnaire at the 1st training session)

	Strongly yes	Moderately yes	Moderately no	Absolutely no
Do you intend to reconstruct your house or store in Shin-koiwa in the event of a disaster	31 69%	9 20%	3 7%	0 0%

**Table 9.** Disaster-prevention measures for housing

	Shin-koiwa	Nukui	Tokyo Metropolitan survey
1. Fixing furniture	31%	32%	32%
2. Initial fire control measure (Installation of extinguisher)	49%	73%	N/q
3. Stock of drinking water and food	76%	64%	54%
4. Seismic capacity evaluation and seismic retrofitting of houses	7%	16%	21%
5. Earthquake insurance	27%	30%	N/q

**Table 10.** Recognition of school evacuation sites and management organization

		Know very well	Know a little	Do not know	No answer
School evacuation sites	Shin-koiwa	60% (27)	22% (10)	4% (2)	13% (6)
	Nukui	55%	29%	12%	3%
Management organization of school evacuation sites	Shin-koiwa	29% (13)	18% (8)	36% (16)	18% (8)
	Nukui	44%	32%	19%	6%

In the question asked in the training in Nukui, "Evacuation sites" and "Management organization of evacuation sites" were used instead of "School evacuation sites" and "Management organization of school evacuation sites."

**Table 11.** On the recovery of houses and towns

	Yes I'm thinking about the method of recovery.	I thought about it, but I don't know what to do.	I didn't even think about it.
Do you ever think about how to repair or reconstruct your house in order to return to your original life if the house gets damaged in a disaster? (Answers in Shin-koiwa)	16 36%	17 39%	11 25%
Answers in Nukui, Nerima-ku	10%	44%	45%
Do you ever think about how the town recovery will proceed if the entire town gets severely damaged in a large disaster? (Answers in Shin-koiwa)	12 27%	21 48%	11 25%
Answers in Nukui, Nerima-ku	6%	44%	51%

**Table 12.** Findings in town walking

	Found much	Found a little	Found nothing
Through the town walking did you find anything, such as potentially dangerous areas in case of earthquake, the condition of school evacuation sites, or the condition of temporary housing sites?	26 58%	18 40%	1 2%
Answers in Nukui, Nerima-ku	54%	40%	6%

**Table 12** is the result of the question "Did you obtain any findings?" 58% of the participants answered, "I have obtained many findings." The result obtained in the Nukui district showed the same tendency. That is, almost 60% of the local participants obtained many findings by imaging the disaster damages and responses.

The "Town walking and town examination" is an established training program and widely used for town development. When it is used for recovery training sessions, it is important to improve the recognition of the damage-reducing resources through the questions from experts and the communication with local participants from the viewpoint of recovery.

### 3.2 The second training session: Considering recovery from life as an evacuee

In the second training session, the participants role-played their lives as of two weeks after an earthquake disaster when they were living life as an evacuee, a month after the disaster when they could move to temporary housing, and three months after the disaster when discussion on the planning of town recovery had started. This training session involved them imagining where they lived at each post-disaster stage and considering what action to take. The role-playing scenarios were based on those considered in the training in the Nukui district, although connection to local community (woman activities in community associations, PTA activities, etc) was added as another item. In other words, the roles were determined by the following points: 1. Condition of the residential houses that they lived in and stores that they worked at, 2. Family

structure and residence history, 3. Job, 4. Connection to local community, and 5. Others (debts, savings and other assets).

The places of residence at each stage were summarized in a "Home rebuilding selection chart," based on which group discussion was conducted. In the group discussion, the participants discussed problems expected in the rebuilding of the houses, conditions for occupancy of the temporary houses, and problems in the town recovery in the Shin-koiwa district from the viewpoints of "all residents will remain in the district," "no one will remain," etc, which could be deduced from the chart.

**Tables 13** and **14** tallied the chart in either case of the complete destruction role play (the role play of a resident whose house was completely destroyed) and the partial destruction role play (the role play of a resident whose house was partially destroyed). The recovery process stages in the Tables were not given in the questionnaire but written by the respondents. From the Tables, we found the following result on the participant's choice of house reconstruction in the Shin-koiwa district:

- 67% of the participants in the partial destruction roles chose the process "Remain in the house -> Temporary treatment -> Repair the house," and this was the main path toward house recovery.

- The participants in the partial destruction roles that chose temporary houses were all living in rental housing.

- 19% of the participants in the complete destruction roles (5 participants) chose the reconstruction path of evacuating to outside the damaged area after the disaster and remaining (or moving to) outside. The others hoped to stay in the Shin-koiwa district, maybe by living in the temporary houses, and to reconstruct the houses.

Debriefing(Note 3) was newly introduced to the Shin-koiwa training. Namely, a "Legal and administrative consultation simulation" was held in cooperation with the Town Recovery Support Association. Typical legal consultation is conducted on a one-on-one basis, although this time each group asked questions and lawyers, experts, and administrative officers answered them in a plenary session.

As for the participant's consciousness, **Fig.2** shows the result for the question on the easiness of playing the roles. 51% of the participants answered that playing the roles was "Easy" or "Slightly easy."

**Table 15** is the result for the question on anxiety about the recovery, which was asked before the second training session, and

**Table 13.** Result from home rebuilding selection chart of the complete destruction roles (Number of individuals)

Living place	Two weeks after	A month after	Three months after
1 School evacuation site	15	3	
2 Remain in the house / Temporary treatment / Repair the house	3	1	2
3 Relative's house outside the damaged area	3	5	
4 Evacuate or move to outside the damaged area	2	6	5
5 Rental housing (Around Shin-koiwa if possible)	2	3	5
6 Live in a tent by myself / Construct temporary house by myself	1	2	1
7 Temporary public housing		6	9
8 Consider reconstruction of house by myself			4
	26	26	26

(Single-family houses A, B; Apartment owner B; Rental condominiums and apartments A; Condominiums)

**Table 14.** Result from home rebuilding selection chart of the partial destruction roles (Number of individuals)

Living place	Two weeks after	A month after	Three months after
1 School evacuation site	18	5	
2 Remain in the house / Temporary treatment / Repair the house	4	12	18
3 Relative's house outside the damaged area	4		5
4 Evacuate or move to outside the damaged area	1	2	3
5 Rental housing (Around Shin-koiwa if possible)		2	1
6 Live in a tent by myself / Construct temporary house by myself			
7 Temporary public housing		1	4
8 Consider reconstruction of house by myself		1	
	27	27	27

(Stores A, B, C; Rental condominiums and apartments B; Apartment owner A, C)

**Fig. 3** is the result for the question on factors of the recovery that caused anxiety, which was asked at the end of the training. Before the second training session, 64% complained of anxieties about their lives and houses. However, after the training, although 63% still felt anxious about money for the reconstruction, there was no tendency of increasing the anxieties over other factors. In particular, to the question on the recovery of communities and connections to neighborhood, the number of participants who selected the answer "Very anxious" was relatively small and even some chose the answer "Not anxious," which is characteristic compared to the other questions.

In the question asked in the training in Nukui, "Evacuation sites" and "Management organization of evacuation sites" were used instead of "School evacuation sites" and "Management organization of school evacuation sites."

### 3.3 The third training session: Considering ideal temporary housing and towns

The third training session was devoted to group work with the following groups: "Town group" that performed on-map training to examine the possibility of temporary towns, and "House group" and "Store group" that examined the imagined life in temporary houses and stores respectively with the assumption that they remained in the district and would be able to construct their houses and stores.

Materials used and procedure were the same as those used in

the training in Nukui. The issues in the group discussion are summarized as:

#### 1. Town group

-Which vacant lot can be used for the temporary town?

-Is it necessary for the local community to form an association in order to realize the temporary town?

-Problems of administration and local communities for the management of the temporary town.

#### 2. House group

-Honest evaluation of house arrangement such as parallel house arrangement (as in Hanshin) or house arrangement surrounding a courtyard, by imagining "if I live in the house...."

-Problem in determining who should have priority for moving to the temporary houses.

-What kinds of problems are expected in one's life in the temporary houses? Is there anything that the local communities can do to support this situation?

#### 3. Store group

-Honest evaluation, from the viewpoint of customers or store owners, of store arrangement such as equally-arranged stores along railways or concentrated markets

-In what kind of situation are the temporary stores necessary?

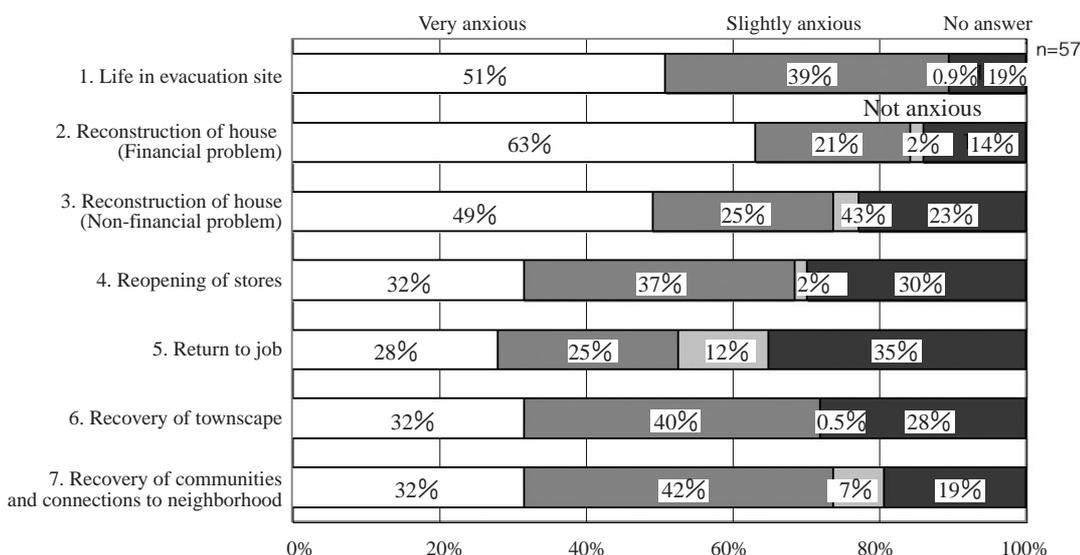
-Problems in the business of the temporary stores

**Table 15.** Anxiety about recovery from disaster (Asked at the first training session)

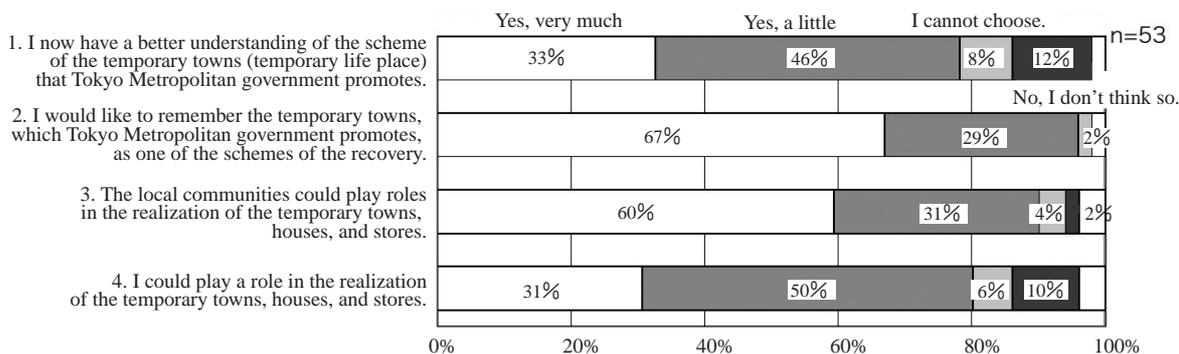
	Yes, very much	Yes, a little	Not very much	Not at all
Are you now anxious about the recovery of your life and house after a large earthquake?	29 64%	15 33%	1 2%	0 0%
Answers in Nukui, Nerima-ku	31%	63%	6%	0%

**Table 16.** Experience of considering temporary stores and towns (Asked before the third training session)

	I have thought about it.	I have a little concern about it.	I never thought, and never had concern, about it.	No answer
1. Temporary stores	23%	61%	5%	11%
2. Temporary towns	16%	68%	4%	12%



**Fig. 3** Anxiety about various problems in the recovery from earthquake (Asked at the end of the second training session)



**Fig. 4** Consciousness about temporary houses, towns, and stores (Asked after the third training session)

Figure 13 shows the result of the house design game using a primary-school yard, and Fig. 14 is the result of the store design game assuming the store is completely gutted by fire in a disaster.

Let us first look at the training result of the store group that is

one of the area characteristics in the Shin-koiwa district. Two store groups participated in the training under the same condition. One group claimed that the store street served as a place for vigorous town and human communications and therefore that “the temporary store street should be constructed immediately to open the

stores as soon as possible.” Another group claimed, on the other hand, that a full reconstruction program is more important than the temporary stores. Namely, they considered that if a shared temporary store was built on a site other than the original store location, it was not certain whether a business license, in particular for restaurants, would be smoothly issued. They also thought that the two-year contract of the temporary stores could have problems in relevant rights even in a disaster situation, because of the leasehold issues. The second group thus found problems in the realization of the temporary stores.

The questionnaire prior to the third training session shows that there was high concern about the temporary stores and towns although only 20% of the participants answered, “I have thought about it” (Table 16). One of the achievements of the third training session is that many participants answered that they would like to remember the temporary towns (Fig. 4). However, also in Fig. 4, we see that not many people answered, “Yes, very much” to the question “Do you now have a better understanding of the scheme of the temporary towns?” This result indicates one of the limitations of the three-hour training program. 60% answered “Yes, very much” to the question “Do you think local communities could play roles in the realization of the temporary towns, houses, and stores?” but only 31% answered “Yes, very much” to the question on the individual’s roles. This suggests that the participants did not realize their own roles. In other words, although the design games

of the temporary towns, houses, and stores conducted in Nukui and Shin-koiwa provided an opportunity to learn about the idea of temporary towns, more learning programs by local leaders or experts would be necessary.

**3.4 The fourth training session: Considering town development for recovery**

In the fourth training session, group work was conducted with two groups: the “Recovery policy group” that discussed the principle of the town recovery development in the entire Shin-koiwa district, and the “Recovery image group” that examined the recovery images of residential areas, store streets, and station plaza. As in the third training session, the training materials were the same as those used in the training in Nukui. Large differences from the Nukui training are: 1. “Debriefing” introduced in the second and third training sessions, and 2. Town recovery draft plans for the group discussion in the training sessions were produced as training by local government and by local community associations. The debriefing in the fourth training session was not the “legal and administrative consultation simulation” as in the second and third training sessions, but three drafts (current situation, community association’s plan, and local government’s plan) were evaluated with the Disaster-prevention town development support system(Note 4).

The community association’s plan (Fig. 16) was created by

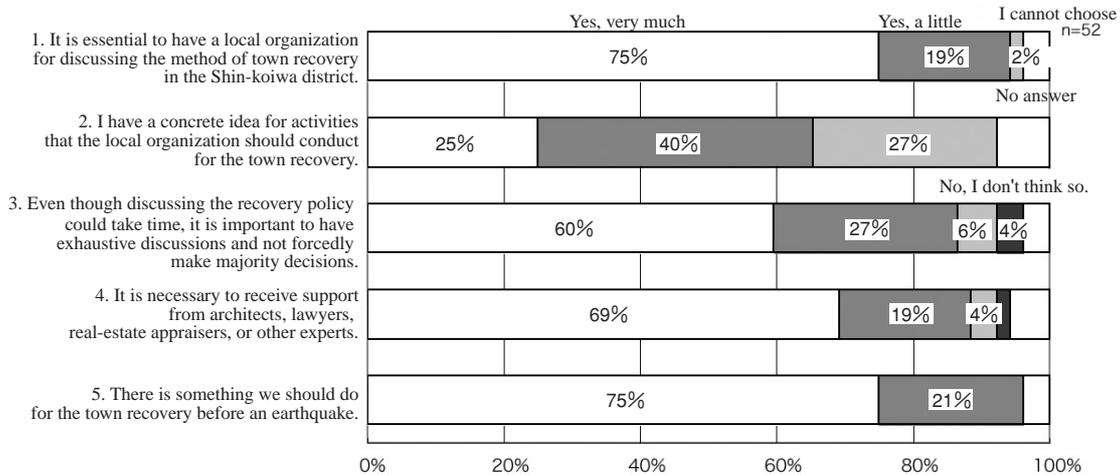


Fig. 5 Consciousness about the entire images of the town recovery development (Asked before the fourth training session)

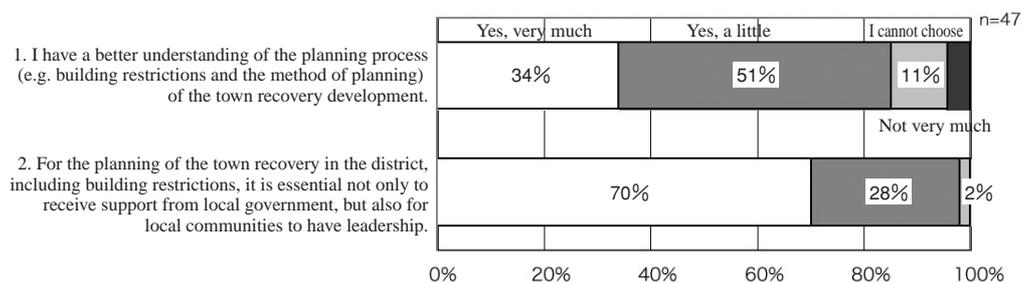


Fig. 6 Planning process of the town recovery and the leadership of local communities for the planning (Asked after the fourth training session)

about 10 participants from the South Shin-koiwa town development association with the help of a planner through 4 meetings that were held once a week during the one-month period between the third training session and the fourth. The local government's plan was created by the officers at Katsushika-ku government with some advice from the Tokyo Metropolitan government and university researchers (Fig. 17). Creation of the draft plans in the limited period of one month and presentation of the plans were tension-filled training sessions for both government staff and community association members.

In the group work, as in the training in Nukui, the participants selected an image from the "Image catalog of recovering towns" (Note 5) and explained the image that they wanted to realize. Then, based on the two draft plans, they discussed how the selected image could be realized with these plans. There were opinions that the two plans should not be in opposition to each other but should be mutually complementary based on the discussion on the meaning of the difference between them (Fig. 15).

Figure 5 is the result for the question on the consciousness about the entire image of the town recovery development, which was asked before the fourth training session. About 70% of the participants chose "Yes, very much" as the answer to the questions "1. Is it essential to have a local organization for discussing the method of town recovery in the Shin-koiwa district?" "4. Is it necessary to receive support from architects, lawyers, real-estate appraisers, or other experts?" and "5. Is there something we should do for the town recovery before an earthquake?" This indicates that the participants acknowledged the significance of "being prepared in advance for the recovery." On the other hand, fewer participants approved of the method of determination in the question "3. Though discussing the recovery policy could take time, is it important to have exhaustive discussions and not to forcedly make majority decisions?" and chose "Yes, very much" in answer to the question "2. Do you have concrete ideas for activities that the local organization should conduct for the town recovery?"

In the questionnaire after the fourth training session (Fig. 6), 34% of the participants answered "Yes, very much" to the question about the better understanding of the planning process. Although the ratio of the approval answers to the question "Do you have concrete ideas for activities that the local organization should conduct for the town recovery?" was relatively low in the questionnaire before the fourth training session, several opinions on this issue were submitted after the training, such as "Community associations, store streets, and Town Development Association will play a central role in the Recovery Association," "Collaboration with new residents in high-rise condominiums is important," "It was a good opportunity since there was almost no chance for the local government, residents, and local community to gather and discuss," and "We need to be ready to contact experts at any time. Experts who know much about the area are preferable. It is also important to find and nurture such experts in the community." As for the question "Is there something we should do for the town recovery before an earthquake?" there were opinions in the group discussion such as "Collection of local information and information management" and "Establishment of disaster-prevention principles in the Town Development Association's activities." That is, the participants acknowledged through the training the importance of a loose human-resource network involving experts and local

governments, even though it is just the first step toward the "development of a local recovery organization before an earthquake."

Figure 9 shows the result for the question about the participant's interest in participating in the town recovery activities. About 50% of the local participants gave positive answers to the questions "Although the activities seem difficult, would you like to cooperate to the best of your ability?" and "Would you like to participate in local organizations that work on the recovery and revival?" That is, the participants had an image of the opportunities to discuss the town recovery planning in the local communities, based on the "loose network" and "existing local community organizations."

### 3.5 Participant's consciousness about all the training sessions

Figure 8 shows the participant's answers to the question about the knowledge that they obtained through the training sessions, looking back on all the training sessions. The questions in Fig. 8 are the same as those used in the training in Nukui. 81% of the participants answered "Yes, very much" to the question "3. Is consultation with experts to acquire knowledge essential for disaster prevention and town recovery in the local community?" This might be due to the debriefing and the participation of the facilitators and experts in the group work. Also, almost 60% answered "Yes, very much" to the questions on their findings in the "4. local activities prior to a disaster" and "5. measures that should be realized prior to a disaster." Namely, the participants recognized the hardware and software problems in preparing for a disaster.

## 4. LOCAL PARTICIPANT'S EVALUATION OF TRAINING METHOD

In the preceding chapter we analyzed the content of the training sessions from the perspective of the participant's consciousness. Now we analyze the method of training, based on the participant's opinions.

Figure 9 shows the result for the question about the difficulty of the second, third and fourth training sessions. Compared to the second role-playing training, the participants felt that the third training session's "Considering ideal temporary housing and towns" and the fourth training session's "Considering town development for recovery," both of which worked on full recovery processes, were relatively difficult. The total percentage of the participants who chose "Very difficult" and "Slightly difficult" was 53% for the second training session, 65% for the third, and 66% for the fourth.

Figure 10 is the result for the question about work load in the third and fourth training sessions. (This question was not asked in the first and second training sessions.) More participants answered "Slightly tired" in the fourth training session than in the third. The house, store, and town design games in the third training session required not only brainstorming, but also practical work such as model handling and vacant-lot area measurement on the maps, which might reduce the participant's feeling of weariness, compared to the fourth training session. The training time was 210 minutes in the first and second training sessions and 180 minutes in the third and fourth training sessions.

Next, Fig. 11 is the participant's answers to the question about

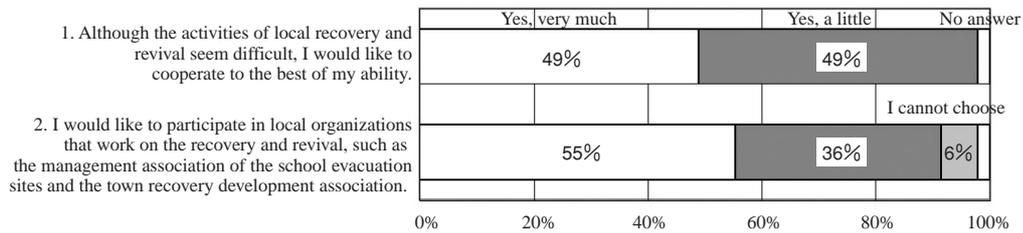


Fig. 7 Participant's interest in participating in the town recovery activities (Asked at the end of the fourth training session)

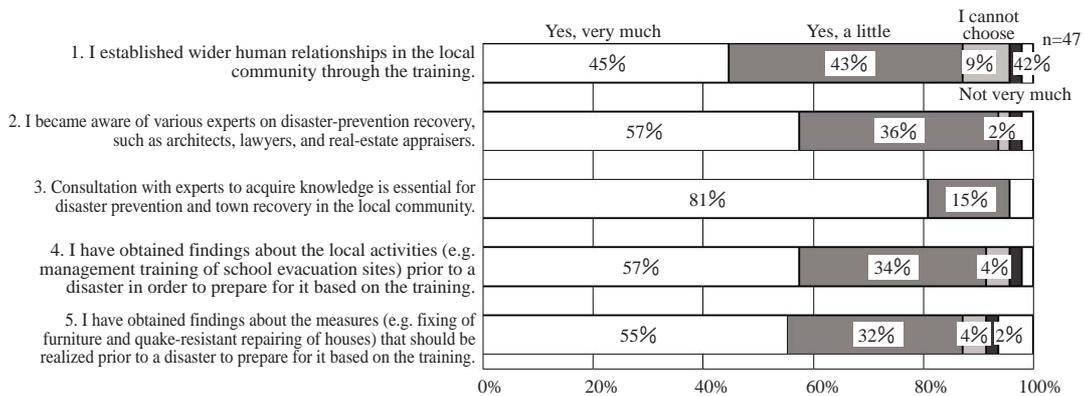


Fig. 8 Local participant's consciousness, looking back on all the training sessions (Asked at the end of the fourth training session)

the effect of the training method. 1) and 2) are the answers collected at the end of the fourth training session and 3) is the one collected at the end of the third training session. 57% of the participants answered "Yes, very much" to the question "1) Is it effective for the local community to use large maps to take a bird's-eye view of the areas (i.e. to create inspection maps and examine the recovery principle)?" 47% to the question "2) Is the role playing in the second training session effective image training to respond to a disaster?" and 33% to the question "3) Do you now have a spatial image (e.g. on the size and density of temporary houses) of the temporary stores and towns?" The result might reflect the fact that it is rather difficult to imagine an unreal world such as temporary houses, stores and towns, compared with just plotting disaster-prevention resources on the maps. One of the major problems in future program design will be determining to what extent participants should pursue reality in the virtual world of the training.

The debriefing conducted in Shin-koiwa was effective since the participants gave positive answers to the question on acquisition of support and knowledge from experts including architects, lawyers, and planners.

### 5. STAFF'S EVALUATION OF THE TRAINING METHOD

A questionnaire survey targeting the staff was conducted at the end of the fourth training session. A total of 37 answers were collected from 12 administrative officers, 10 students, and 15 experts. Table 17 shows the answers to the question about the experience of participating in a town workshop (e.g. urban devel-

opment MP planning, park development, etc.) and in the "disaster-prevention training" with local residents. 62% of the participants (23 participants) answered that they had participated in the workshop, and 57% (21 participants) gave positive answers to the question on the participation in the disaster-prevention training. Many (32%) participated in the workshop as a facilitator, and few (14%) in the local disaster-prevention training.

Figure 12 is the result for the question about the staff's impression of the entire training. As in the questionnaire targeting the local participants, the questions were taken from the questionnaire survey in the Nukui district. Many positive answers were given to "5. High consciousness of residential members (65% chose 'Yes, very much')" and "6. High ability of local society (high local community power) (38% chose 'Yes, very much')." In other words, the staff found few problems in the progression of the training and some significance of it. 65% answered "Yes, very much" or "Yes a little" to the question on the difficulty of the training (question 4), and many positive answers were given to the question "2. Did you obtain clues for future activities and their development." However 51% gave positive answers to the question "1. Did the recovery training give you the confidence to support the town development or the local disaster-prevention training?" which indicates that all the participants were not very confident in the support activities in other areas. Lastly, 27% of the participants answered "Yes, very much" to the question "3. Is the role playing that assumes temporary positions effective for extracting opinions from residents?" and a total of 68% approved it.

The participants were encouraged in the questionnaire to write about the method and significance of the training. Their answers

contained many issues and here we do not summarize but just show some of them with a slight modification of the sentences.

-I found difficulty in imagining the roles in the recovery role playing. We may need some refinement to solve this problem.

Also there was a situation where the participants did not take the roles seriously by adopting the attitude “Well, it’s not a real story, anyway.”

-The debriefing succeeded in “capturing the hearts” of the participants and they all had serious expressions on their faces.

-It should be appraisable that the large workshop for town recovery was realized with 60 local participants in 9 groups. On

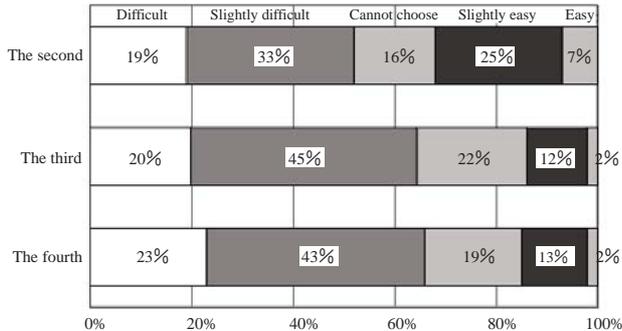


Fig. 9 Participant's feeling on the difficulty level of the second to fourth training sessions

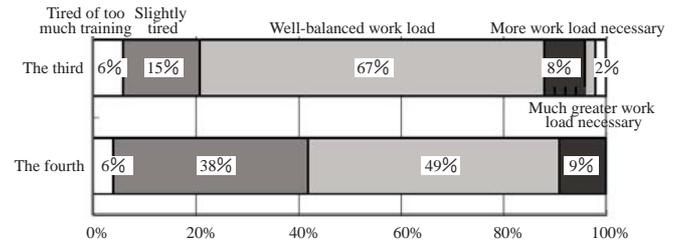


Fig. 10 Evaluation of work load of the third and fourth training sessions

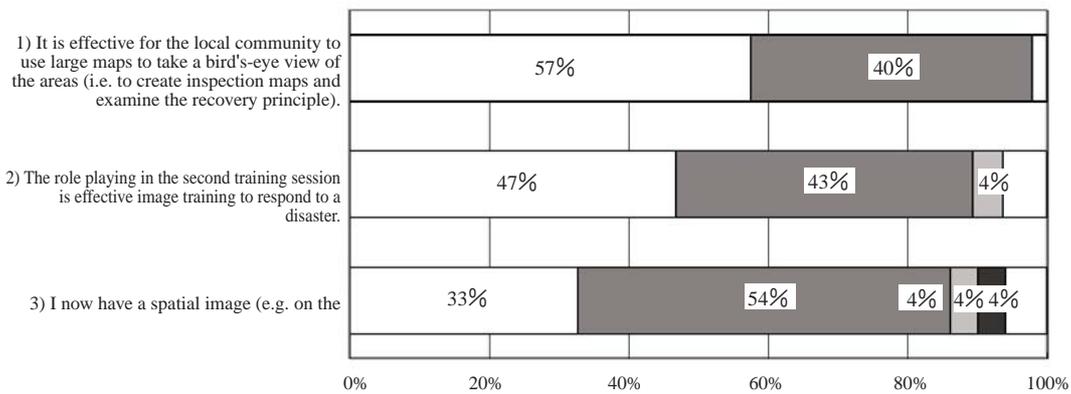


Fig. 11 Local participant's evaluation of the training method

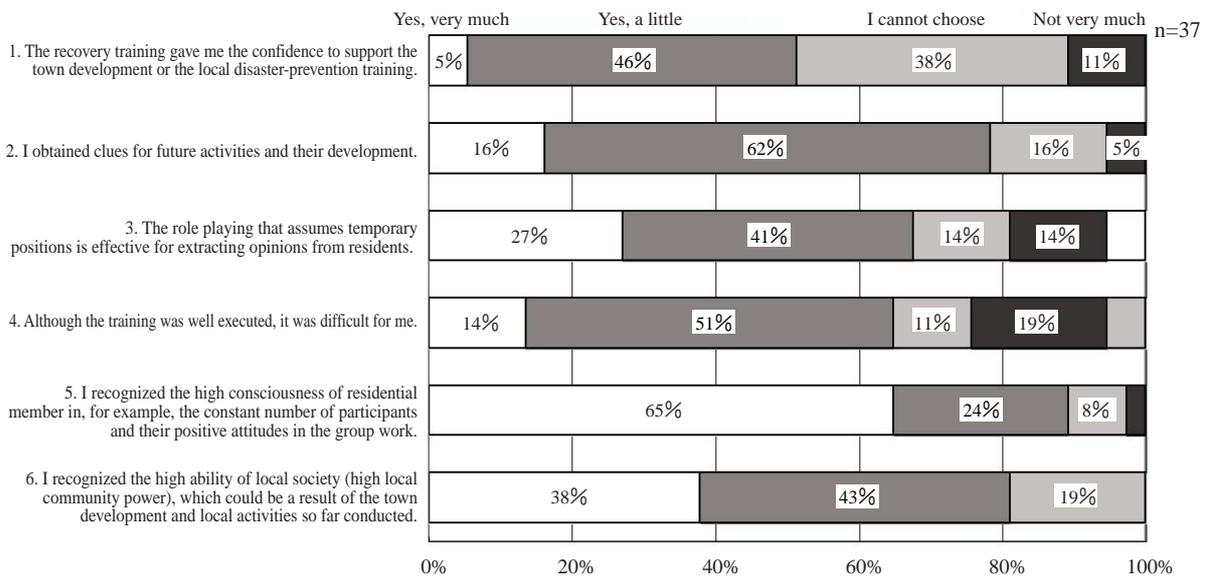


Fig. 12 Staff's evaluation of the training

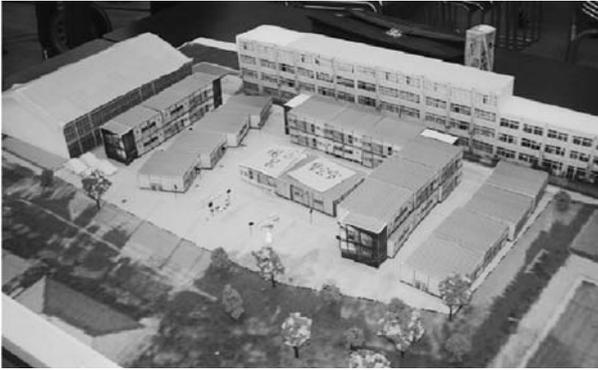


Fig. 13 Result of temporary house design game

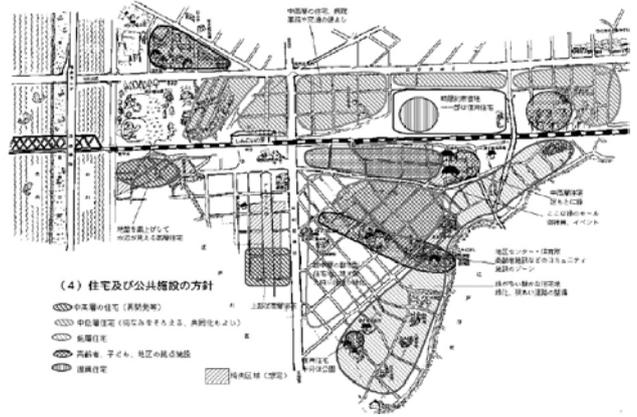


Fig. 16 Town Development Association's draft plan for the town development principle (used for the training)

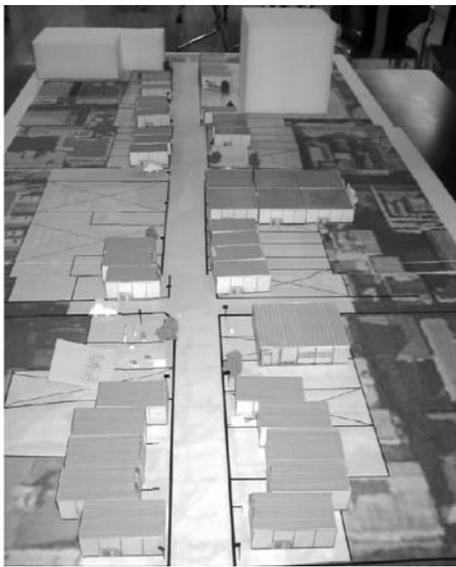


Fig. 14 Result of temporary store design game



Fig. 15 Example evaluation of town development principle diagram (In the fourth training session)

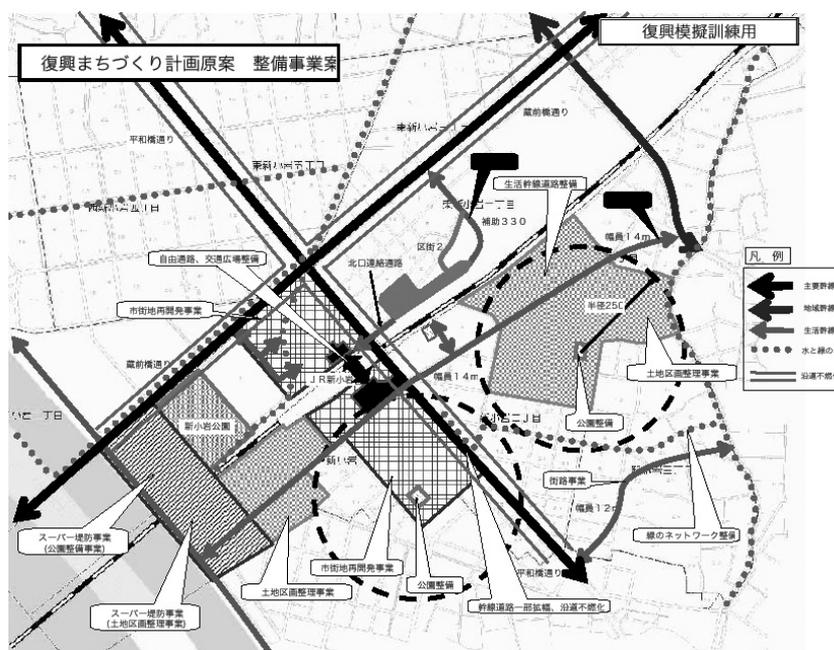


Fig. 17 Katsushika-ku government draft plan for the town development principle (used for the training)

	W.S. of participation in town development <sup>(5)</sup>	Neighborhood community-training program for post-disaster recovery	Disaster-prevention training in local communities
Major participants	-Local community organizations -Stakeholders -Citizens who voluntarily participated	Integration	-Local community organizations -Local activity associations such as Child associations, Woman associations, etc
Major supporting experts	Architects, planners, lawyers, caseworkers	Cooperative network type	Fire control organizations
Administrative department in charge	-Urban development department	Cooperative project type	-Disaster-prevention department
Estimated number of participants	10-15	30-50	Can be more than 100
Evaluation points of the training program	Growth of common recognition about "town"		
	Sharing of target image of town development		
			Acquiring knowledge of responses to a disaster
			Maintaining the level of response technology
		Local communication	

Fig. 18 Positioning of neighborhood community-training program for post-disaster recovery<sup>(Note 6)</sup>

the other hand, each participant should make effort in considering and responding to the future ripple effects of the workshop in the local community.

-The role of local residents should be clarified. In other words, it needs to be made clear whether emphasis should be placed on collecting opinions from the participants as local residents or on each participant's learning training about the recovery. I was unable to figure out the required level at each part of the training.

-There should be some "mechanism" for linking to the development of hardware. In order to make a connection between the training and actual town development planning, the local government should provide financial and human support.

-As preparation for a disaster, cooperation among the local government, local organizations, and experts needs to be strengthened and the cooperation should be demonstrated in the form of models or drawing sheets, which are to be revised on a regular basis and used for making a new plan.

As Aiba(4) pointed out, in order to overcome the difficulty in imagining the town recovery, the techniques developed in the town development design games could be improved for the recovery training, and realistic, maybe severe, aspects of the town recovery should be offered, for example by inviting experts from Hanshin-Awaji area.

**6. POSITIONING OF NEIGHBORHOOD COMMUNITY-TRAINING PROGRAM**

In this article, we analyzed the participant's consciousness about each training session in Chapter 3, the participant's consciousness about the method of training in Chapter 4, and the

staff's evaluation of the training in Chapter 5. Ichiko (3) classified the pre-disaster recovery theory into (1) estimation of damages, (2) concrete planning, (3) sharing of recovery procedure, and (4) actual town development for disaster prevention, and showed the relation between the present program and the one for the Nukui district. The program in the Shin-koiwa district brought new dimensions in particular to (2) and (3). That is, the local Town Development Association produced a guideline diagram as a part of the training for realizing "(2) concrete planning." The plan was barely feasible and there remained a problem on how the training could be reflected to a concrete town-development planning, but the recovery planning was built in the training program for the first time, which was not in the program for the Nukui district. Also, since the experts highly evaluated the training, we can be sure that the "loose network with various experts" and the "existing local community organizations" would be used for discussing the town recovery development plan. This is another progress.

The principles shown by the Town Development Association and the local government in the fourth training session both included previously-made plans and ideas. Through the fourth training session the participants acknowledged that the town recovery was an opportunity to complete future visions that the town already had before a disaster, and that it was too late to discuss the future image of the town after the disaster. So the training is effective not only at the initial stage of the recovery process, but also for revising the recovery plan several years after it was made and re-activating the activities.

The programs for the Nukui and Shin-koiwa district were not interrupted. As seen in Fig. 7, more than half of the participants in Shin-koiwa looked forward to the active participation in the town

recovery development activities. This suggests that the participants were actually motivated by the training. The training should be evaluated as a work experience with great significance. Lastly, for further development of the neighborhood community-training program for post-disaster recovery, we would like to propose a hypothesis that this training is positioned in a fusion region of two existing social learning programs, i.e. the "workshop for participation in town development" and "disaster-prevention training led by local communities." The overview is given in **Fig. 18**. The figure shows the following. The major participants and administrative department in charge of the training program are the integration or cooperative types. The program could be conducted aiming at growth of common recognition about "town" and target image sharing of town development, which were emphasized in the town development workshop. Or it could be conducted aiming at the evaluation of acquiring knowledge of responses to a disaster, which is important for disaster-prevention training, and regular repetition for keeping the response technology level. Namely, the training program can be derived from the existing programs.

\* Tokyo Metropolitan University's research survey was conducted as part of the "System development for the establishment and agreement of recovery planning" in the "Special project for damage reduction of large disasters in major towns (2002-2006, Ministry of Education, Culture, Sports, Science and Technology)."

#### Note

Note 1) Youth Development Local Committee consists of committee members, groups, and organizations related to youth development, such as Youth Development Committee members, exercise trainer members, probation officers, Child Committee members, Child development group members, PTA, schools, resident's associations, etc. The head office is located at the Department of Youth, Katsuhika-ku, Tokyo.

Note 2) The Tokyo Metropolitan survey is the questionnaire that was conducted on 500 individuals by the Bureau of Citizens and Cultural Affairs, Tokyo Metropolitan in December 2003.

Note 3) Debriefing is feedback from design game experiences to actual town development. For details, see Reference 5.

Note 4) For the system used, see Reference 7.

Note 5) "Image catalog of recovering towns" is a list of 100 photographs of towns that recovered in the Hanshin area with an

explanation of recovery mechanisms, including recovery activities.

Note 6) Aiba's theory that community-based town reconstruction and disaster-prevention recovery town development can interact with each other from viewpoints such as "communication," "main body and organization," and "planning system and process" served as a good reference for the idea of **Fig. 18**<sup>6)</sup>.

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