HOUSING RECOVERY AFTER KOBE: THE URBAN PLANNING PROCESS

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SUMMARY

The magnitude 7.2 Hanshin-Awaji earthquake on January 17, 1995 directly struck the inner urbanized core of Kobe, Japan. It destroyed closely knit neighborhoods and killed over 6,000 people. A minimum of 136,000 housing units were lost. Needless to say the devastating housing losses were extremely disruptive and their replacement became an urgent aspect of the recovery. By February 1999, four years after the earthquake, approximately 295,269 units had been built.

The housing recovery program was multi faceted and was an outgrowth of a well established national planning process which existed before the earthquake. The relative efficacy of each vehicle used by the public and private sectors impacted the rate of construction and type of housing as well as the geographic dispersal. The disparate roles as well as strengths and weaknesses of the private sector and the various levels of government reveal important and transferable insights

INTRODUCTION

The January 17, 1995 Hanshin-Awaji 7.2 earthquake centered under Awaji Island 20 km. from Kobe was among the most destructive earthquakes to have impacted a modern industrialized city in this century. According to statistics released in December 1996 by Hyogo Prefecture, the earthquake resulted in approximately 6,300 fatalities and loss of an estimated 136,000 to 250,000 housing units.

Three types of planning processes were used: current underlying zoning, land readjustment, and urban renewal. In addition special pre-existing government subsidy and bonus programs were available to private developers. The focus of the research reported in this paper has been to analyze the planning and implementation variables as they influenced characteristics, volumes and locations of replacement housing.

THE PLANNING PROCESS

Three months after the earthquake the government adopted the Phoenix Plan which established a three year target to build 125,000 units. This recovery plan allocated construction between the public sector (65%) and the private sector (36%).

Table 1: Recovery Goals: Comparison of Units Planned with Units Built

	Total	Private Sector	%	Public Sector	%
Phoenix Plan	125,000	44,500	36	80,500	64
Built	295,269	248,346	84	46,923	16

Urban Growth Boundaries have been defined for the major metropolitan areas under Japan's National Urban Planning Law. The boundary for Kobe encompasses the heavily damaged urbanized area of Kobe and neighboring communities, plus the sparsely settled/rural adjacent hillsides of surrounding communities. This Urban Growth boundary became coterminous with the declared boundary of the Disaster Restoration Zone, to remain in effect for four years, encompasses

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The housing recovery process was built around three types of government assistance:

- Subsidies to stimulate private construction
- Technical assistance in site and infrastructure planning
- Re-development)

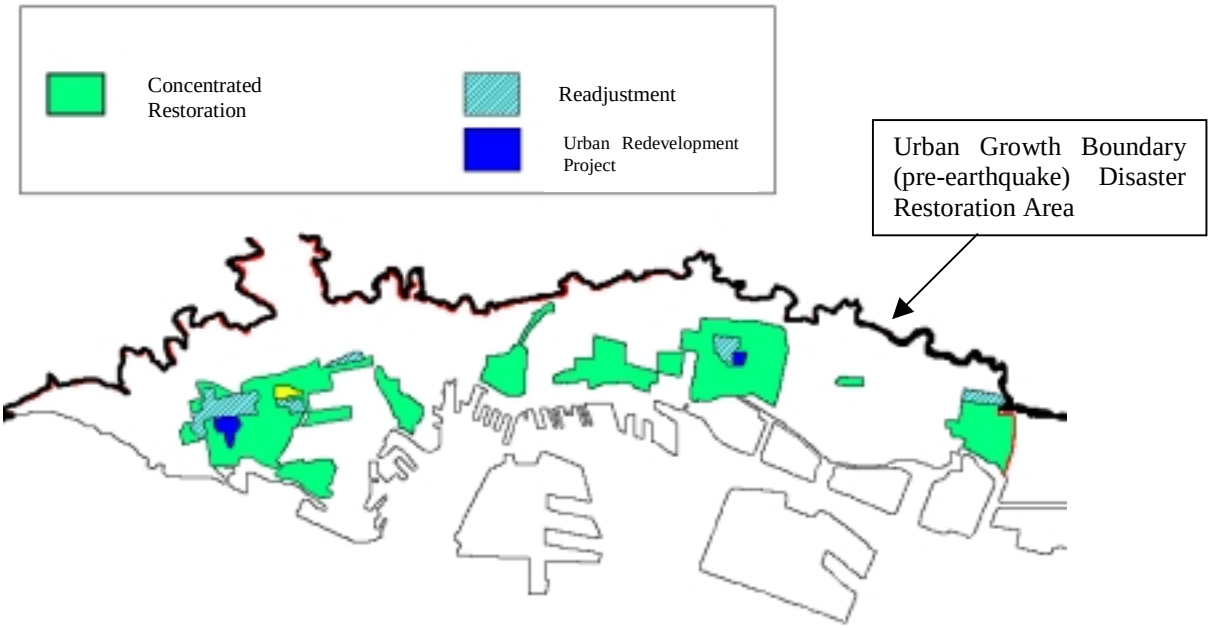

Figure 1: Disaster Restoration Area and Subzones in Kobe City.
Pre-existing Planning Zones Established the Framework for Rebuilding

Source: Based on data from Kobe City

Five days after the earthquake boundaries of subzones were delineated within the Disaster Restoration Zone for areas suffering very heavy damage, including areas destroyed by fire as well as those that had previously been planned for redevelopment. These subzones reflected three types of designations areas based on variations in applicable planning regulations and processes:

- Black Zones
  Areas with changes in land patterns and land use. They constitute approximately 3% of total damaged area. There are two types of black zones:
  Urban Redevelopment Projects
  Land Readjustment Zones
- Gray Zones
  Concentrated Restoration Zones
- White Zones
  The remaining 80% of the Disaster Restoration Zone

Black Zone: Redevelopment Districts

The City of Kobe had before the earthquake adopted a long range plan which envisioned three new city centers. Two of the centers, had been designated as urban renewal districts. The pre quake uses in the urban renewal districts tended to accommodate low rise substandard single and multi family (often wood frame) structures on small lots. The urban renewal concept for each area was a multi use “new town” with high rise high intensity residential and commercial uses around important transit nodes.

The Rokkomichi project (studied as a case example) consists of 5.9 hectares. Before the earthquake there were 984 residential and commercial landowners (including 700 households) in the area. .The e pre-existing plan for the area which had been prepared by the City proposed six 30 story towers surrounding a park. No residential use was permitted on the ground floors. Residents objected to the building height, densities, and lack of neighborhood amenities. They also adamantly objected to the park's lack of street frontage, which prohibited vehicular access by responders in the event of a fire or another earthquake. In response to protests from occupants a machizukuri committee was formed. This committee was instrumental in preparing a counter proposal.

On February 28, 1997 the City adopted a revised Rokkomichi redevelopment concept. This plan proposed a park configuration with frontage onto a major thoroughfare. The revised concept also proposed varying building heights and densities, some residential on the ground floor and a range of neighborhood amenities.

The finalized plan consists of 4 multi use blocks; two with 30 story structures and two with varying building heights ranging from 7 to 12 stories. These configurations eliminate the previously proposed 'wall" effect." The total project area consists of 1,838,300 s. m. accommodating 952 residential units, plus a satellite municipal office, sports fitness center, offices and other commercial uses.

By year 4 (1999) all of the land had either been acquired or was in the acquisition process. The 30 story tower on block 1 was in the final stages of construction. This Block 1 building is primarily designated for owner occupants; and first priority will be given to previous residents of the area. Second priority will be given to former residents of the immediate vicinity. Future stages, (the first building of which began construction in spring 1999) will be for renters, who will receive a rent subsidy for 5 years.

Detailed planning and design efforts are currently (spring 1999) underway for the recreation facilities including roof top gardens, pocket parks and the 1 hectare park. The detailed park plan is jointly being prepared by the landscape architect, retained by the city and the machizukuri. The land for the park is currently being acquired by the city—a very difficult process since the land area is fully developed.

Black Zone: Land Readjustment

Land readjustment is a comprehensive urban redevelopment procedure which authorizes planning and construction of trunk roads and parks, as well as rationalization of lot shapes and sizes. Land for public facilities is contributed by landowners abutting the facility, up to 10% of their land. By November 1996, nearly two years after the earthquake, eleven land readjustment projects had been proposed.

The first step in the planning process is to subdivide the community into blocks or negotiating units. The individual blocks then form subcommittees to coordinate with the comparable subcommittees of the other blocks e.g. transportation, parks, urban design, lot boundary changes. Once the community approves the plan, it is submitted to the city for formal adoption. The land readjustment procedure requires a set of highly complex administrative procedures, such as land price valuation, design and allocation of housing lots after readjustment, the removal of buildings, and the purchase of land from owners wanting to move.

A federal subsidy is provided to the municipal government for an advisor to facilitate the planning and decision process. The negotiating process is handled through the machizukuri (neighborhood council). The final plan identifies the street alignment, right of way widths, and park locations. Once the plan is approved (by 80% of the population covered by the plan) the municipality begins acquisition for street widening which necessitates lot boundary "adjustment." At this point land is acquired and roadways are constructed. In many cases this process occurs simultaneously, with roads being widened, resulting in some buildings intruding into the right of way. Subsequently all new development must comply with the plan.

Roadways constructed through the land readjustment process often result in irregular right of ways until all properties are acquired

Gray Zones

The National Urban Planning Act stipulates that rebuilding can occur so long as projects comply with underlying zoning. The gray zones represented areas which had experienced extensive damage and which had previously (prior to the earthquake) been identified by planning authorities as the focus for redevelopment. For example large areas around the readjustment zones in the vicinity of major transit nodes are “gray” zones. Sanomiya, the main shopping area, is also a gray zone. The designation renders projects eligible for specific bonus and subsidy programs (see next section).

White Zones

These areas have no special plan and no government provided technical assistance for planning. Conversely no special review procedures are in place. Two and a half years after the earthquake most of the new buildings were located in white zones (Kinmokusei). The major strategies in such zones are joint or collaborative housing projects and comprehensive improvement projects which render them eligible for bonus and subsidy programs (see next section.

SUBSIDY PROGRAMS

Prior to the earthquake the national government had adopted a program which has been intended to reduce overcrowding on substandard lots and replace substandard residential structures with fire and earthquake resistant buildings. This mechanism has been used extensively throughout the Damage Restoration Zone, especially in the “gray” and “white” zones. To qualify for the program a developer must propose residential use, consolidate two or more lots, be 3 stories or higher; be high quality i.e. comply with seismic and fire resistant building codes; provide parking, and provide a specified minimum frontage on a roadway with a minimum width (which varies by district).

All the subsidy programs provide government funds for approximately 18% of the total building through application of a formula covering 80% of:

- Site survey, geotechnical investigation and building design
- Site preparation
- Construction cost of common area including open space, water supply and electricity for common area, corridors, staircase, and elevator

Two of the programs require that sites be located within specified districts. All of the areas indicated as special "black" or "gray" districts in figure 1 are eligible for jushiso and mitsujujigyo. The third program, yuken, is applicable anywhere and was used extensively in the "white" zones.

Jushiso: urban residential area improvement project
The intent of jushiso is to subsidize construction of high-quality (condominium) apartments in designated areas. All projects must consolidate lots. Single family projects are not eligible.

Mitsujujigyo: high-density urban improvement project
The intent of mitsujujigyo is to subsidize rebuilding projects such as wooden apartment, townhouse and old single family houses. Residential or mixed use projects are eligible.

Ju-shi-so project which consolidated lots and provided a high quality building eligible for subsidy

Yuken: high-quality building development
The intent of Yu-ken is to subsidize multi-owner projects mixed use housing, and rebuilding of apartments. The location of yuken projects is not restricted, however they must address such planning objectives as:

- Land Integration: two or more landowners build one building; when there are only 2 owners the site must be smaller than 200 sq.m. or be irregularly shaped.
- Rebuilding: rebuilding of apartment use with more than 10 unit owners. More units, and more floor area must be provided than the existing structure.

CONSTRUCTION TRENDS CLIENT BUILDER: INTENDED OCCUPANCY

Throughout the course of the recovery period the "client builder" has been primarily the private sector.
This trend was however particularly evident in year 1. Despite the predominance of private construction it should be noted that the vast majority of units have been constructed by using the government subsidies for front end expenses and common area costs.

Table 2: Annual Number of Units Built by Client/Builder

	1995	1996	1997	1998	Total
Public	8,252	21,976	12,004	4,691	46,923
Private	88,131	78,762	48,041	33,412	248,346

Source: Hyogo Prefecture June 1999

In 1994, the year prior to the earthquake 45,550 housing units were constructed. In the two years following the earthquake the volume doubled, and then began to decrease, reaching pre-earthquake levels by summer 1997. Total volumes remained high from July 1995 until November 1996.

A high percentage of the units lost were "wooden houses" constructed after World War II. Many of these single family homes had been converted to multi family use. Such sites lent themselves to single family reuse or to small multi family projects which did not necessitate a time consuming land assembly process. Reconstruction in the first year occurred primarily on such small sites. The review process is local for the relatively small projects. Design review is, however, required for projects which consolidate more than 5 lots. Thus in the first two years after the earthquake the majority of new buildings utilized 5 or fewer lots and consisted of projects less than 40 units. By the second year this trend began to reverse; multi family exceeded single family construction, although the projects continued to be comparatively small. By mid 1998 (2½ years after the earthquake) large projects were under construction and/or nearing completion. Reportedly a significant number of the private new construction has been intended for new occupants from Osaka and elsewhere; and not necessarily for earthquake victims.

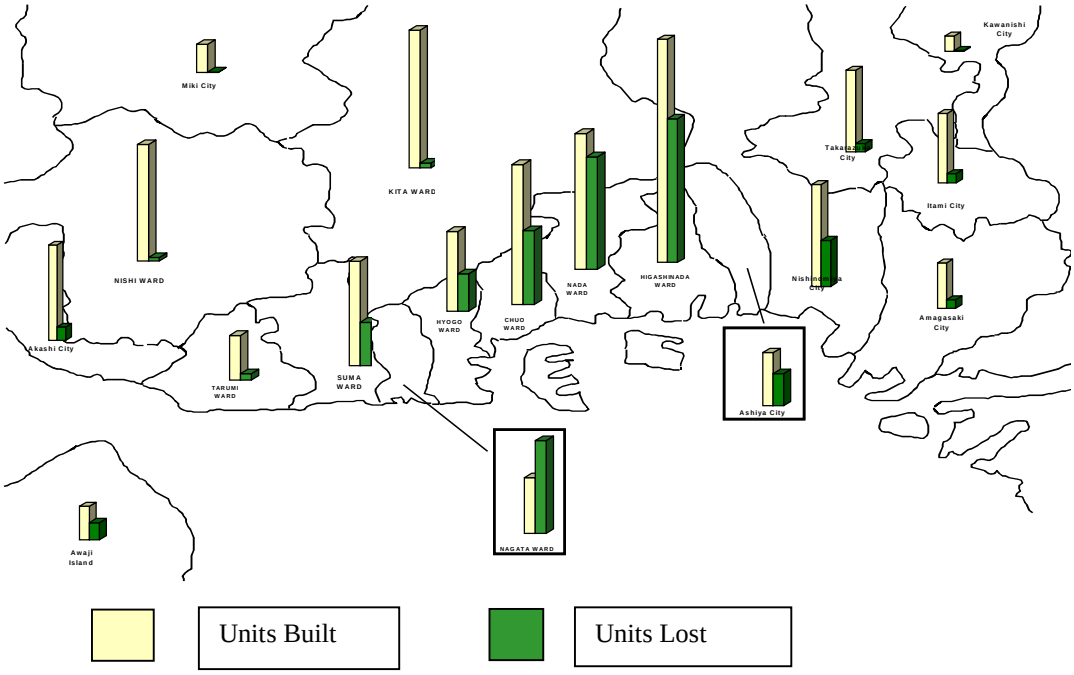

Figure 2: Comparison of Units Lost with Units Rebuilt: 1999

Source: Hyogo Prefecture, June 1999

During the first two years the majority of new units were intended for owner occupancy. Interviews with developers indicated that virtually all projects utilized one of the subsidies which covered "front end" costs such as design fees as well as common area expenses. By the third and fourth years units intended for owner occupancy had plummeted; by 1997 construction trends reversed and units intended for owner occupants declined, while rental units remained high, as did units for sale. These peaks reflect the immediate rebuilding by owners who lost their own homes and were able to obtain financing for reconstruction while the number of owner (intended) units sharply declined by 1997 (two years after the event) the number of units for sale continued to rise, as did the number of rental units. Many of these "for sale" and rental units are located in outlying neighborhoods which lost virtually no units.

Table 3: Construction Permit Applications by Intended Occupancy:February 1995-December 1998

	1995	1996	1997	1998	Total
Kobe City					
Owner occupied	12,057	11,464	5,252	3,851	32,624
Rentals	13,906	28,410	14,522	6,455	63,293
Owned by companies	610	510	259	163	1,542
For sale	6,204	11,226	10,185	7,255	34,870
Total					**132,329**
Hanshin					
Owner occupied	13,696	9,369	4,578	3,759	31,402
Rentals	13,598	22,713	13,078	5,614	55,003
Owned by companies	485	802	1,157	279	2,723
For sale	7,568	13,273	11,683	8,343	40,867
Total					**129,995**

Source: Hyogo Prefecture 1999

According to recent census from Hyogo prefecture the estimated population of the region remains approximately the same as before the earthquake. The number of new residential units, which is significantly larger than the number lost exceeds the region's capacity for absorption and is resulting in a high vacancy rate (the precise rate has not been released).

CONCLUSIONS

The Kobe reconstruction is an outstanding example of public private partnerships. During the first two years predominate building types were small projects under 40 units. Most were built by owners and small to mid size developers using pre existing subsidy programs for high quality projects. More time is required to assemble and finance large projects. This complexity factor points to the need for clear vehicles such as the subsidy programs which provide maximum flexibility and that can be used expeditiously by either the public or private sector. In addition, the realities of owners and developers rebuilding where there are the least obstacles emphasizes the importance of adopting tools before a disaster strikes.

The total number of new units exceeds even the highest estimate of units destroyed. It should be noted however that these units tend to be higher quality than the ones lost in terms of floor area and life safety (fire, seismic resistance). Overbuilding has however resulted in a large number of unoccupied units. The units built in the first year or two were owner occupied and primarily in the eastern sectors of the region, while the units constructed in the last two years are predominantly for sale or rent. These are in the western and outlying areas.

The subsidies, which had been developed to achieve goals to reduce overcrowding on substandard sized lots provided powerful stimulus to construction. The vehicles used most extensively in the white and gray zones required no community negotiation and minimal public review. These vehicles for which the underlying intent was to function as a stimulus, have essentially bypassed the planning process. On the one hand the individual subsidies significantly stimulated construction on a building-by-building basis, primarily by the private sector, which built 5 times the number of units envisioned by the Phoenix Plan. On the other hand early and rapid building without a plan tended to dramatically increase densities and change the underlying character of the community. Neighborhoods with a more deliberate planning process such as the readjustment communities tend to be recovering with a more rational land use pattern. In the long run it would appear that the permanent dislocations to such neighborhoods would be less than those that are over built.

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