Pre-Disaster Recovery Planning
Tokyo

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12 January, 2011

Population and Dimension

- **West Tama**: (3 towns and 1 village)
  - 59,764 residents
  - 375.96 K㎡

- **Tama Cities**: (26 cities)
  - 4.06 million
  - 783.93 K㎡

- **Islands**: (2 towns and 7 villages)
  - 28,578 residents
  - 375.96 K㎡

Total population: 13 million
Total area: 2.187.65 K㎡

- **Special wards**: 23 Special wards

Damage intensity of houses collapsed by quake in Northern Tokyo Bay Earthquake
- **Buildings / 25ha**
  - Collapsed: 195,000 buildings

Damage intensity of houses burnt down by fire in Northern Tokyo Bay EQ with window of 15m/s.
- **Buildings / 25ha**
  - Burnt: 650,000 buildings

Comparison of Estimated Damage in Tokyo

<table>
<thead>
<tr>
<th>Damage Type</th>
<th>TMG (6.9)</th>
<th>TMG (7.3)</th>
<th>Cabinet O. (7.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total of lost Buildings</td>
<td>264,000</td>
<td>472,000</td>
<td>530,000</td>
</tr>
<tr>
<td>Collapsed @</td>
<td>60,000</td>
<td>127,000</td>
<td>120,000</td>
</tr>
<tr>
<td>Burnt down (without @)</td>
<td>232,000</td>
<td>394,000</td>
<td>410,000</td>
</tr>
<tr>
<td>Killed persons</td>
<td>3,100</td>
<td>6,000</td>
<td>7,800</td>
</tr>
<tr>
<td>by Shake</td>
<td>1,300</td>
<td>2,500</td>
<td>3,100</td>
</tr>
<tr>
<td>by Fire</td>
<td>1,800</td>
<td>3,500</td>
<td>4,700</td>
</tr>
</tbody>
</table>

Plates in Japanese Islands and surrounding areas
- North American Plate
- Eurasia Plate
- Pacific Plate
- Philippine Sea Plate

Damage intensity of houses burnt down by fire in Northern Tokyo Bay EQ with window of 15m/s.

Eurasia Plate
North American Plate
Pacific Plate
Philippine Sea Plate
How to recover Tokyo from Next Earthquake?

★Preparedness of Recovery & reconstruction Measures

1995 Hanshin-Awaji Earthquake Disaster
1997 Promotional Plan for Earthquake-proofing Urban Improvement, as a revised Conceptual Plan of 1981. (in not only Central Tokyo but also Inner Suburban Tokyo)
1997 Preparedness plan for Urban Reconstruction Project after Next One
   ●Urban restoration Manual
1999 Tokyo earthquake recovery examination committee has been established
2001 Grand Design for Post-quake Urban Reconstruction
2003 New Ordinance for Earthquake Measures
2003 Revision of Manuals for Earthquake Restoration
   ●Post-quake Restoration Manual (Measures Edition for Officers)
2003~ Urban reconstruction Simulation Training
   (Exercise of Community Recovery & restoration)
   ●Implemented Exercises in 27communities in 15 Wards & 1 City

Kind of Earthquake Recovery Manual

TOKYO

Integrated in 2003

Earthquake recovery manual (Urban restoration Manual)
Earthquake recovery manual (Life Recovery Manual)

Earthquake recovery standard manual for a basic municipality (2009)

Preparedness for Recovery from Earthquake in Tokyo
Manual (for officers) / (Process for Citizens) / Grand Design

Post-quake Restoration Manual (Measures Edition for Officers)

On Daily Life of Pre-event Period
- Evacuation Period

Support of Community Organizing
- Organization for Community Recovery in Evacuation Shelter
- Establishment of Organization

Proposition of Restoration Plan Based on Grand Design
- Aid for Community Activity
- Aid for Restoration planning
- Aid for Temporary Town Project

Diversification of Restoration measures

Restoration Collaborated with Community
- Restoration of City & Community

Earthquake

Period of Making Recovery & Reconstruction Plan
- Period of Implementation of Recovery & Reconstruction Projects

Community Organization
- Not yet Organized

Not yet

Earthquake Support of Community Organizing

Earthquake

Restoration process for next Tokyo Earthquake
Step1  construction of Temporary Town in Damaged Area.

Restoration process for next Tokyo Earthquake :
Step2  Redevelop From “Temporary Town” to “Permanent Town”

Grand Design for Post-quake Urban Reconstruction

Strategic Projects of Urban Reconstruction after Tokyo’s "Grand Design for Urban Reconstruction"

- Safer Residential Districts with fire-proofing buildings & community Facilities
- Safer Ring Zone with greenery (Open Spaces)
- Safer Grounds Reclaimed by Blink of Collapsed Buildings
- Construction of Large Parks as Back-up Bases for residential Districts
- Rearrangement of Water Fronts (Rivers and Canals)
- Construction of important Infra-structures and Networking
Two kinds of exercises for recovery & reconstruction
① An exercise for administrative process of making the draft plan of city and community recovery by officers. Ten times of exercises have been continued by TMG and TMU.
② An exercise of community-based recovery process and draft plan of community recovery in collaboration with officers and residents, supported by professional groups including TMU.

An exercise for administrative process of making the draft plan of city and community recovery by officers in 2010.

To learn the Recovery Manual and to exercise the community recovery plan making as a model study of Ohyama District in Itabashi Ward.

Outline of Ohyama District as a Crowded Wooden Houses District.

Image of Damage in Study District

<table>
<thead>
<tr>
<th>Type</th>
<th>Wooden</th>
<th>Non-W</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Bulds</td>
<td>2,066</td>
<td>1,213</td>
<td>3,279</td>
</tr>
<tr>
<td>Fully Dmg</td>
<td>77</td>
<td>10</td>
<td>87</td>
</tr>
<tr>
<td>Half Dmg</td>
<td>410</td>
<td>59</td>
<td>469</td>
</tr>
<tr>
<td>Partly Dmg</td>
<td>About 1,650</td>
<td>1,650</td>
<td>3,300</td>
</tr>
<tr>
<td>Burnt-down</td>
<td>421</td>
<td>421</td>
<td>842</td>
</tr>
<tr>
<td>Burnt area</td>
<td>4.70ha</td>
<td></td>
<td>6.0%</td>
</tr>
</tbody>
</table>

*Amount of Ohyama 78ha

Fireproof Structure 966 Buildings
Semi-fireproof Structure 494 Buildings
Fireproofed Wooden Structure 1,051 Buildings
Wooden Structure 128 Buildings
Burnt-down District 4.7 ha
Damaged zone mainly by Shake

Total Families 8,950
Single family 4,645 52%
Aged single family 956 11%
Family with kids 953 6%
Owner-occupiers 4,043 45%
Population 17,006 100%
Aging people 4,231 25%

Owner-occupier 25%
Rented site house owner 20%
Rented apartment 35%
Factory & shop 5%
(nominal)

Exercise of Community Recovery Plan making.
Community Exercise of the pre-disaster Recovery & reconstruction planning.

① 1st WS: Walking around community and imaging damage caused by earthquake
② 2nd WS: Imaging recovery problems of house rebuilding and livelihood, in the evacuation site.
③ 3rd WS: Planning ideal temporary houses for community restoration in each town.
   How many vacant sites are there in the community?
   How many temporary houses can be constructed in each town?
④ 4th WS: Let’s make a recovery basic principle and reconstruction plan for our community.
   Nerima local Authority tried to make a recovery principle & plan.
   Residents tried to discuss a recovery principle and plan.
⑤ 5th WS: Community meeting for presentation of products of WS and sharing them among residents.

1st WS: Walking around community and imaging damage caused by earthquake in Shinkoiwa

2nd WS: Imaging recovery problems of house rebuilding and livelihood, in the evacuation site.

3rd WS: Planning ideal temporary houses for community restoration in each town.

How many vacant sites are there in the community?
How many temporary houses can be constructed in each town?

4th WS: Let’s make a recovery basic principle and reconstruction plan for our community.

4th WS: Let’s make a recovery basic principle and reconstruction plan for our community.
Concluded Remarks

• Long-term efforts of damage reduction in pre-event period are the most important.
• In the same time, the preparedness measures for emergency response is necessary, because earthquake hits our city tomorrow.
• Damage reduction must be implemented by myself. Nobody implements it for me.
• The more reduction of damage can make emergency response the more easy and effective.
• Making city safer against earthquake means making city more comfortable and sustainable.
★ There are many kinds of issues for making Tokyo more safer and more sustainable!