

Japanese Urban Disaster Management (and DM in UNCRD)

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12 Oct. 2011

1. Background

The Great Hanshin-Awaji Earthquake

Date January 17, 1995

Magnitude 7.3

Dead 6,434 persons

Collapsed (total) 111,123 buildings

Collapsed (partial) 144,274 buildings

Evacuees (peak time) 320,000 persons



Kobe, damaged by the Great Hanshin-Awaji Earthquake (1995)

**Damages approx. 100 billion USD
(9,927 billion Yen)**

- Buildings 5,800 b. Yen
- Harbors 1,000 b. Yen
- Business 630 b. Yen
- Expressway 550 b. Yen
- Gas /Power 420 b. Yen
- Railways 344 b. Yen
- Schools 335 b. Yen
- Road, bridge 296 b. Yen
- Hospitals 173 b. Yen
- Communication 120 b. Yen
- Agriculture 118 b. Yen
- Water supply 54 b. Yen
- Others 87 b. Yen

Reference: Common Issues of Recovery

Area

Target

- | | |
|-------------------------|-------------------------------------|
| ▪ Housing | ▪ Community based activities |
| ▪ Infrastructure | ▪ Social recovery |
| ▪ Economy | ▪ Economic recovery |
| ▪ Culture | ▪ Property recovery |
| ▪ Community | ▪ Development approach |
| | ▪ Awareness and incentives |
| | ▪ Implementation |

2. Lessons learned from the Great Hanshin-Awaji (Kobe) Earthquake in Jan. 1995

Data resources:
DRI/JRI
Kobe City
Hyogo Prefecture
Japanese Government

UNCRD Hyogo

Damages of Kobe Earthquake (Total, Hyogo and Kobe)

Damages		Total (incl. Osaka)	Hyogo pref.	Kobe city
Human (person)	Dead	6,434	6,401	4,571
	Missing	3	3	2
	Injured	43,792	40,092	14,678
	Evacuees (peak)	320,000	316,678	236,899
Houses (building)	Totally collapsed (families)	111,123 (191,617)	104,906 (186,175)	67,421 (-)
	Partially collapsed	144,274	137,289	55,145
Emergency Response (building)	Publicly Dismantled Houses	108,672 (Total 136,730)	87,289	61,392
	Temporary Houses	49,800	48,300	32,346

Source : 2008.1.1 (Kobe city) <http://www.city.kobe.jp/cityoffice/06/013/report/index-e.html>
2006.5.19 (Total) http://www.bousai.go.jp/1info/kyoukun/hanshin_awaji/earthquake/index.html

Kobe damaged by the Great Hanshin-Awaji Earthquake (1995)



Hanshin Expressway

Expressway and road bridges were collapsed, and the infrastructure standards were revised.



Sannomiya, Kobe



Kobe City Hall, 1995

Buildings designed with old anti-seismic code (before 1980) were severely damaged.

As the new buildings are proved safe, level of the seismic code for buildings was not changed.

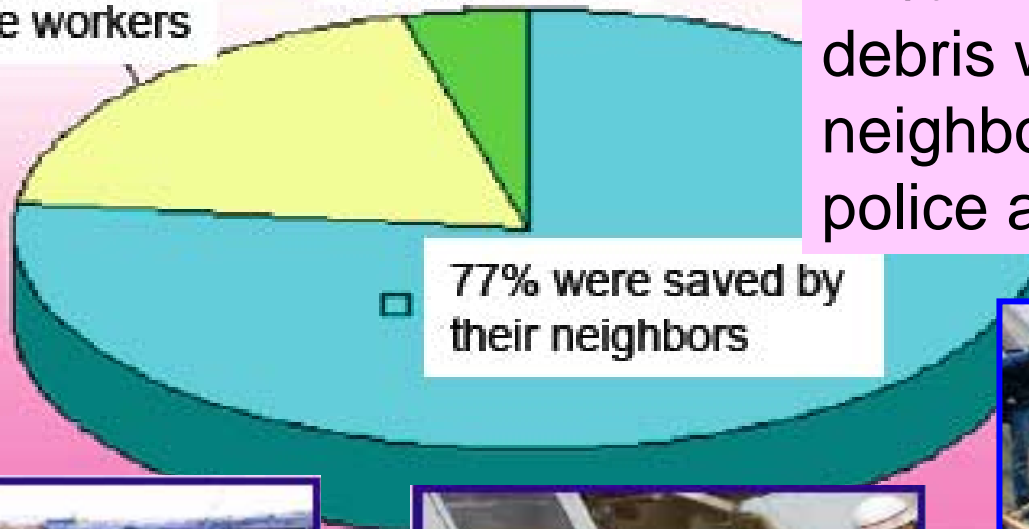
Significance of local Communities

During the immediate aftermath of a large-scale disaster or an accident, volunteer fire extinguishing activities & rescue/aid activities by local citizens are very effective.

Among some 35,000 people who suffered difficulties in evacuating themselves:

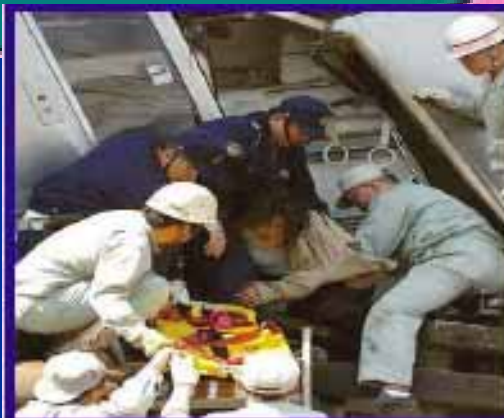
19% were saved by rescue workers

4% by others

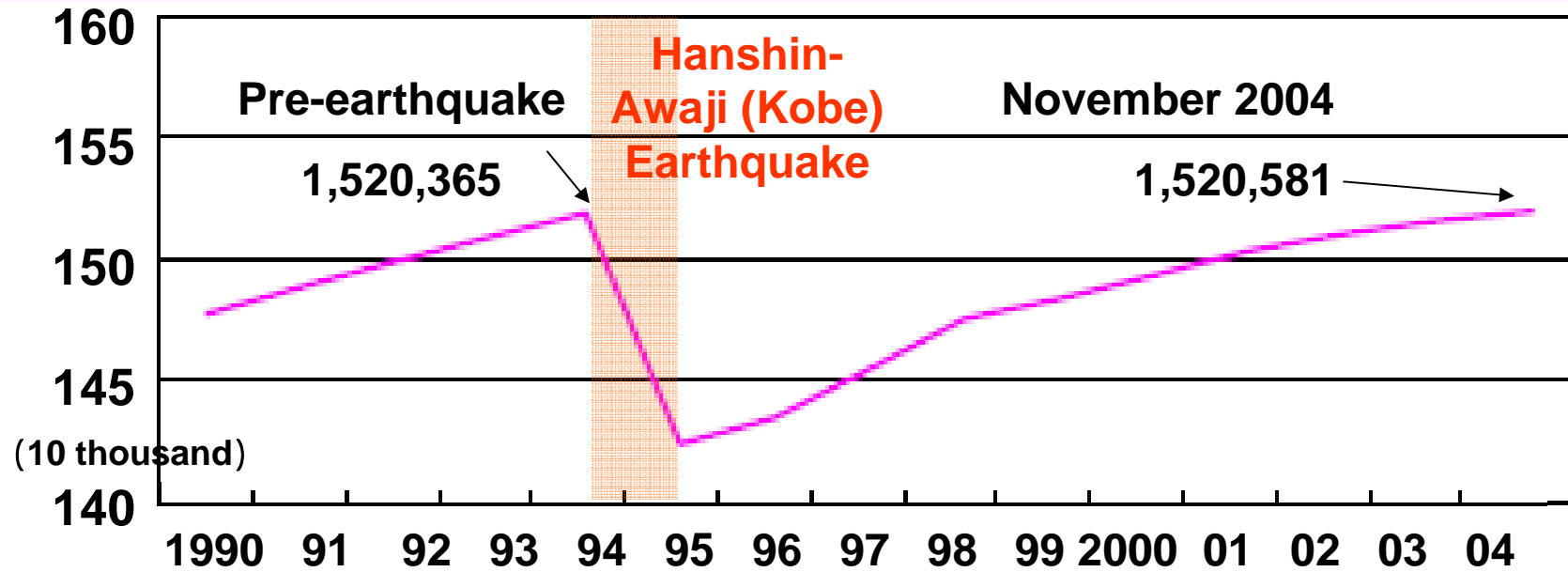


77% were saved by their neighbors

77% of people under debris were rescued by neighbors while 19% by police and fire fighters.

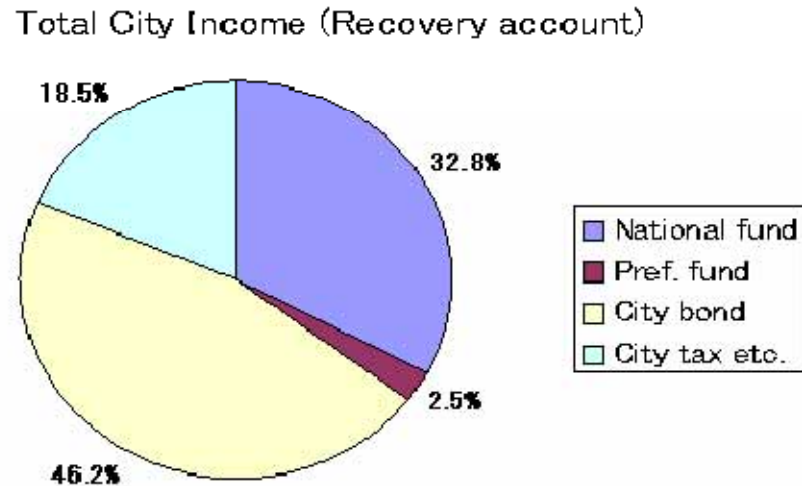


Trends of Population: Kobe City

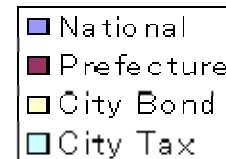
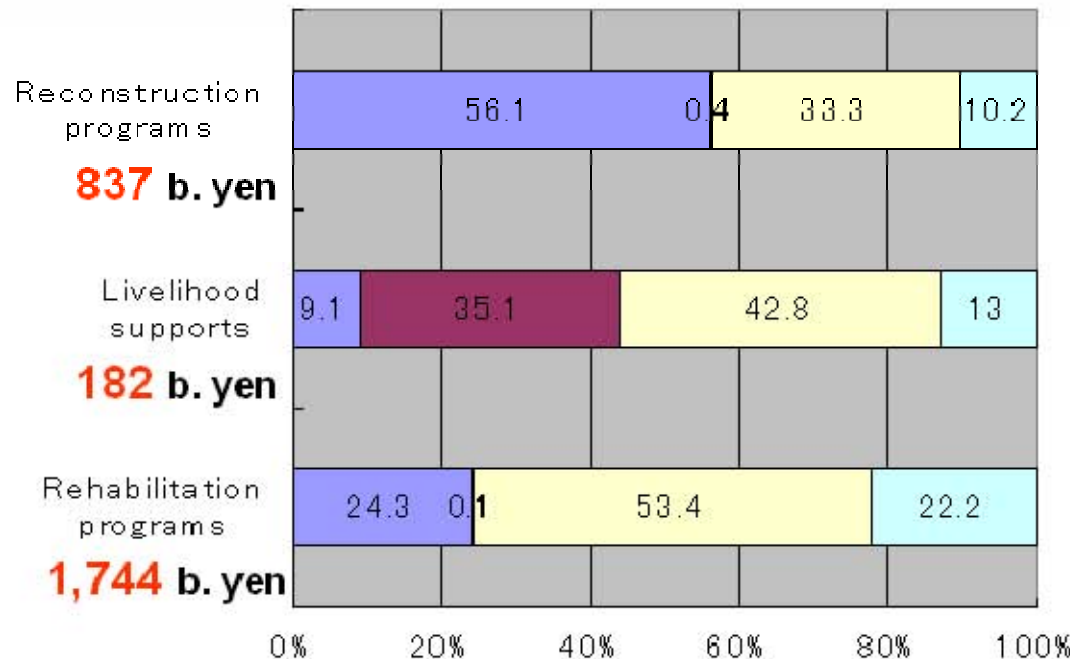


Share of Funding Source of Recovery Projects (Kobe City)

1994-2004
Kobe City
budget for
Recovery
Total **2,763**
billion yen



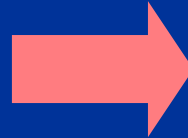
**Chuo-ku,
Kobe city
Jan. 1995**



Kobe City Urban Recovery Project (Example)



Overview of Shin-Nagata area
immediately after the earthquake
(January 1995)

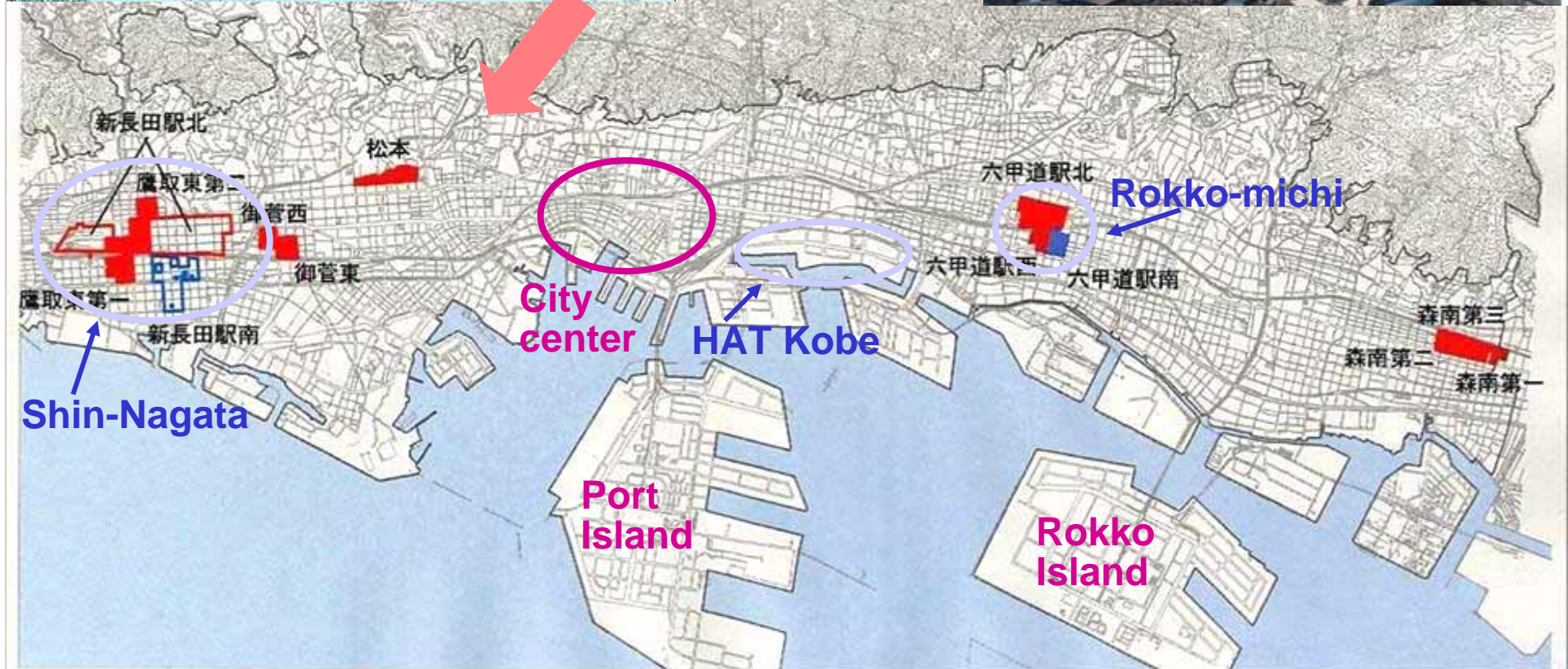


Overview of Shin-Nagata area
after the implementation of the
urban recovery projects (2005)

Kobe City Urban Recovery Projects



Urban Renewal and Land Readjustment Projects for Reconstruction



3. Urban Disaster Management Policies in Japan

- Great Kanto Earthquake (1923)
- Measure for promoting Fire-proof buildings
 - Fire-proof buildings
 - Urban structure against fire
 - Kukakuseiri (Land Readjustment)
- Urban Renewal of Densely Built-up area
- Other Urban Disasters

Ginza damaged by the Great Kanto Earthquake (1923)

Dead 99,321 Missing 43,476persons Burned by fire 447,128 units



大正十三年九月一日、関東大震災の東京一帯の様子。横浜より北西80キロメートルの地点で発生した地震は、当時、世界屈指の大都会を襲った。最大震度7、20センチメートルの揺れが、東京市内で150以上の戸数を倒壊させた。

Measures for promoting Fireproof Buildings and the Urban Structure

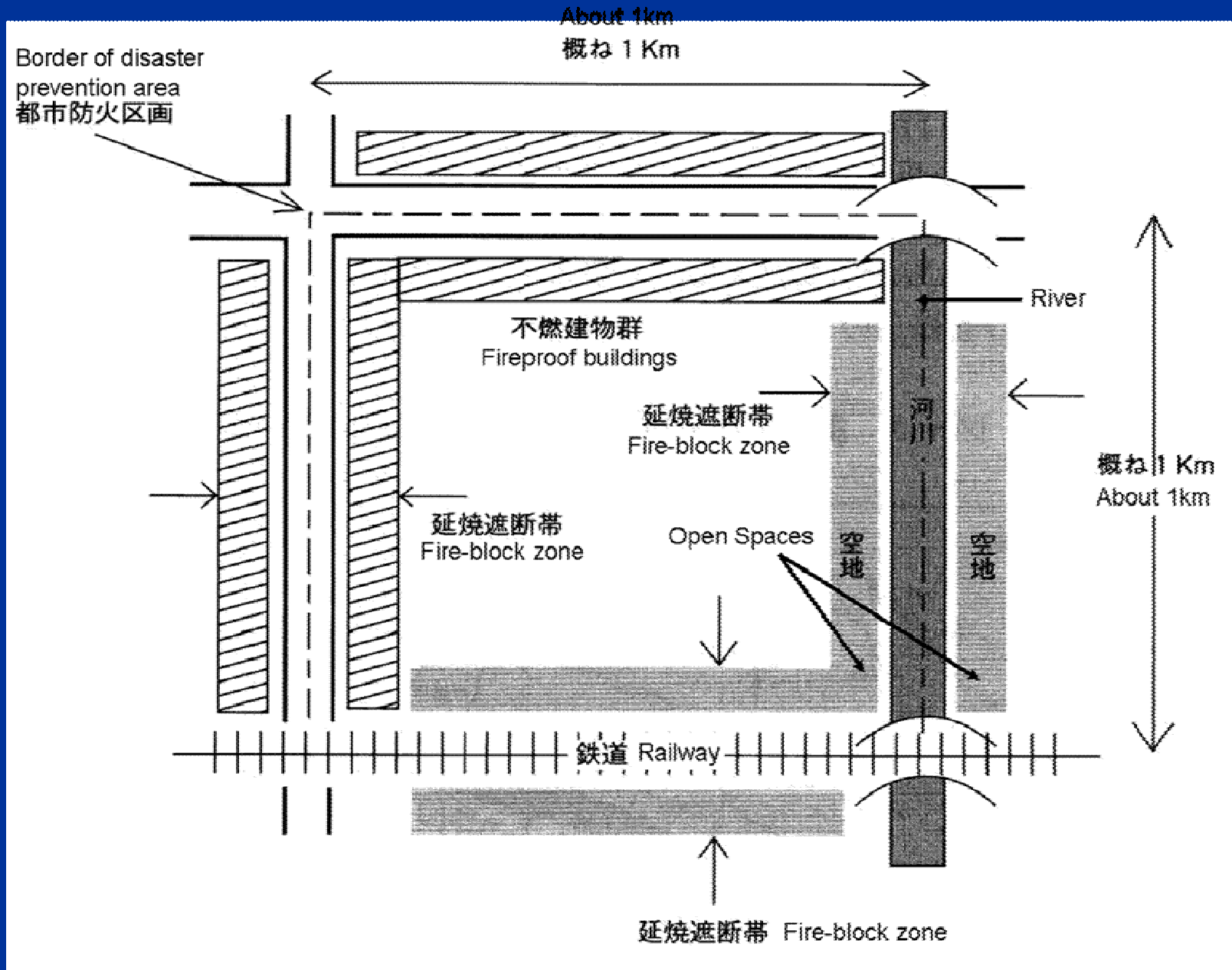
1. Rebuilding to earthquake-resistant and fireproof building

It is clear that urban areas where rate of fireproof building is high and density of building is low, become very safe from disasters. Remarkable improvement in rate of collapsed houses and semi-collapsed houses was found after enforcing the new earthquake-resistant planning rules (1981). It's found that the promotion of rebuilding is effective to make safe urban areas.

2. Developing urban fire-block zones

An “urban fire-block zone” is surrounded by main roads, railways, rivers and fireproof buildings in order to stop the spread of fire. Therefore, people don't need to refuge or fires don't spread in the city when an earthquake occurs.

Developing urban fire-block zones



Measures for promoting Fireproof Buildings and the Urban Structure

Before Fire-proof Improvement



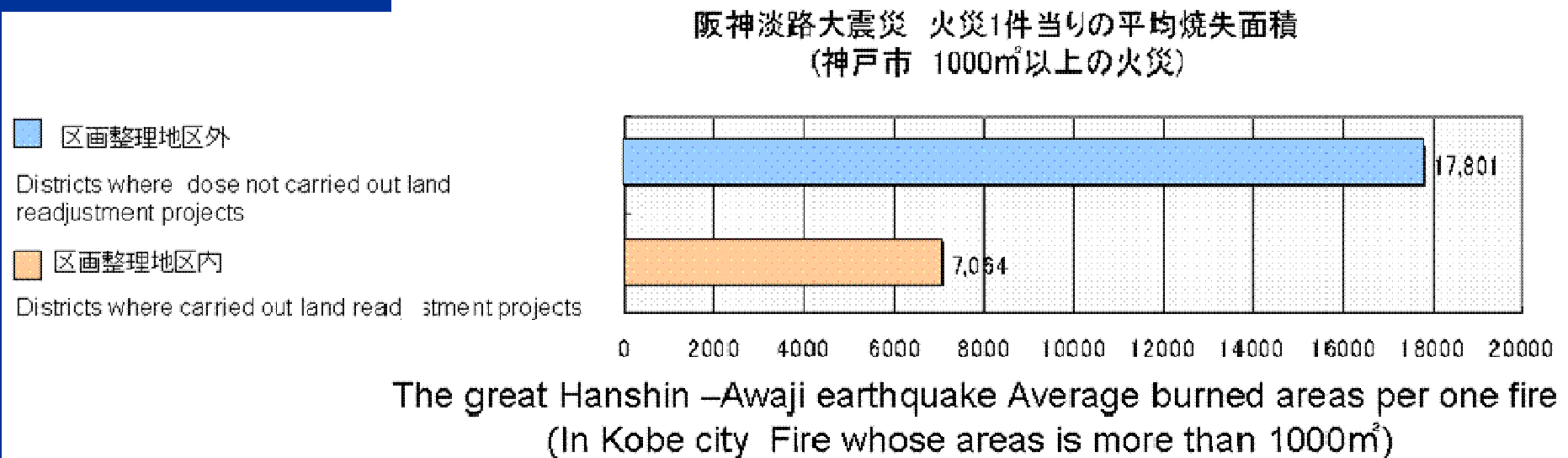
Measures for promoting Fireproof Buildings and the Urban Structure

After Fire-proof Improvement



3. Building public facilities and Community design with participation of residents

In districts where community design activity such as Kukakuseiri (land readjustment projects) has been carried out before the earthquake, reconstruction projects were carried out smoothly.

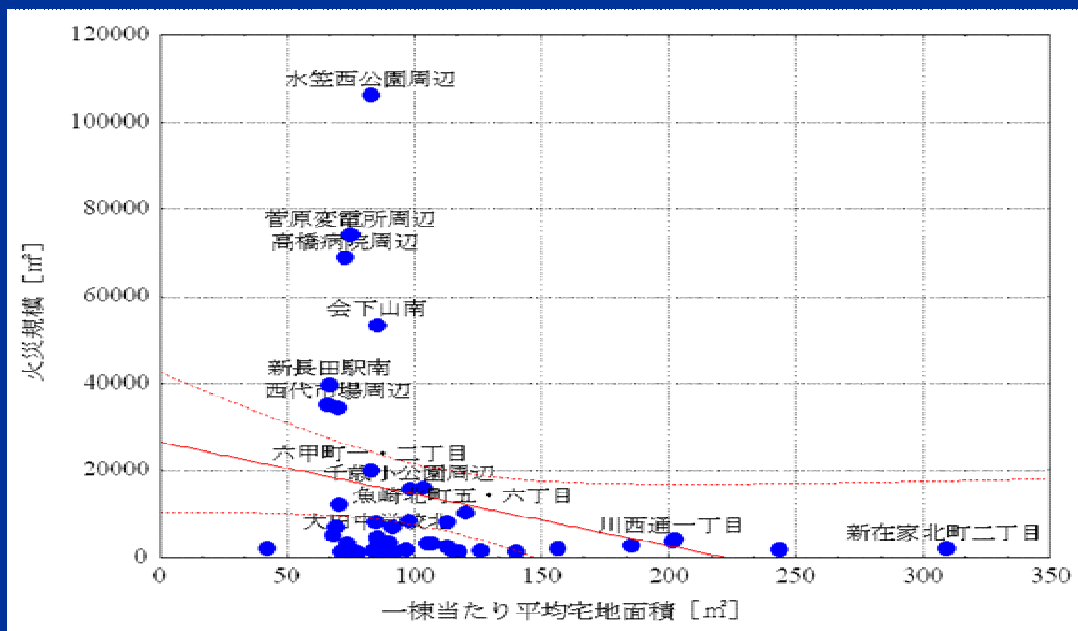


Measures for improving Densely Built-up areas with wooden houses

Lessons of the great Hanshin-Awaji Earthquake

Densely built-up areas

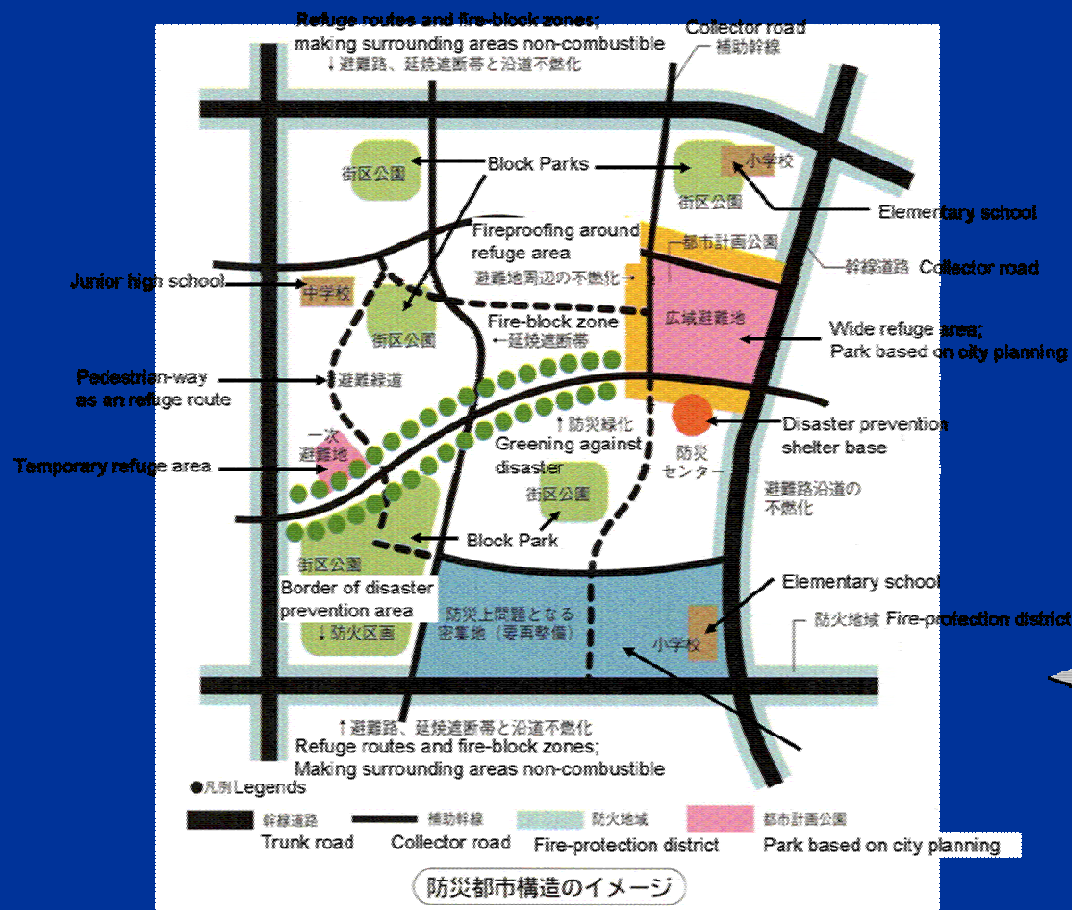
Building Research Institute analyzed districts whose burnt out area is $1,000\text{m}^2$ (43 districts). The areas with high concentration of small houses whose average lot areas is under 100m^2 have high risk of big fires.



Average Lot
Sizes and
Fires Sizes

Summary of Act for Densely Built-up Areas Improvement for Disaster Mitigation

The act was enforced in 1997 and reformed in 2003 to promote totally to improve densely built-up areas which have the high risk of disasters.



Special disaster-resistant districts improvement system

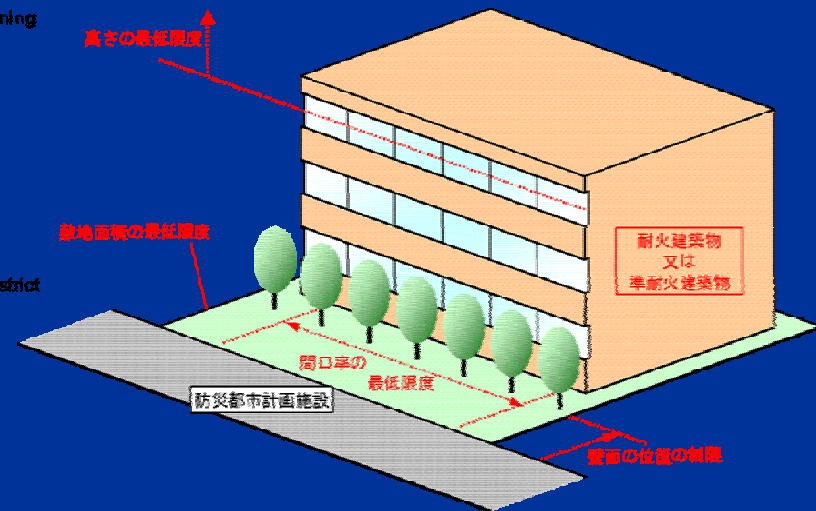
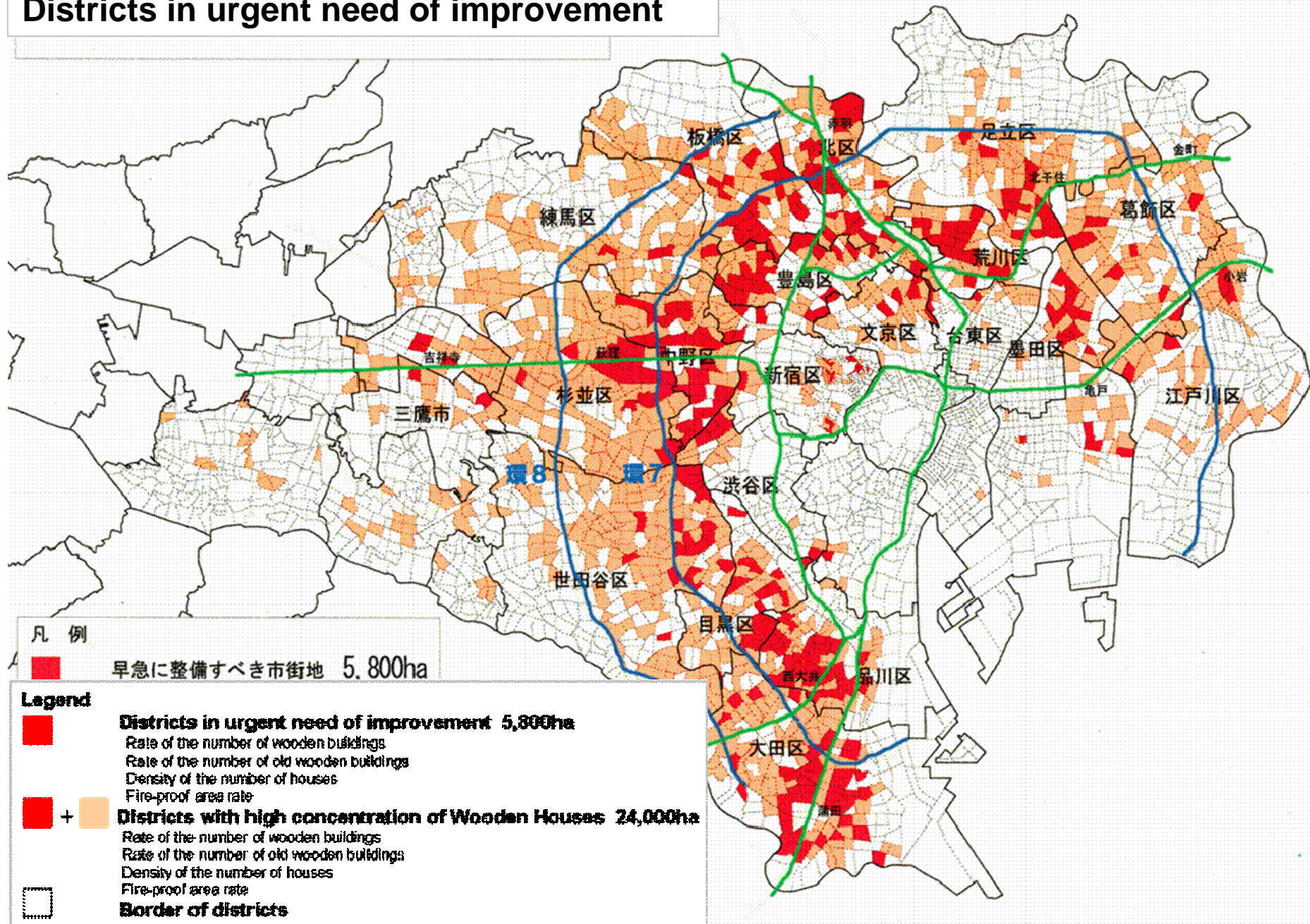


Image of an urban structure resistant to disasters

Districts in urgent need of improvement



4. Other Urban Disasters



June 2004, Niigata prefecture



Collapse of Kanetsu Highway

Oct. 2004, Horinouchi Town, Niigata prefecture

(Ref.) UNCRD's Disaster Management

- Established in 1999, UNCRD (Nagoya) was founded in 1971
- The Kobe (Great Hanshin-Awaji) Earthquake, 17 January 1995
- IDNDR (United Nations International Decade for Natural Disaster Reduction 1990-1999)
- WCDR (World Conference on Disaster Reduction, Kobe Jan. 2005) – Hyogo Framework for Action 2005-2015



1. Objectives and Activities (Hyogo Office since 1999)



Model Projects

Implementation

Demonstration



Training

Technology transfer

Capacity Building

Model construction

Shake-table test

Hazard Maps

Workshops

Handbook

Education

Awareness raising

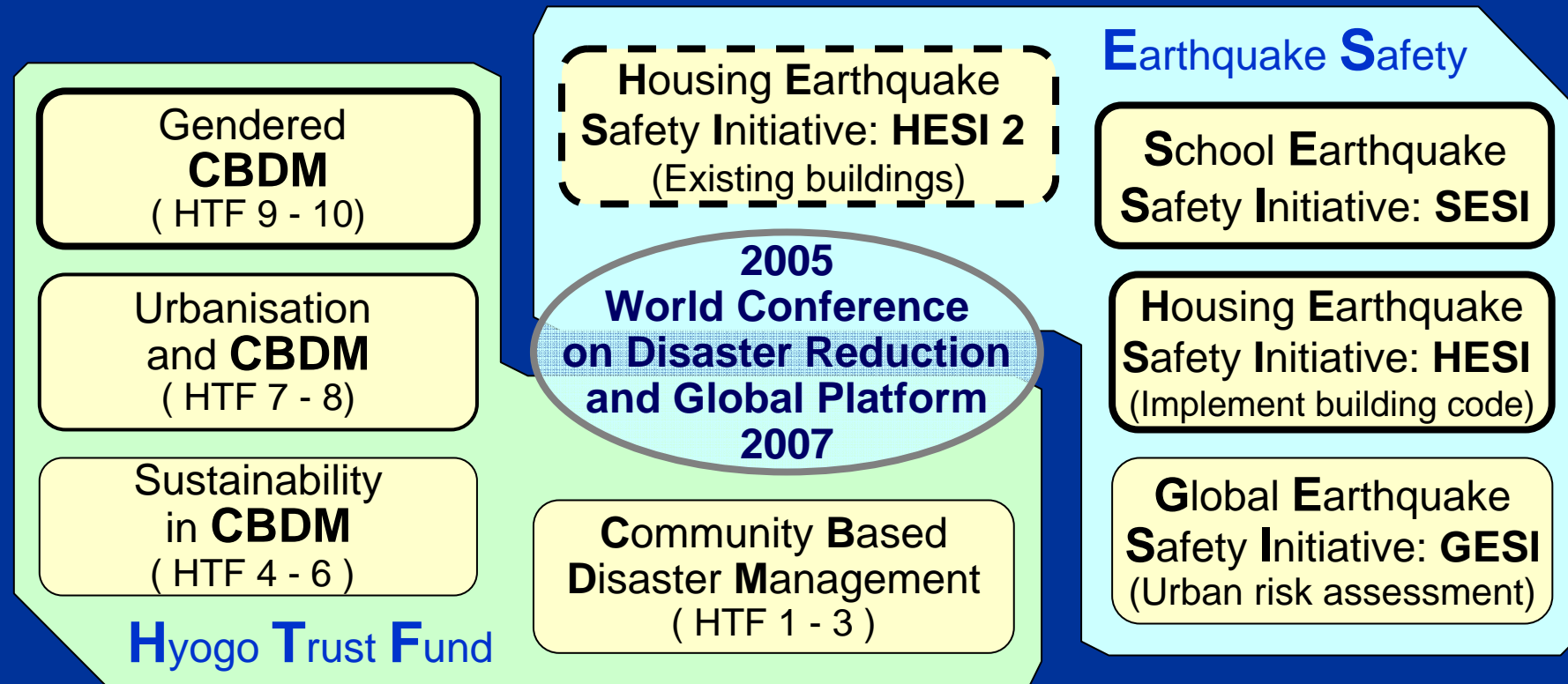
Motivation

Disaster resilient communities, safer schools, houses
for Sustainable Development and Hyogo Framework for Action

2. Projects of Hyogo Office (1999 - 2008)

Recovery Projects

of disaster affected areas (Japan, Indonesia, Pakistan, China etc.)



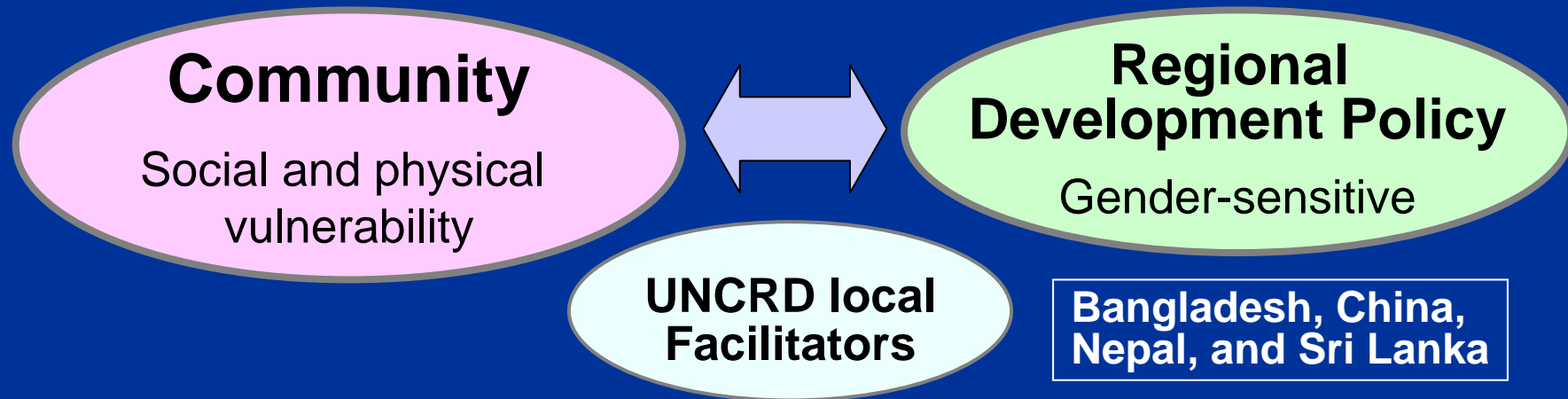
Field Survey (Core Fund)

of disaster affected areas (Pakistan 2006, Peru 2007, China 2008 etc.)

3. Project in 2007-9 (Hyogo Trust Fund)

Gendered CBDM

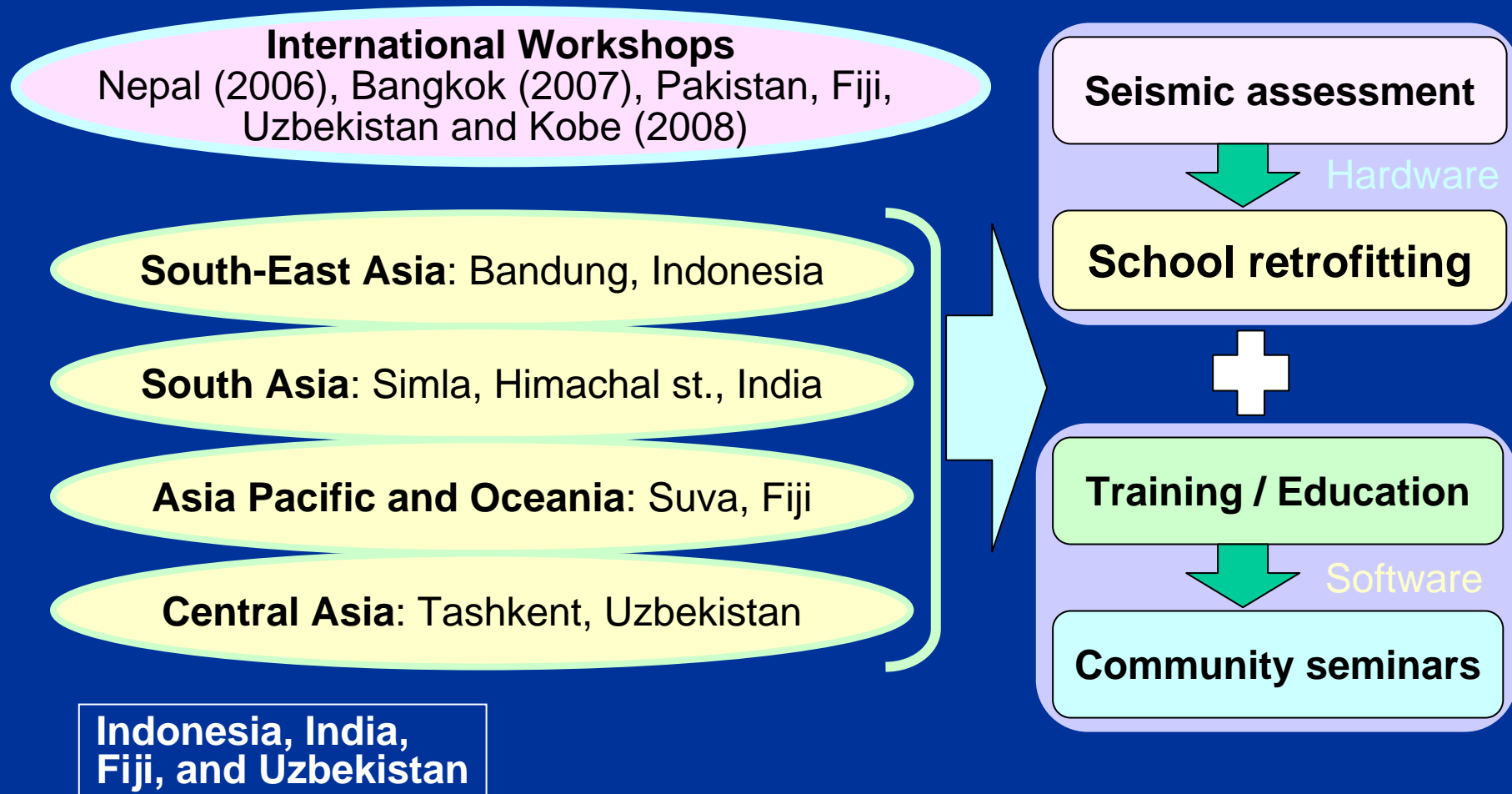
in the context of regional development: HTF



1. Targeted at gender-sensitive CBDM linking to regional development policies.
2. UNCRD local facilitator promotes policy dialogs, trainings and awareness raising.

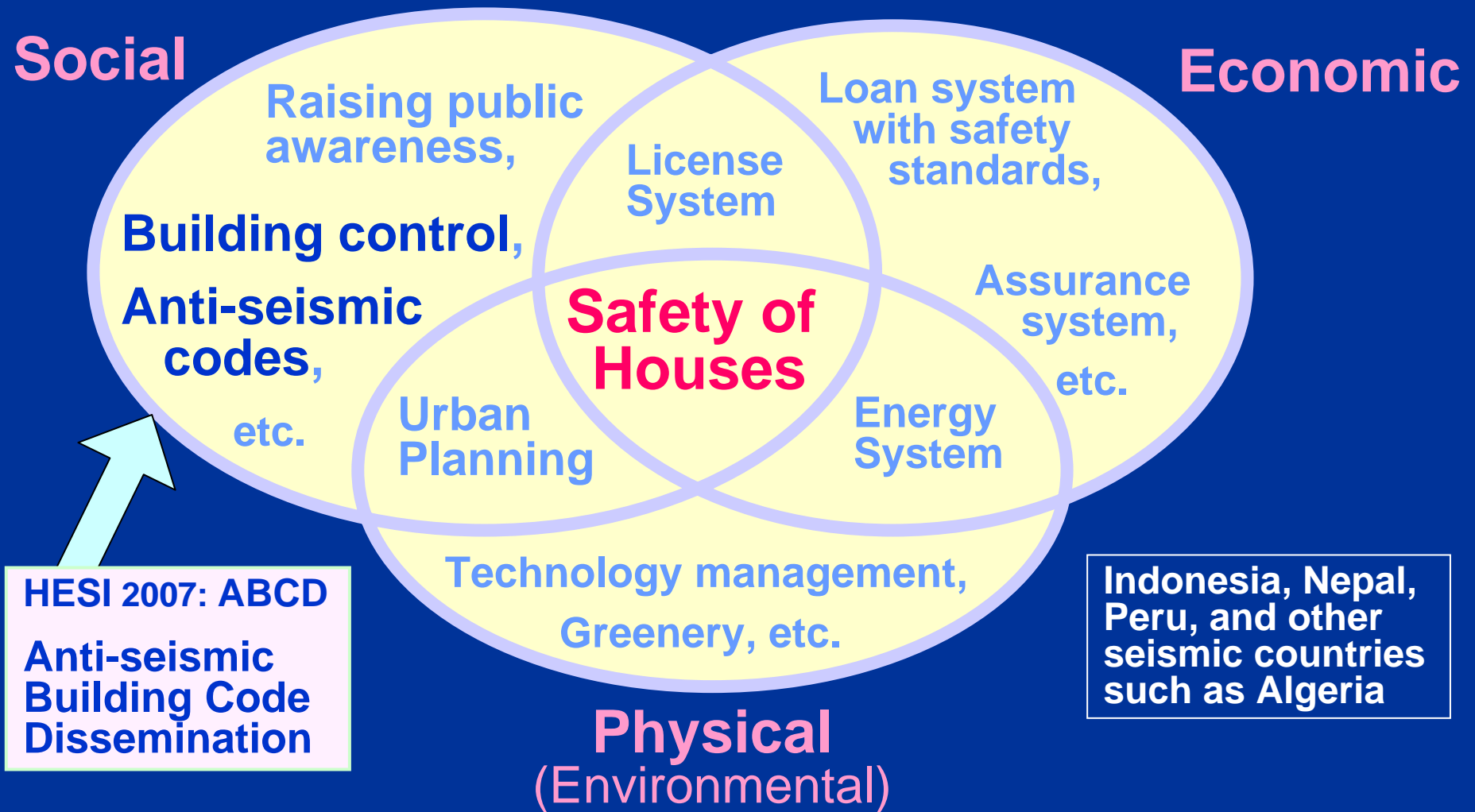
4. Project in 2005 - 2009 (Human Security Fund)

Reducing Vulnerability of School Children to Earthquakes (SESI: School Earthquake Safety Initiative)



5. Project in 2006 - 2011 (fund by MLIT/GOJ)

Housing Earthquake Safety Initiative (HESI)



6. Field Survey (Indonesia '06, Bangladesh, Peru '07, China '08)



7. Main approaches of UNCRD Disaster Management programs

To incorporate and integrate disaster management into regional development plans and programs through:

- (a) strategies to reduce vulnerability for promoting rapid urbanization;
- (b) prioritizing the disaster resiliency of major urban facilities such as schools and hospitals;
- (c) regional risk assessment utilizing micro-zoning (hazard map); and
- (d) introduction of risk assessment and disaster prevention systems into planning processes.

To develop and transfer regional disaster management planning and technologies through:

- (a) establishment of disaster data bases and data management systems;
- (b) providing guidelines for pre-, mid-, and post large-scale disasters;
- (c) technology transfer, including economic efficiency and casualty evaluation; and
- (d) development of educational and training programs on disaster management and awareness raising for the general public such as local residents and communities.

8. Major objectives of UNCRD Hyogo Office

- (1) To provide advisory services to communities vulnerable to disasters, in cooperation with governmental agencies, NGOs, and academic institutions alike;
- (2) To improve the safety of core community facilities such as schools, hospitals, and cultural heritage sites that are vulnerable to damage in times of disaster; and,
- (3) To identify and learn best practices in disaster management at the community level and dissemination them through workshops and information technology.



CBDM in Nepal, 2008



END