Lessons on Recovery from the Great East Japan Earthquake and Tsunami

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Character of the Great East Japan Earthquake (GEJE)

- 14:46, 11 Mar 2011
- M9.0
- Multiple disaster; earthquake, tsunami, fire, land slide and nuclear power plant accident
- Huge area; 500km length
  From Aomori to Tokyo
- These characteristics make it different from the Hanshin-Awaji earthquake in 1995 in Kobe.
Damage by the Great East Japan Earthquake
(as of 7 Mar. 2013)

- Death 15,880
- Missing 2,694
- Secondary death 2,303
- Solitary death 57
- Evacuee 315,195

Total 20,877 person

House damage
- Totally damaged 128,931 units
- Half damaged 269,045
- Partially damaged 736,323
Major 3 types of damaged area

1. Ria-coastal area
   Iwate, Miyagi prefecture
2. Coastal plain
   Miyagi prefecture
3. Nuclear accident area
   Fukushima prefecture
Damage in ria-coastal area coastal area

Ofunato city

Kesen-numa city

Onagawa town
Coastal plane

Rice field damaged by tsunami

Sendai airport
Nuclear radiation contamination

- Many local government offices moved to other city, town and prefecture.
- They can not know when they can return to their home town
- It is difficult to discuss about reconstruction plan.
Framework for transitional shelter

Disaster

Evacuation Shelter
- Usually municipal buildings, schools, gymnasiums

Transitional Shelter
- Funded by Central government, organized by prefectural government.

Permanent Housing
- Survivors build their own houses or live in public housing at discount rent

Disaster Relief Act 1947
Public Housing Act
Victims Life Support Act 1998
Three types of temporary housing

As of 14 Dec 2012

A) Temporary housing 48,447 units
   (1) Prefabricated house
   (2) Wooden house

B) Private apartment as temporary housing 61,442 units

C) Existing public housing & government-owned accommodations 10,824 units
Many problems in temporary housing

- Heat control, noise protection
- Small space < 29㎡
- Poor facility
- High cost; 6 mill. yen/unit
- Inconvenient location
- Losing community

These problems are well known from Kobe earthquake lessons.
Temporary housing, Kobe case 1995

Mountainous site

Affected area

Total number of temporary housing; 48,300 units

On the artificial land
New experience ; Wooden temporary housing

- 30m²、2.6 mill. yen/unit
- Good quality
- Permanent use
- Local material
- Local carpenter
- Good for local economy

Sumitacho town, Iwate pref.

Fukushima pref. government provides 6000 units.
New experience; Private apartments as temporary housing

- National government money for rent
- 60,000 yen/month for two years
- This system fit for victims needs because they can chose their living location.
- There are many problems.
  1. Moving of victims to urban areas
  2. Lack of support for victims in private apartments
  3. Complicate system to provide rent through national, prefectural and municipal governments.
- The system should be improved before next major disaster in the near future.
Permanent house

- Next stage after temporary housing is getting permanent house.
- There are two options for victims.
  ① Public housing; important option for low income victims
    Current construction plan: 19,260 units
  ② Self reconstruction
Problems of Public housing

- Public housing system is important as safety net for victims, particularly for low income peoples.
- However it is not necessarily best solution.
- Small space, fixed plan, high rise tower block (sometimes), no garden, no farm
- According to Kobe lessons, lottery system destroys local community and makes solitary death.
- In terms of management of public housing, in future local government should be suffer from heavy work under many number of new public housing.
- So we need careful plan and design to make public housing.
Public housing lesson in Kobe earthquake

- Total number; 38,600 units
- Far from home town
- Lottery system for allocation
- Losing community
- Losing community brings social isolation for residents and sometimes solitary death.
- During 18 years since 1995 there has been 1011 persons solitary death because of losing community.
- We must avoid this tragedy in GEJE
Self reconstruction

- It is best way for victims to reconstruct their house as before earthquake on their own land, if it is possible.
- In this sense main measure to get permanent house should be support for victims to construct their own housing.
- So it is better way to decrease the number of public housing, and promote the victims to make self reconstruction by financial support.
Financial support for self reconstruction

- Finance support is very important, but it is quite limited.
- National government support is ¥3 million in maximum case depend on damage level.
- This system has been created after Hanshin-Awaji earthquake, Victims Life support Act 1998.
- National government scheme must be improved.
- Iwate prefecture government and some city governments provide some additional programs. Victims can get 10 mil. yen in maximum case.
Land use and urban planning issues

- Wide area is damaged by tsunami and has future risk.
- Prefecture government makes tsunami simulation and proposes tsunami risk area map.
- According the simulation data each local government makes land use plan.
- Victims in the risk area can not reconstruct on their own land as they like. They have to decide their way to live under the land use plan.
- Relocation program from coastal area to inland or highland area is strongly suggested.

Ofunato city, Iwate pref.
Land use plan

Tsunami protection by three guards.

In the area in front of third guard people should not live and have to move to high land.

Tsunami simulation

Relocation to high land
Many problems for victims and local government

- Consensus making
- Merit and demerit for relocation?
- Job in new area?
- Money to build new housing in new area

- Relocation project needs long time, three or five years.
- During those time how can they earn the money to live?
- Each local government lacks the man power to promote making consensus.
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Thank you for your attention