
Global Platform for Disaster Risk Reduction / side event
Lessons for Recovery from Mega-Disaster

Lessons on Recovery from the Great East Japan Earthquake and Tsunami

23 May 2013, Geneva Switzerland

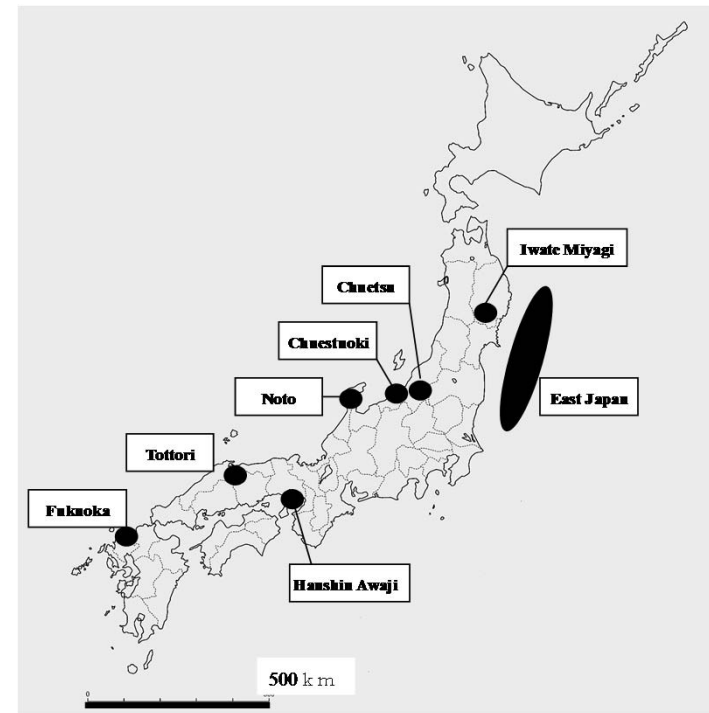
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Character of the Great East Japan Earthquake (GEJE)

- 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)

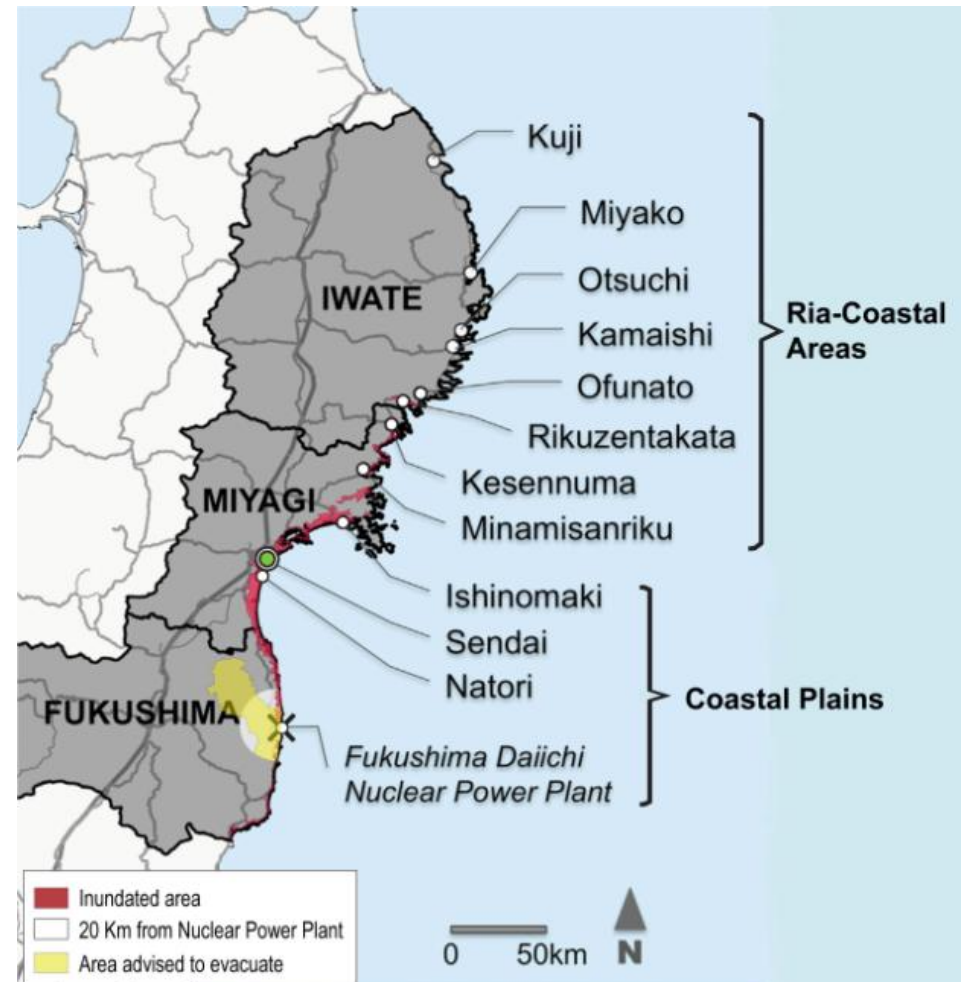
■ Death	15,880	}	Total	20,877 person
■ Missing	2,694			
■ Secondary death	2,303			
■ Solitary death	57			
■ Evacuee	315,195			

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

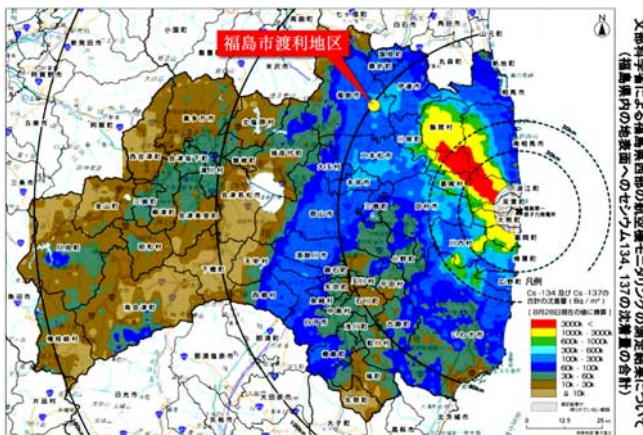


Sendai airport

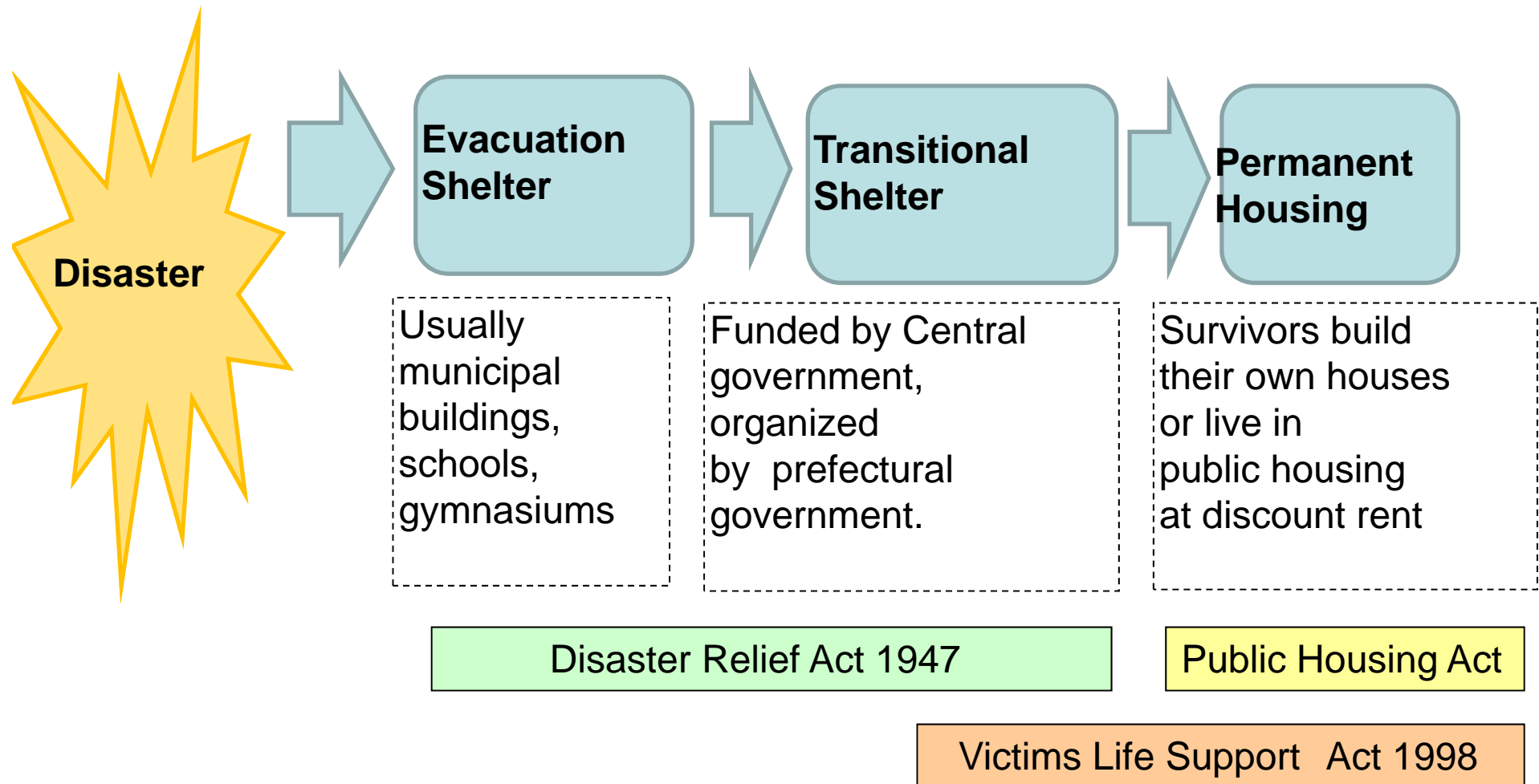


Nuclear radiation contamination

- 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



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

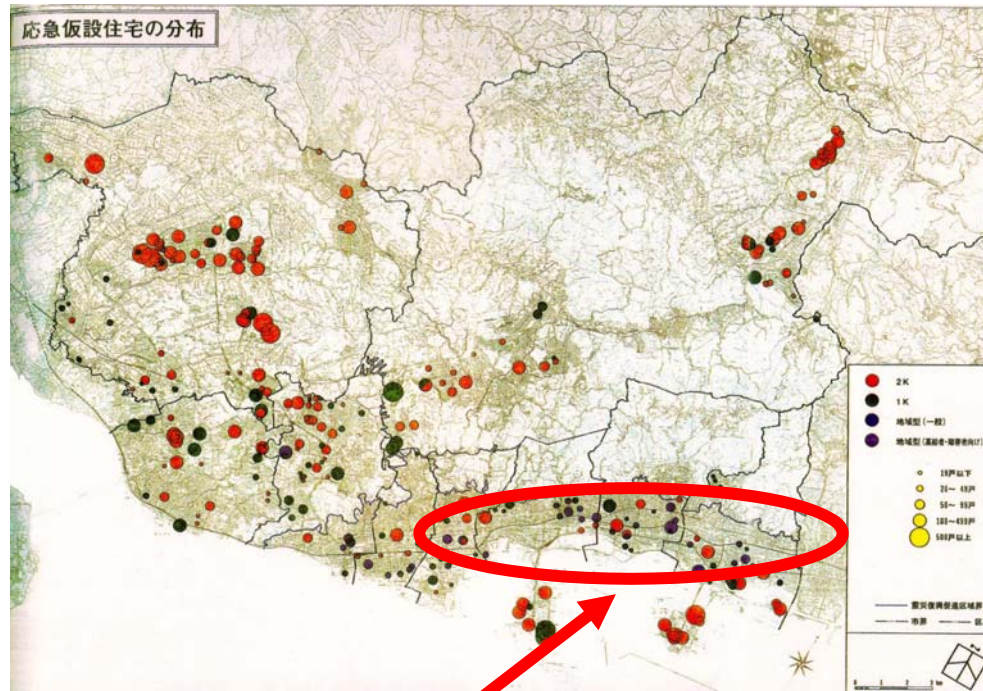
Many problems in temporary housing

- Heat control, noise protection
 - Small space $< 29\text{m}^2$
 - Poor facility
 - High cost ; 6 mill. yen/unit
 - Inconvenient location
 - Losing community
-
- These problems are well known from Kobe earthquake lessons.



Additional work to attach heat insulation panel.

Temporary housing, Kobe case 1995



Affected area

Total number of temporary
housing ; 48,300 units

Mountainous site



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



High-rise public housing in Kobe

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.

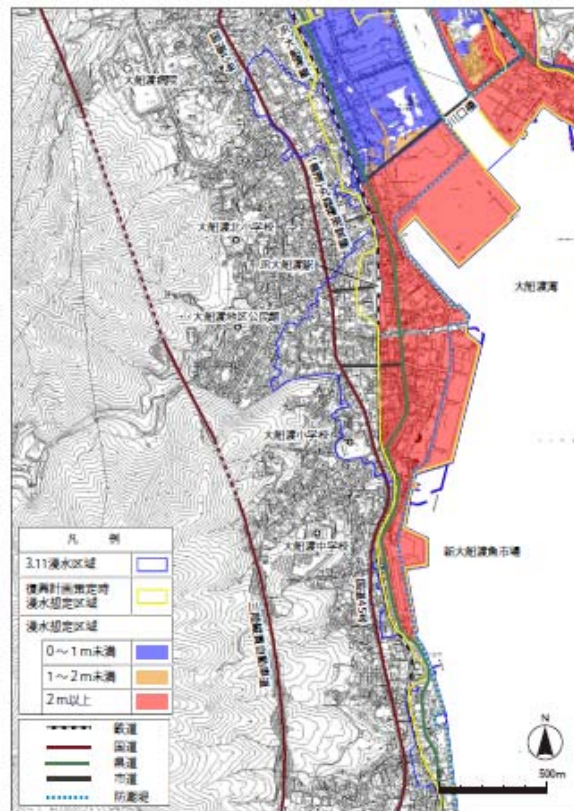
Ofunato city, Iwate pref.



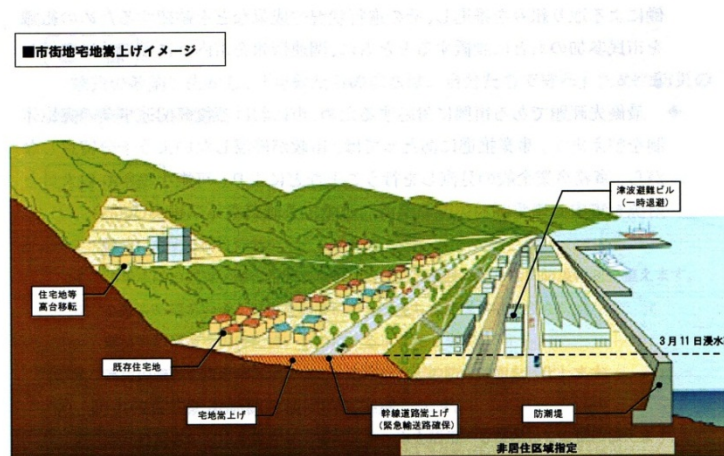
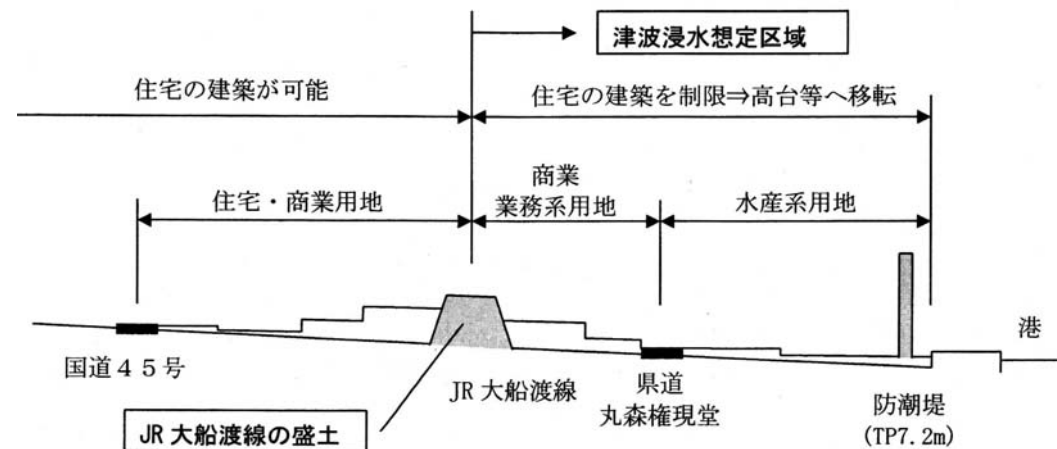
Land use plan

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