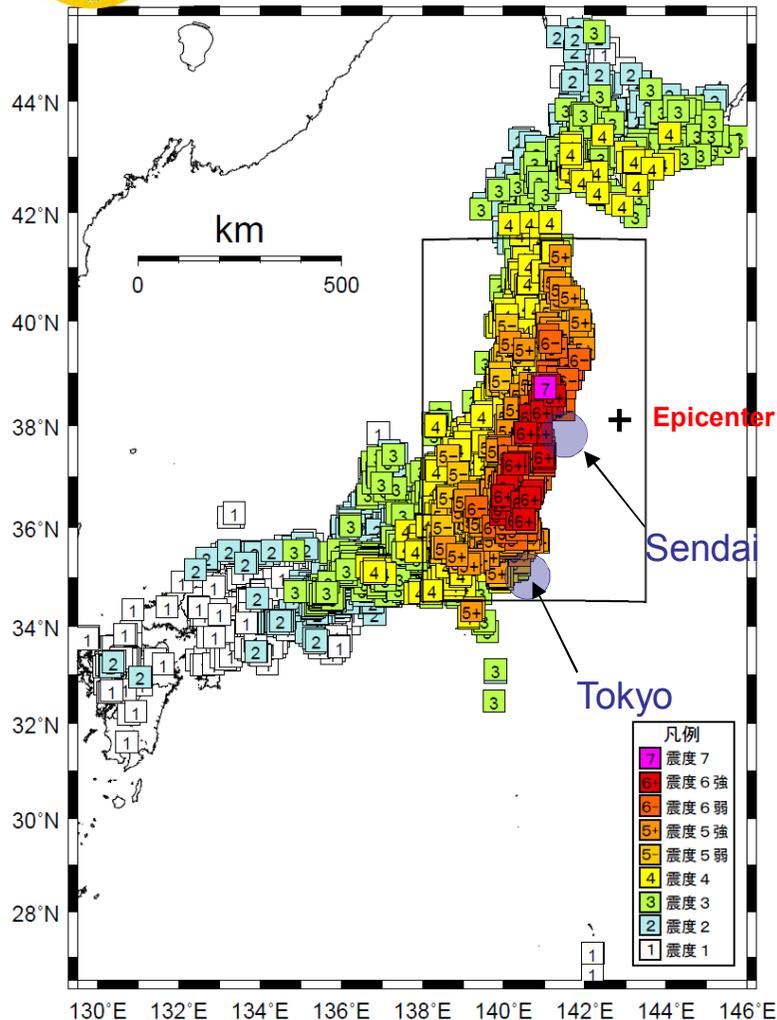


# The Current State of Reconstruction in Sendai City





# Outline of the Great East Japan Earthquake[1]



(Source: Japan Meteorological Agency)

Source: Earthquake and Tsunami Warning, The 2011 off the Pacific coast of Tohoku Earthquake (Japan Meteorological Agency)

**The largest earthquake in Japan's recorded history**

**The fourth-largest earthquake in the world since 1900**

## Time of Occurrence

**March 11, 2011 (Fri.) 14:46**

## Location of Epicenter

**Off the Sanriku Coast (38.1° North, 142.5° East)**

## Magnitude

**9.0**

## Greatest Seismic Intensity

**7 (Northern Miyagi Prefecture)**

**[Greatest Seismic Intensity in Sendai]**

**6 Upper (Miyagino Ward)**

## Tsunami Warning

**March 11, 14:49**

**Major tsunami warning issued for the Pacific Coast of the Tohoku region**

## Tsunami height, time of impact

**Sendai Port 7.2 m (estimated)**

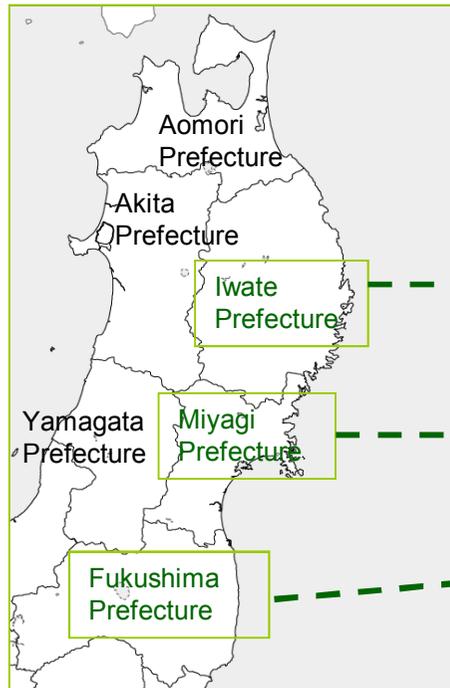
**(The first tsunami wave arrived about 1 hour after the earthquake occurred)**



# Outline of the Great East Japan Earthquake[2]

## Damage in Tohoku by Area

The 2011 off the Pacific Coast of Tohoku Earthquake (the Great East Japan Earthquake) Report 147, (Fire and Disaster Management Agency, Disaster Countermeasures Office)



	Greatest Seismic Intensity	Casualties (as of March 11, 2013)	Damaged Buildings (as of March 11, 2013)
Nationwide	7	Dead: 18,493 Missing: 2,683 Injured: 6,217	Complete: 128,801 Half: 269,675 Partial: 756,794
Iwate Prefecture	6-low (Ofunato City, etc.)	Dead: 5,034 Missing: 1,151 Injured: 211	Complete: 18,370 Half: 6,558 Partial: 14,139
Miyagi Prefecture	7 (Kurihara City)	Dead: 10,427 Missing: 1,302 Injured: 4,144	Complete: 85,259 Half: 152,875 Partial: 224,050
Fukushima Prefecture	6-high (Kunimi Town, etc.)	Dead: 2,922 Missing: 226 Injured: 182	Complete: 21,141 Half: 72,714 Partial: 166,015
Aomori Prefecture	5-high (Hachinohe City, etc.)	Dead: 3 Missing: 1 Injured: 111	Complete: 308 Half: 701 Partial: 1,005
Akita Prefecture	5-high (Akita City, etc.)	Injured: 11	Partial: 5
Yamagata Prefecture	5-high (Yonezawa City, etc.)	Dead: 3 Injured: 45	Half: 14 Partial: 1,183



Kesenuma City,  
Miyagi Prefecture



Shirakawa City,  
Fukushima Prefecture

Miyako City,  
Iwate Prefecture



Photo Source: Ministry of Internal Affairs and Communications, Fire and Disaster Management Agency



# Damage in Sendai



## ◆ Building damage (as of September 8, 2013)

	In Sendai
Completely collapsed	30,034
Severely damaged	27,016
Partially damaged	82,593
Minor damage	116,046

## ◆ Casualties (as of September 30, 2013)

	In Sendai	
		Sendai Residents
Death Toll	908	813
Missing	30	
Injured	2,275	

※Sendai residents who died in the disaster: 987  
 (Sendai residents who died outside of Sendai: 174 )



## ◆ Overall damage in Sendai (as of January 29, 2012) Approximately 1.3684 trillion JPY



# Damage caused by the tsunami



Houses swept away by the tsunami (Near Sanbontsuka, Wakabayashi Ward)



# Damage caused by the tsunami

Arahama Elementary School



Approximately 250 people evacuated to the school rooftop when the tsunami struck.



(Pre-Disaster Arahama Area, Wakabayashi Ward)



Area where only the foundations of houses remain

(Post-Disaster Arahama Area, Wakabayashi Ward)



# Damage to residential land in hilly areas



(Otoya, Taihaku Ward)



(Matsumorijingahara, Izumi Ward)



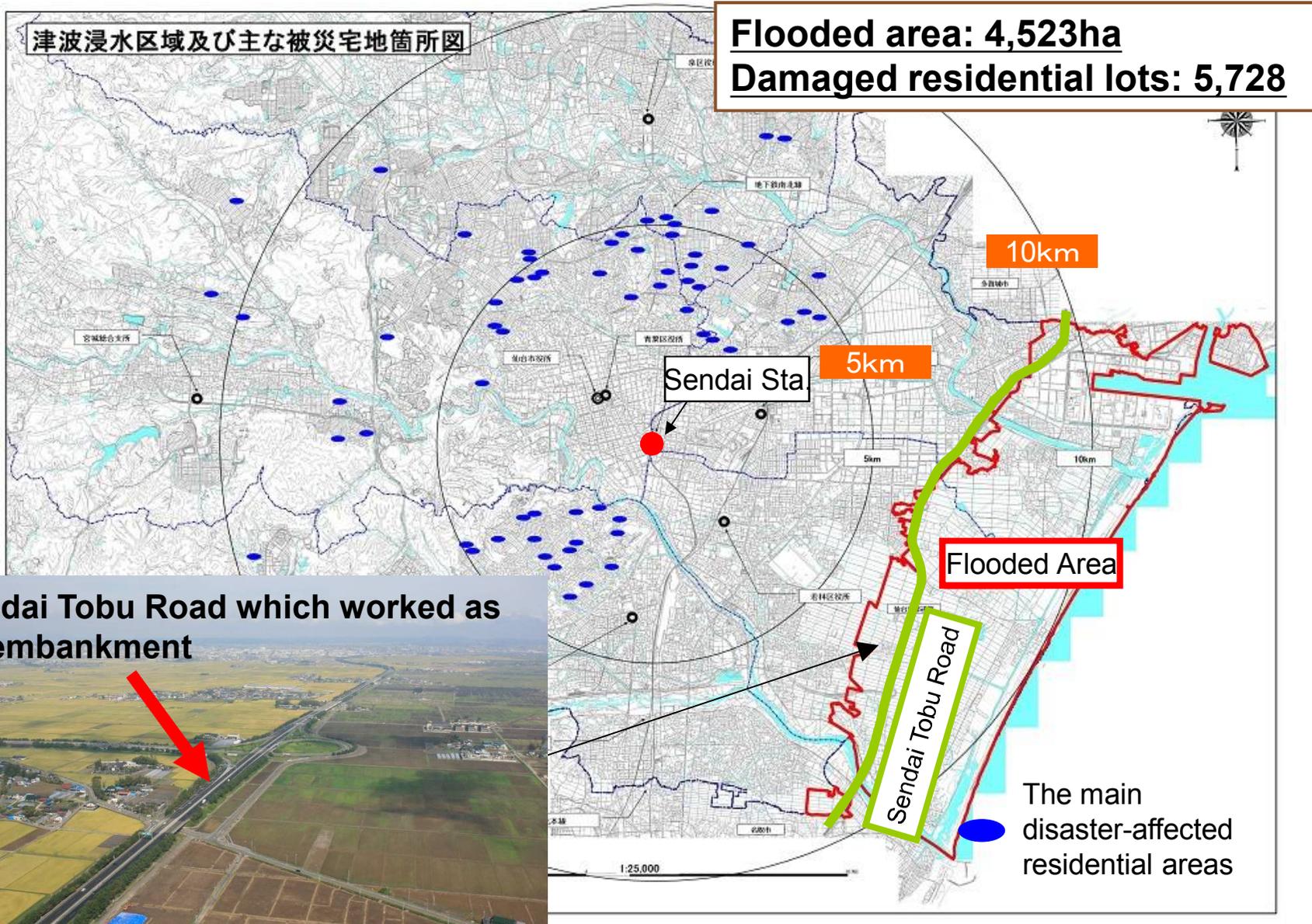
(Oritate, Aoba Ward)



(Midorigaoka, Taihaku Ward)

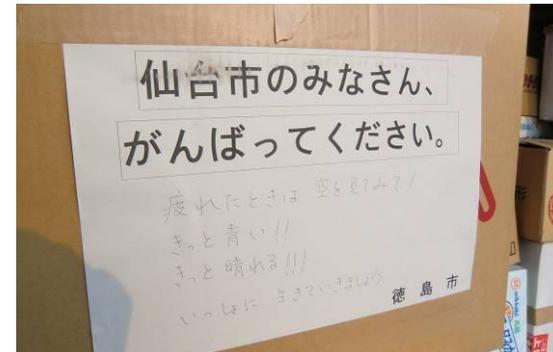
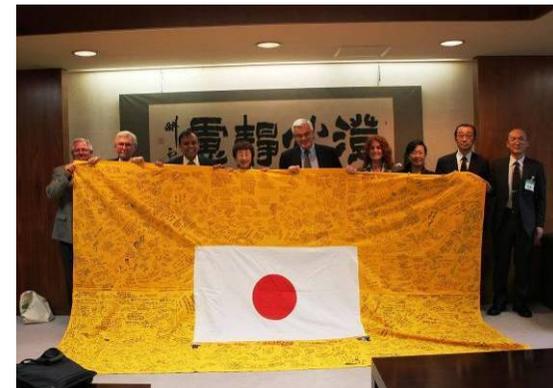


# Areas flooded by the tsunami and disaster-affected residential areas





# Support from inside and outside the country



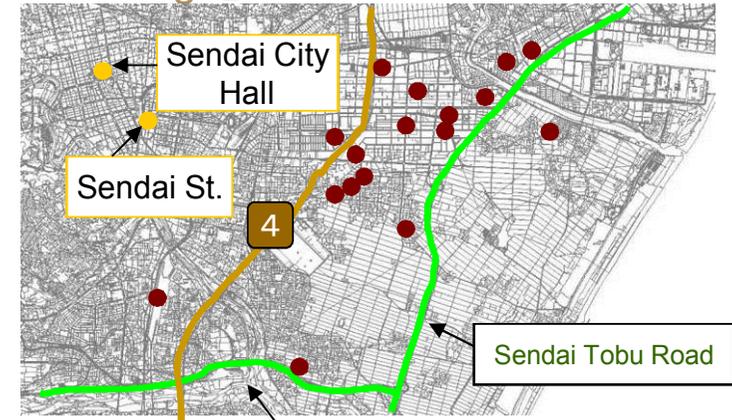


# Construction of temporary housing

【Number of residing households】

	Mar. 30, 2012	Sep. 1, 2013	Ratio
<b>Prefabricated temporary Housing</b>	1,346	1,102	11.4%
<b>Leased private housing</b>	9,838	7,806	<b>81.1%</b>
Leased Municipal housing and others	825	721	7.5%
<b>Total</b>	12,009	<b>9,629</b>	100%

【Location of prefabricated temporary housings】



Area of residence at the time of the disaster

**Total (N= 9,629 households)**

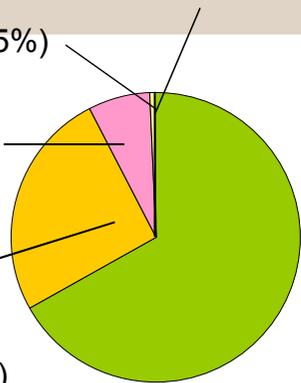
Other / Unknown  
12 (0.1%)

Iwate Pref. 44 (0.5%)

Fukushima Pref. 675 (7.0%)

Miyagi Pref. (excluding Sendai City) 2,447 (25.4%)

Sendai City 6,451 (67.0%)



One third are from outside of Sendai City  
(less than 10% are from Fukushima Prefecture)



Sendai Nanbu Road  
● Temporary Housing

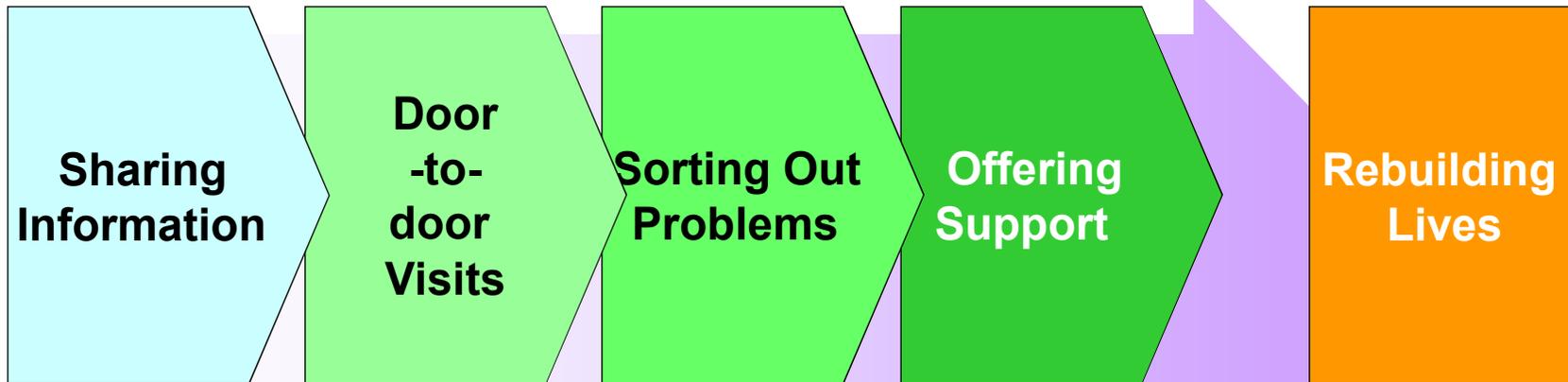


(Asuto Nagamachi temporary housing)



# Efforts to Rebuild Peoples' Lives

◆ Multifaceted support with the collaboration of related organizations are offered to assist people living in temporary housing in order to enable them to get back to their normal lives such as rebuilding their homes.



The Post-Disaster Reconstruction Bureau primarily shares the current circumstances with support organizations including Ward Offices, Social Welfare Council and NPOs.

Support staff visit each households and understand their issues in everyday lives such as rebuilding homes and health problems.

Work to find solutions to problems keeping people from living independently through home visits and working with support organizations.

Multifaceted support is provided in collaboration with our supporting parties and related organizations based on our guidelines.

**Number of home visits**  
**7,980**

(As of the end of Aug 2013)

※including 647 households that could not be reached by multiple telephone calls or visits)



# Debris removal

Estimated amount of debris produced in Sendai City

Approx. **1.35 million tons**  
(About **4 years** worth of the city's processing capacity)



## Source

Roughly classified into:

- combustible
- non-combustible
- recyclable



## Collection site

Established 3 debris collection sites (100 ha total) and temporary treatment facilities in the eastern coastal area  
Subdivided into over 10 categories including **concrete, home appliances, wood, etc.**



**December 2011** Removal of debris completed  
**September 2013** Incineration completed  
**March 2014** Planned completion of processing  
(Including restoration of debris collection sites to original state)

Percentage of disposal to the total amount

**As of August 31, 2013 95% treated**

50% or more of the debris is targeted for recycling

**As of August 31, 2013 74% recycled**



(Temporary incinerator)



(Stacked damaged vehicles)



(Piles of home appliances)

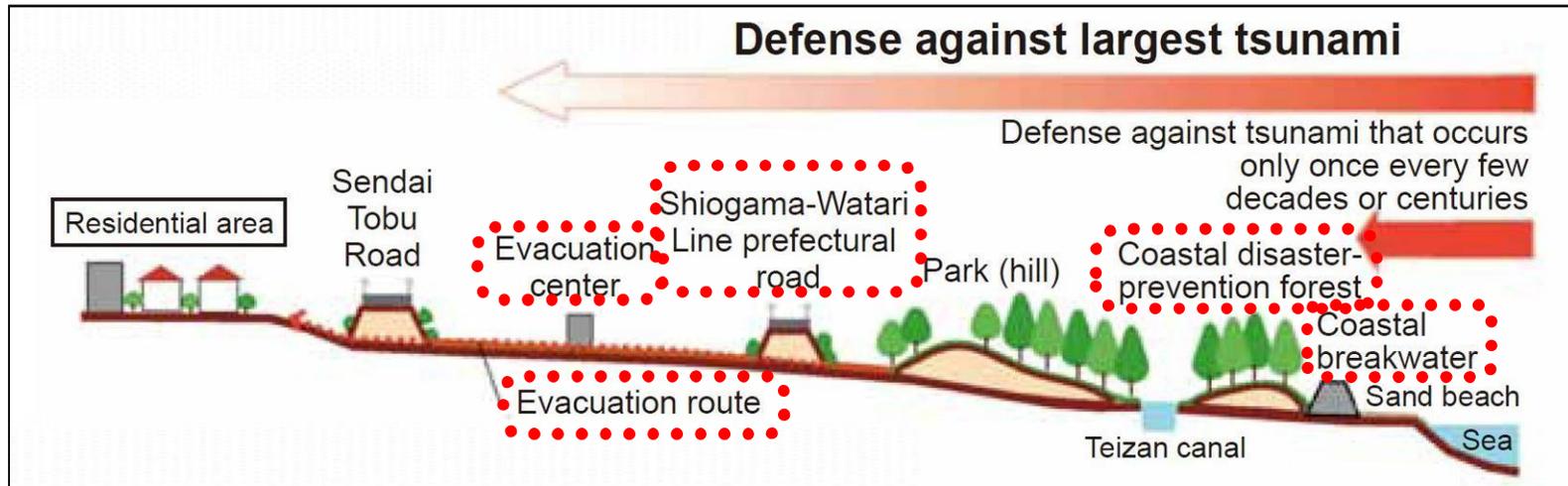


(Mound of metal)

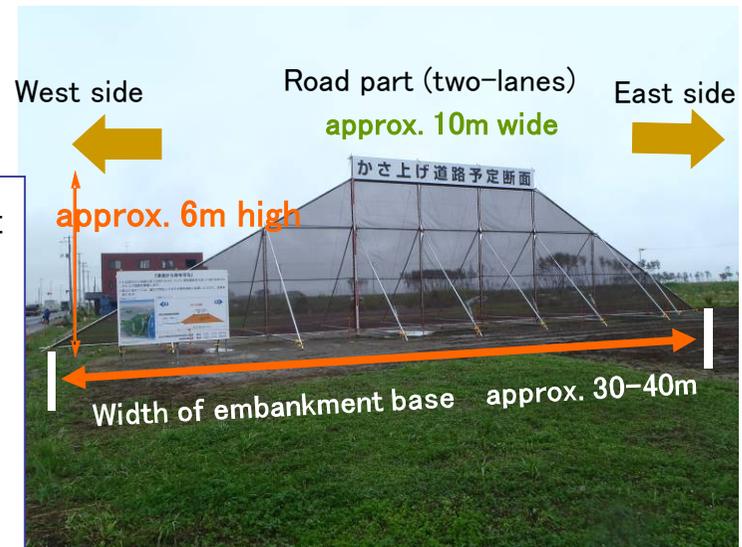


# Tsunami defenses (plan view)

(cross-section view)



## Full-scale model of road elevation





# Tsunami simulations

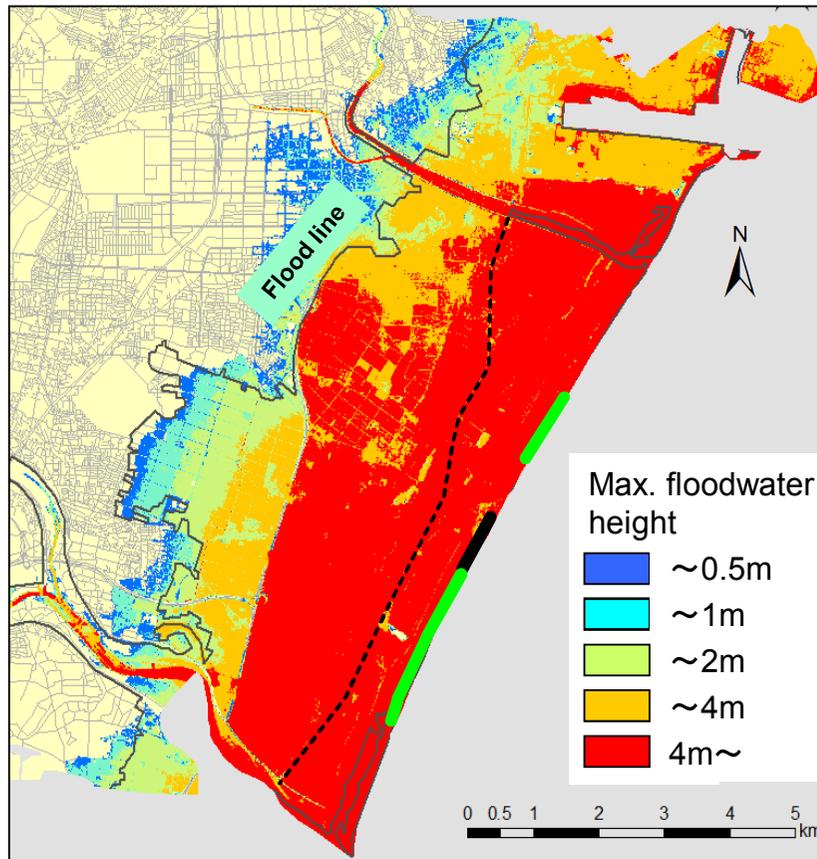
## 1) As a basis for future predictions

Simulation at spring high tide

The March 11 tsunami simulated at spring high tide (T.P.+0.76m) would result in a tide level approx. 1.2m higher than tides on March 11.

Tide level: T.P. +0.76 m  
Coastal embankment T.P.+5.5m  
Coastal embankment T.P.+6.2 m

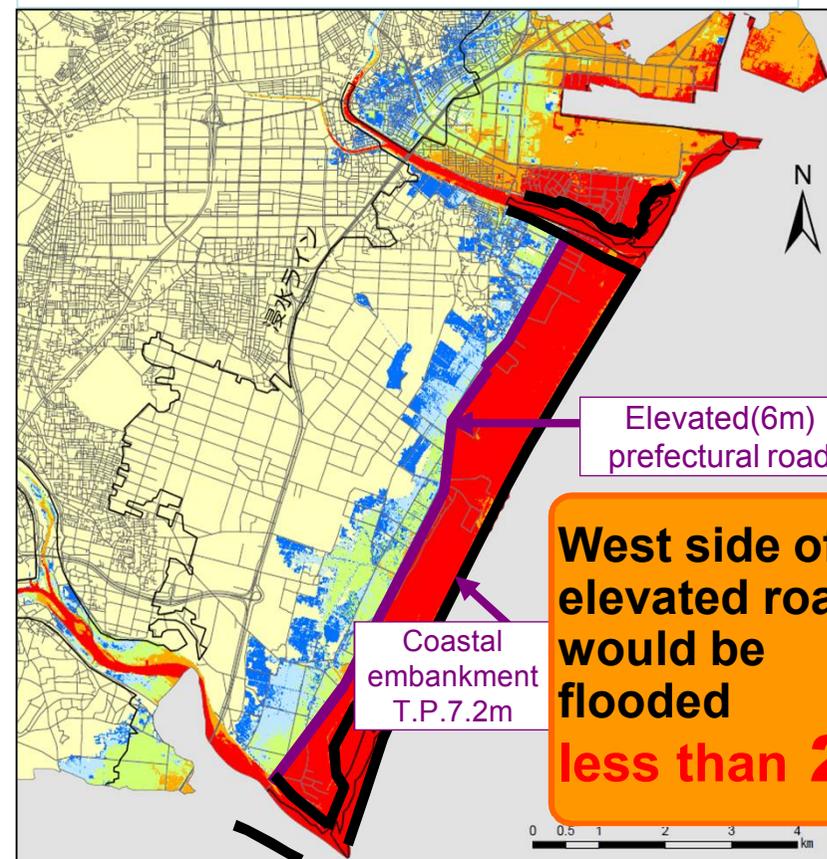
Embankment heights and locations are from the time of the disaster



## 2) Based on reconstruction plans

1. Coastal and river levees as planned by Japan and prefecture.
2. Raised roadbeds laid over original location of prefectural roads, but changes were made in Okada and Minami Gamo to downsize disaster risk zone.

Tide level: T.P.+0.76m  
Coastal/River embankments T.P.+7.2m  
Raised prefectural road 6m

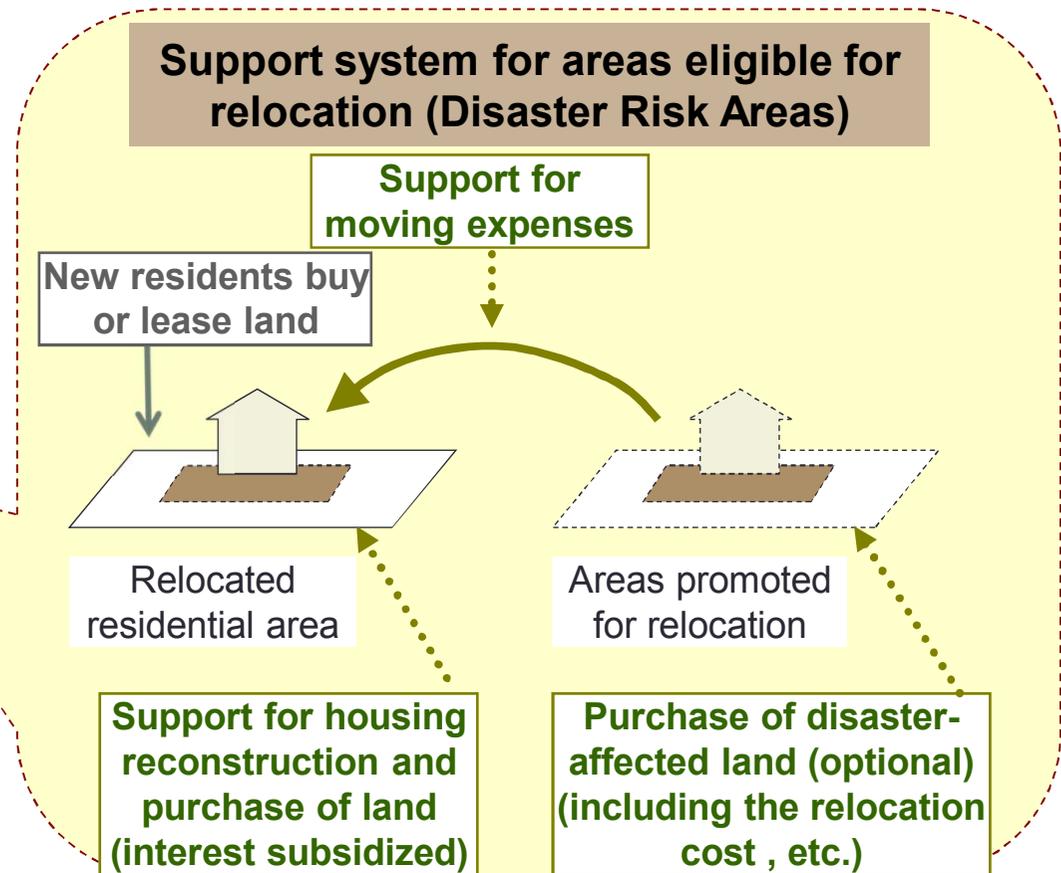
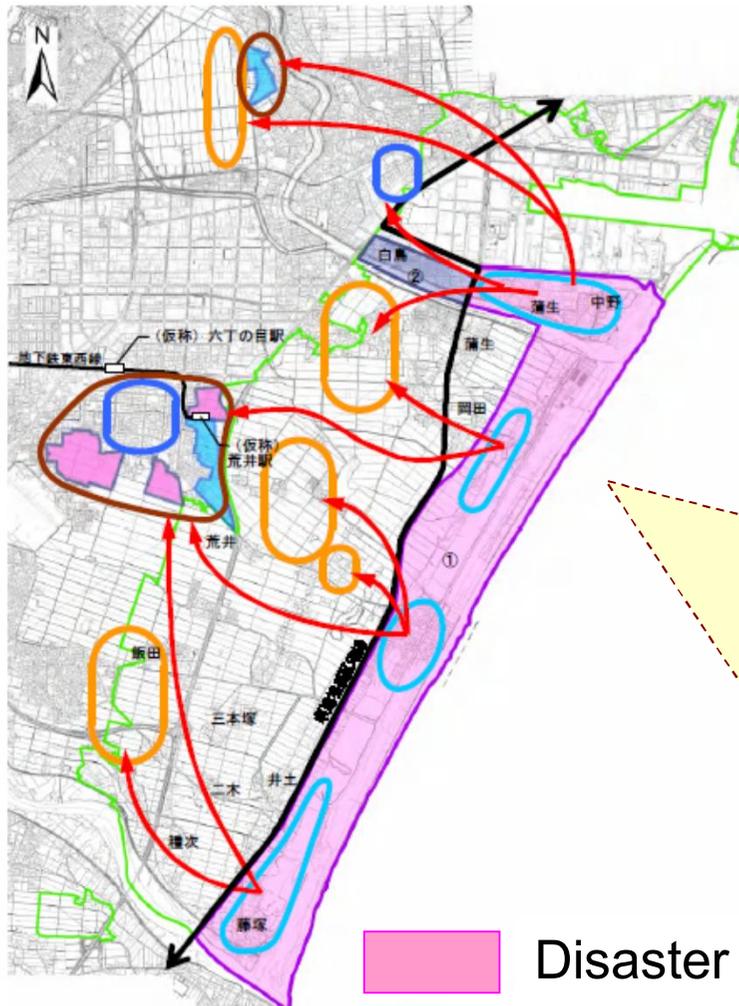


- Terrain (elevation) data: Immediately after the earthquake struck on March 11, 2011 (taking into account land subsidence)
- Applied tsunami scale: Modeled and simulated on the March 11, 2011 tsunami (largest class earthquake in history) by Tohoku University 14



# Rebuilding of housing (1) Disaster-Prevention Collective Relocation

(Plan for Disaster-Prevention Collective Relocation)



Disaster Risk Areas  
Approx.  
**1,540** households

Development of 13 relocated residential areas is scheduled for completion during **FY 2014**



## Rebuilding of housing (2) Restoring and aiding damaged residential land

Of the residential lots in Sendai City damaged by the earthquake,

5,728 were assessed as “dangerous” or “caution required.”

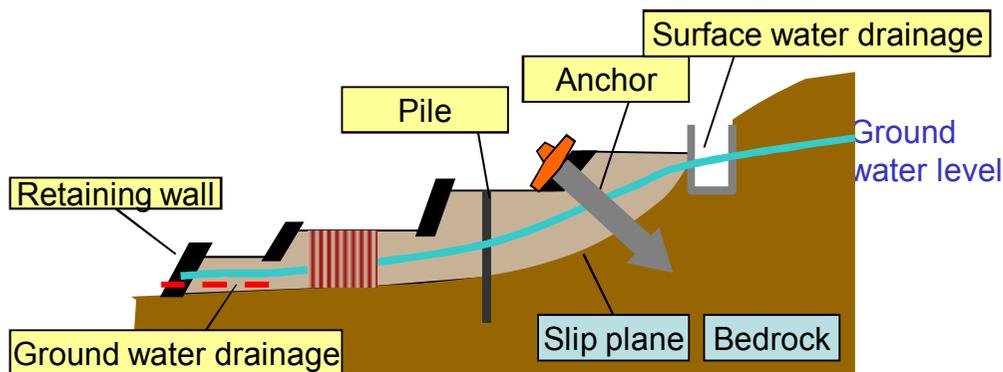
Aid provided for residential land restoration within the public works program area **(Approx. 44%)**

Restoration work is conducted by utilizing subsidy programs including national government reconstruction subsidies for construction fees. As the lots are private properties, land owners bear part of the cost.

Disaster-affected residential land in areas other than those noted on the left **(Approx. 56%)**

For construction works such as rebuilding retaining walls, Sendai City subsidizes 90% of the cost exceeding 1 million JPY when certain requirements are met.

(Conceptual view of a slope collapse and landslide prevention work)



Seikaen area, Aoba Ward



# Rebuilding of housing (3) Development of public reconstruction housing

Planned number of units 3,000



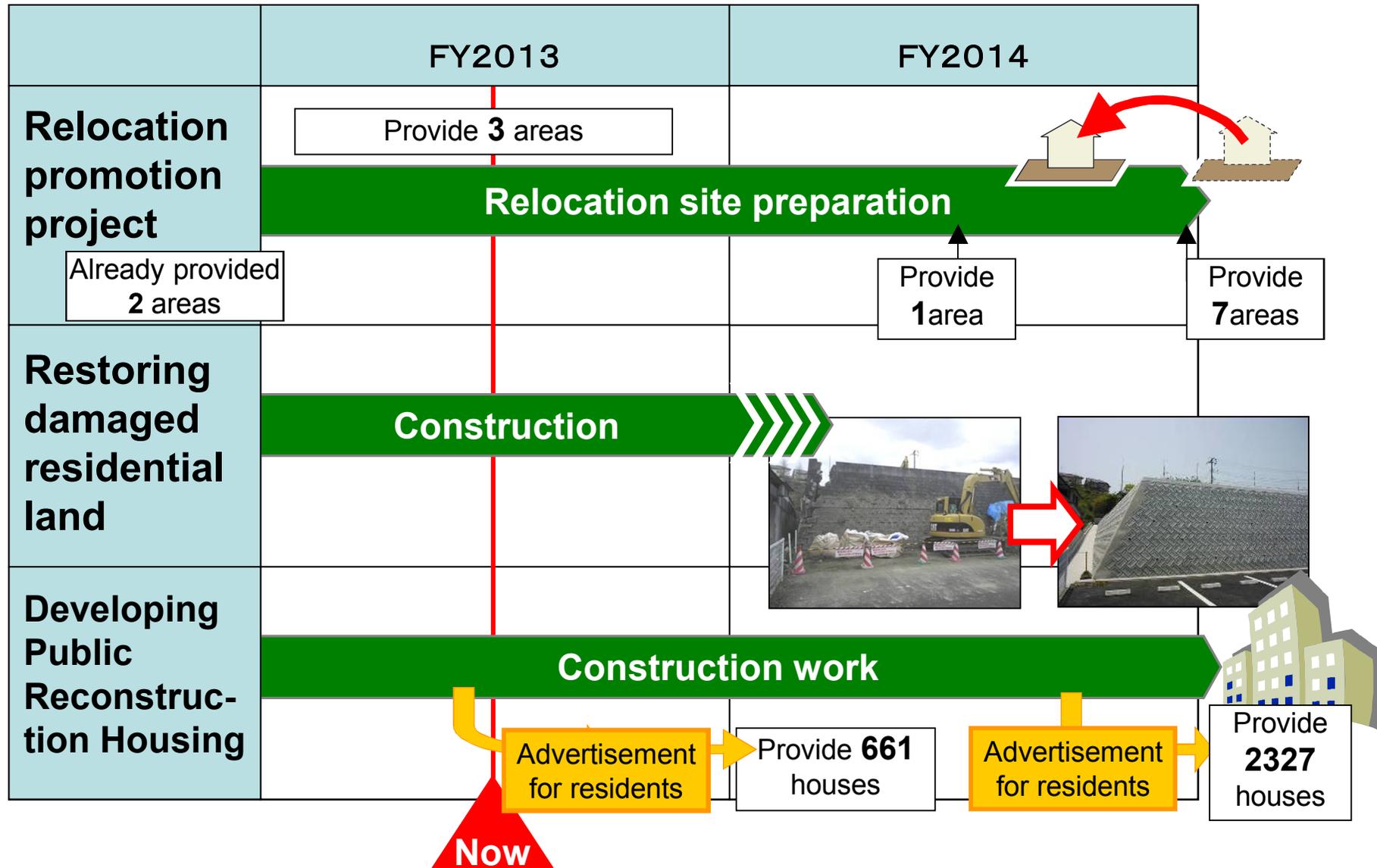
Conceptual image of public reconstruction housing in Tago-nishi



Conceptual image of public reconstruction housing in Arai-higashi



# Schedule for Rebuilding of housing





# Sendai-Miyagi Destination Campaign

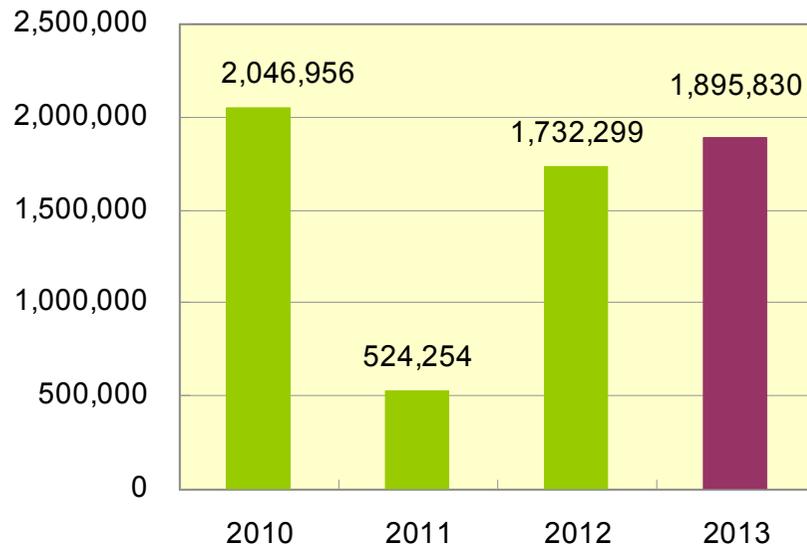
April 1-June 30, 2013



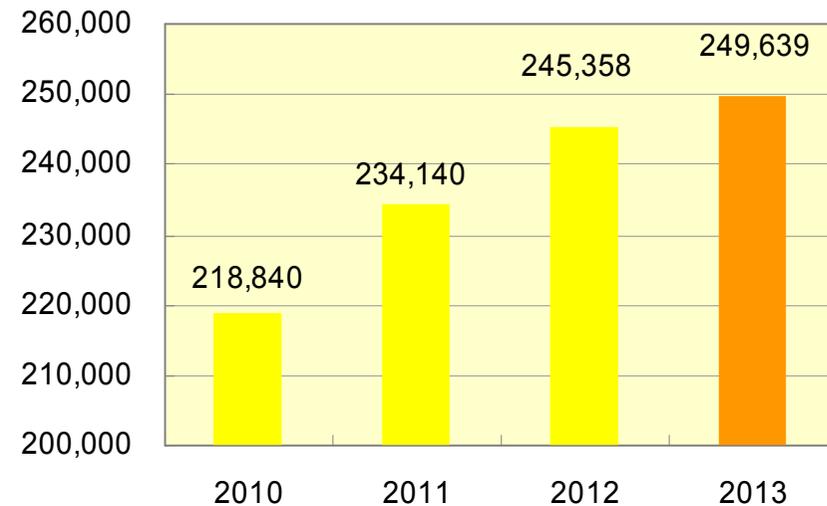
Special Event: Date na Mori Butai  
(Stages of Miyagi's Traditional Performance Art)  
April 13-14, 2013



Number of Inbound Tourists  
(April-June)



Comparison of Overnight Visitors  
(April-June)



\* Data based on sample surveys conducted at major tourist facilities in Sendai City. \* As this is an estimation, future figures are subject to change.