

Special Edition of the Water Policy Journal  
Japan's Case Study

# Lessons Learned from Mega Disasters and Future Policy Development on Water-related Disaster Management in Japan

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Hideo Tokuyama

Vice Minister for Engineering Affairs,  
Ministry of Land, Infrastructure, Transport  
and Tourism (MLIT), Japan

# Initial response after the Great East Japan

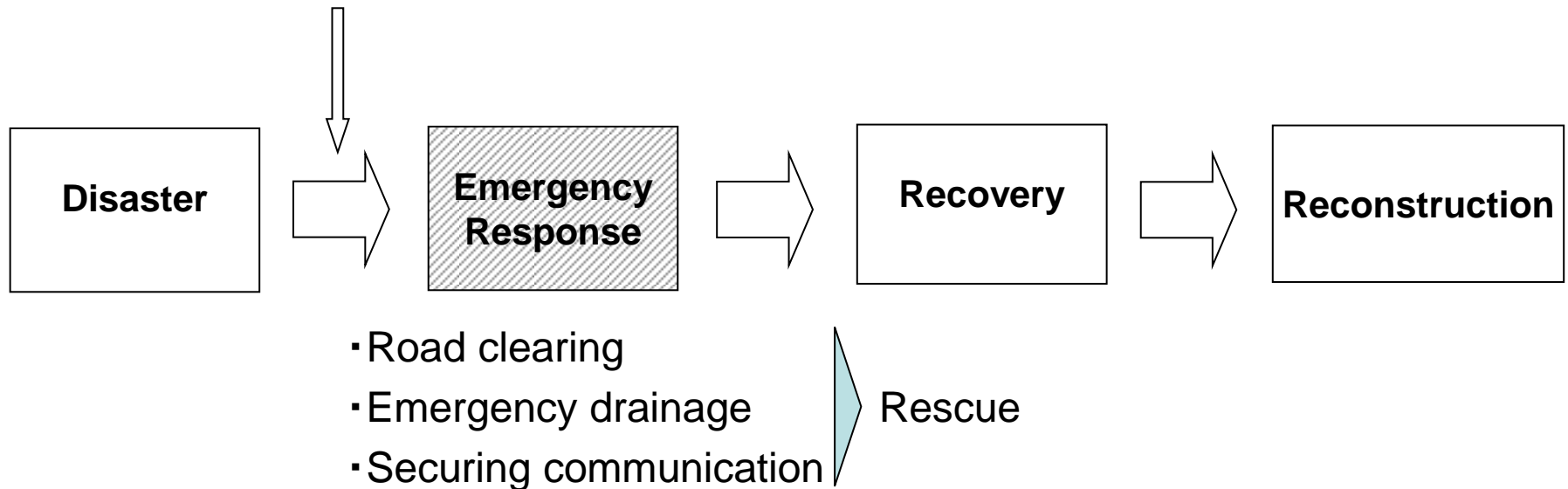
Disaster operation room of the Tohoku Regional Development Bureau of MLIT on March 11 7:53 p.m., the night of the disaster



# Flow of the operation after the earthquake

37minuts after the  
earthquake

The Bureau's  
Helicopter for disaster  
prevention  
"Michinoku"  
emergency takeoff



# Securing Routes for Rescue and Relief

Before clearing





# Operation "Comb"

**First Step** Secured vertical routes (Tohoku Expressway and National Route 4)

**Second Step** Secured east-west routes (enable access from to the coastal areas)

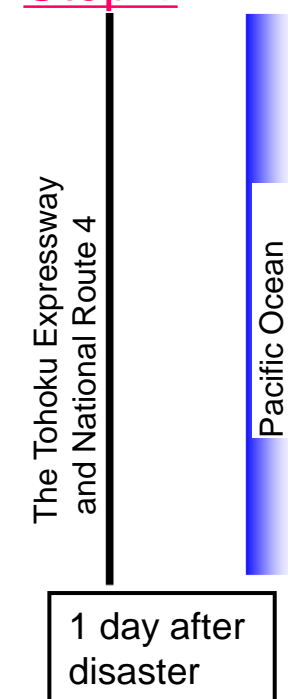
**March 12<sup>th</sup>** : 11 of 16 routes cleared

**March 15<sup>th</sup>** : 15 routes cleared

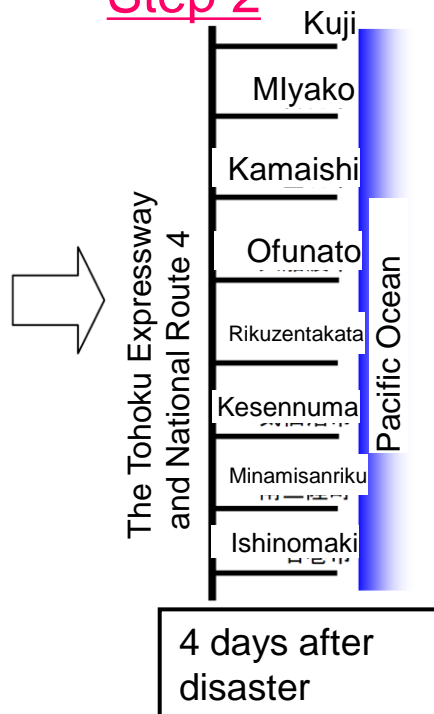
**Third Step** Secured coastal routes

**March 18<sup>th</sup>** : 97% of coastal National Routes 45 & 6 cleared (operation completed)

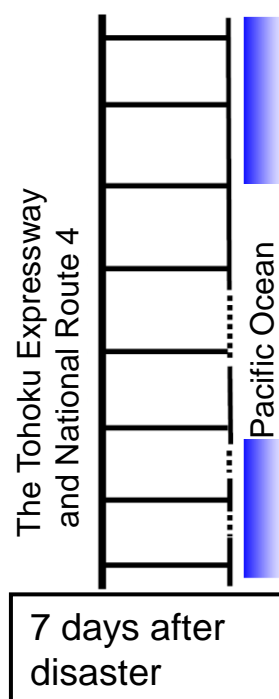
## Step 1



## Step 2



## Step 3



## Map of Operation Comb



# Securing Routes for Rescue and Relief

After clearing



# Drainage operation across disaster affected areas

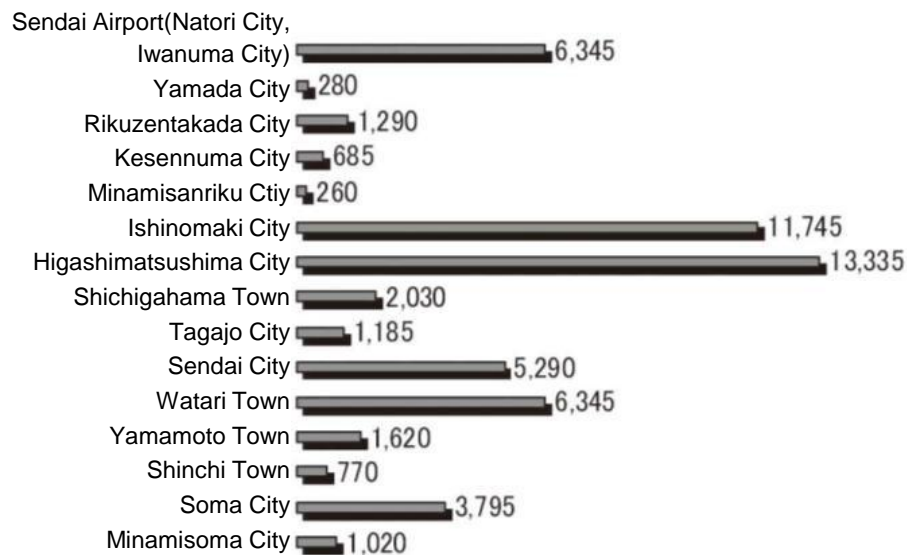
Inundated Area : Approx. 170km<sup>2</sup>

Inundation Volume : Approx. 112 million m<sup>3</sup>

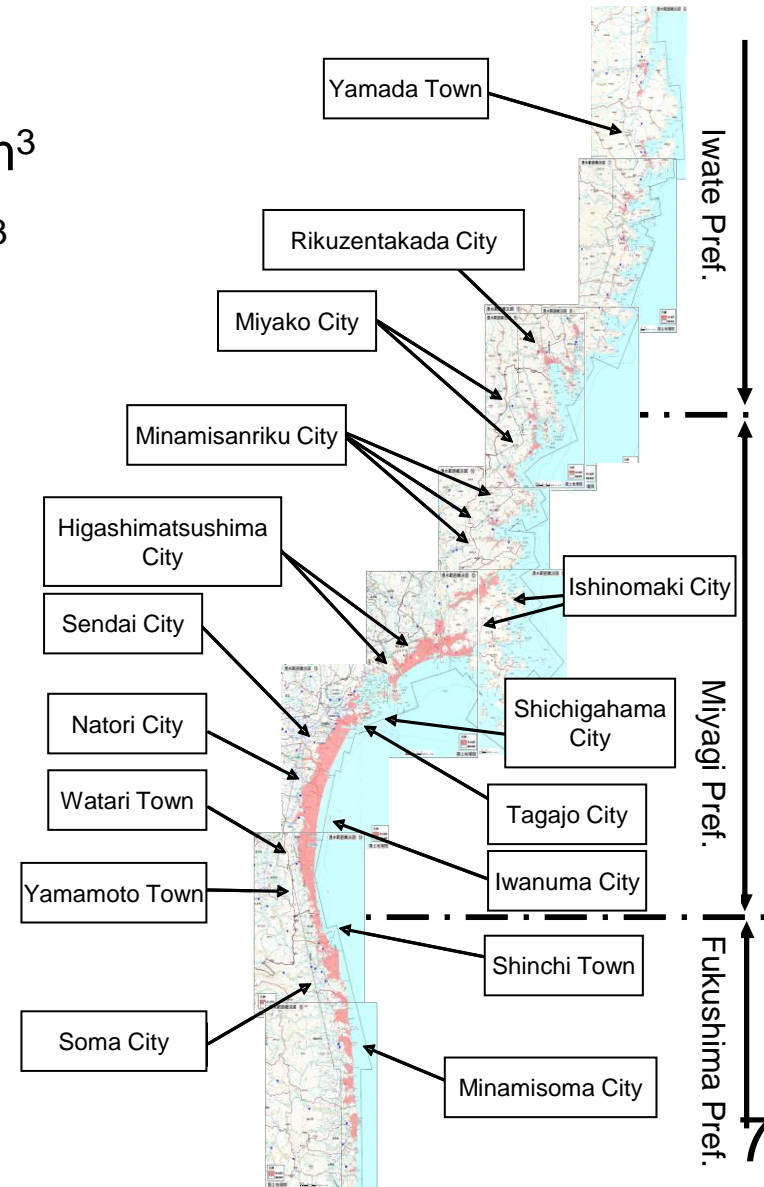
Drainage Volume : Approx. 56 million m<sup>3</sup>

(※16 municipalities, 67 locations)

Estimated Drainage Volume  
at each municipality (thousand m<sup>3</sup>)



## Location of drainage operation





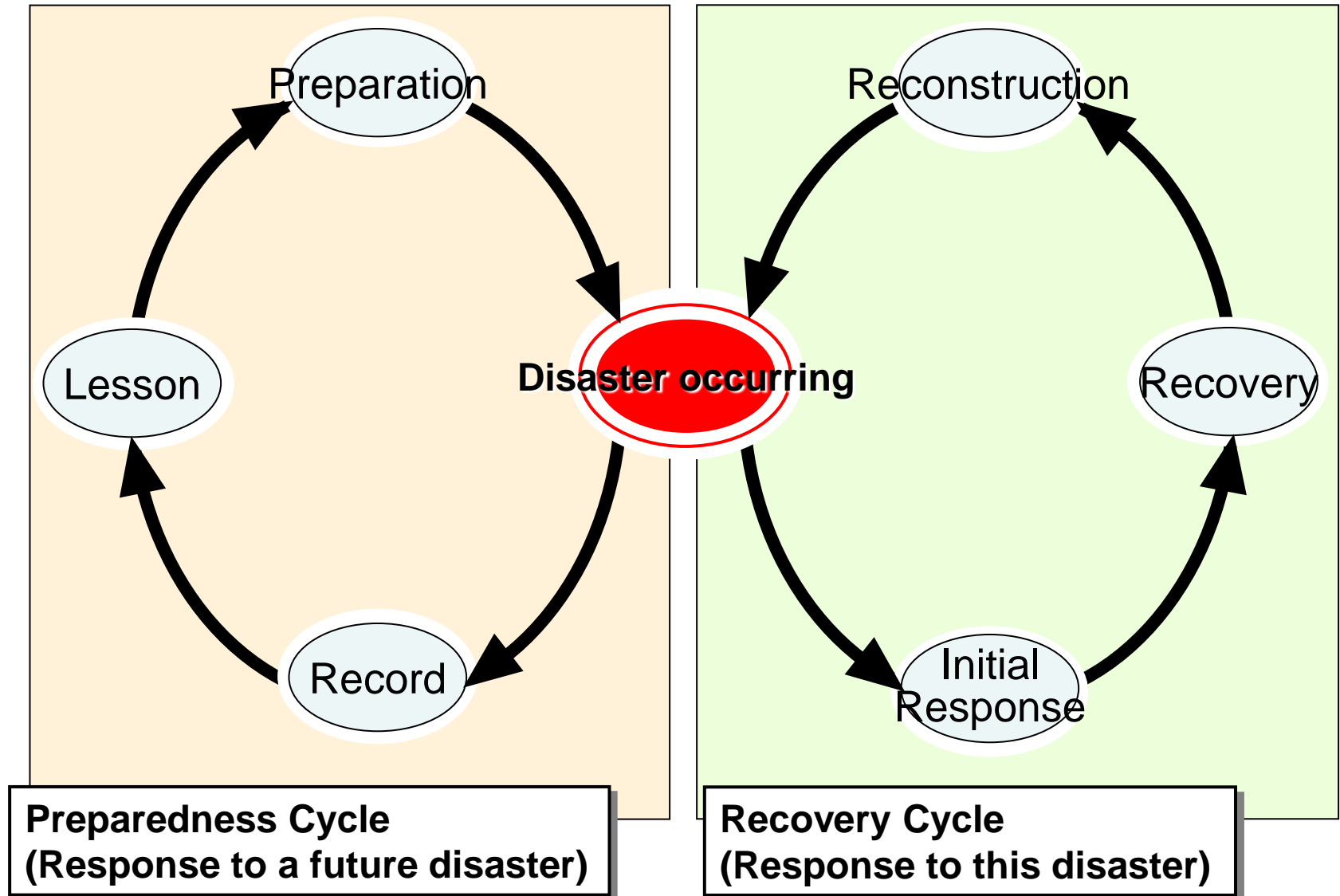
# Emergency Drainage Operation





# Cycle of Disaster Management

## The Cycle of Disaster Management



# First Message to be conveyed to the world through HELP

**Strengthening disaster management investment for “disaster prevention” for protection of economic development gains and consistent progress of the economic growth**

○Based on the experience of the Great Hanshin-Awaji Earthquake, **seismic reinforcement of road bridges were implemented** across the country.  
○Reinforced bridges were prevented from critical damage(i.e. fallen or collapsed).

**January 1995**  
**“the Great Hanshin-Awaji Earthquake”**



**March 2011**

**“the Great East Japan Earthquake”**

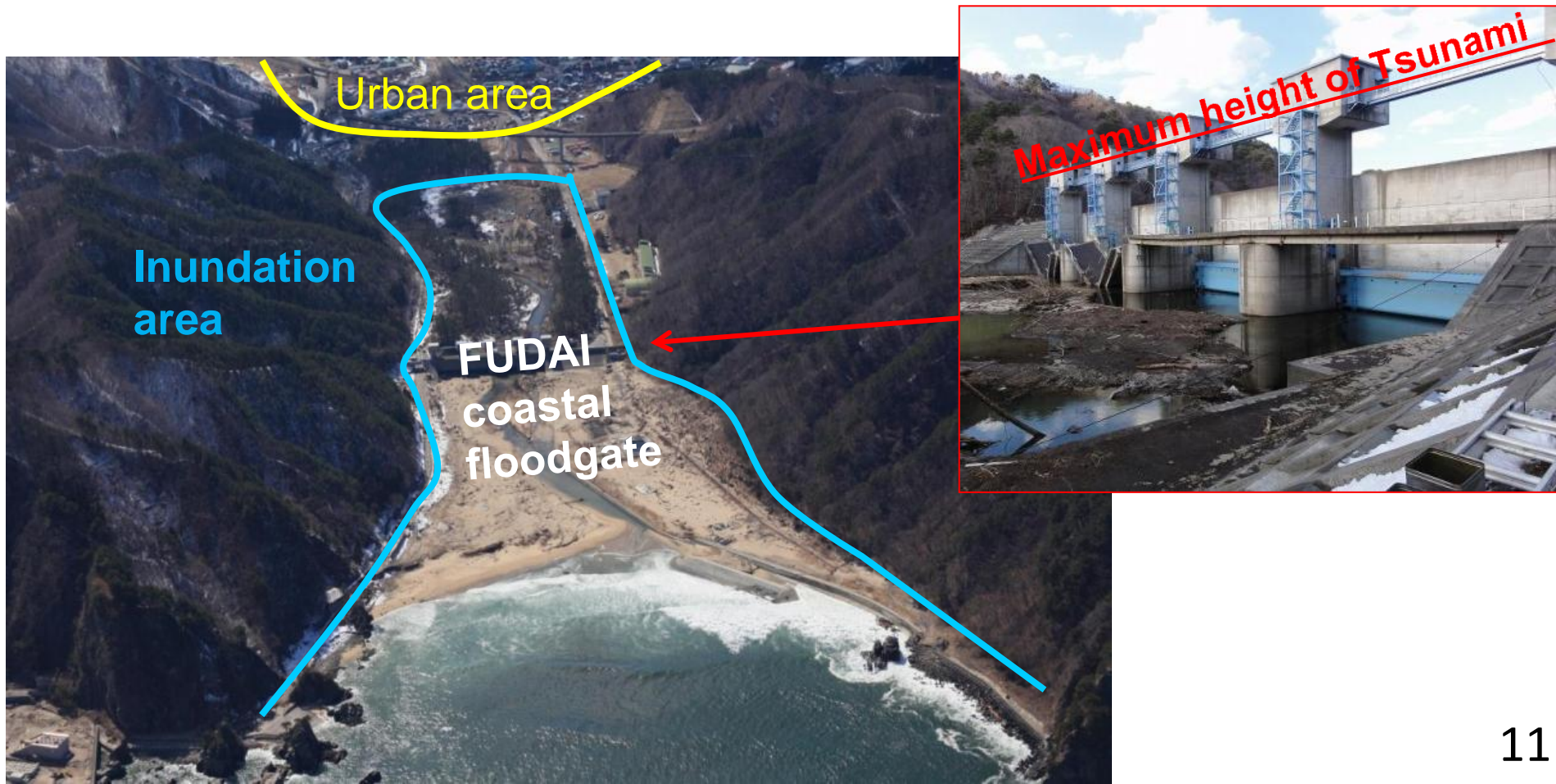
**Anti-falling device**



## Second Message to be conveyed to the world through HELP

**Appropriately combining structural and non-structural measures for protecting human lives and properties from disasters**

○ In the Great East Japan Earthquake, many human lives were lost in many of the coastal regions while **the coastal floodgate protected the urban areas** in Fudai village in Iwate prefecture.





# Third Message to be conveyed to the world through HELP

**Incorporating disaster risk reduction, not only in “disaster management” projects but also in all other sectors for minimizing disaster impacts**

- 7 to 10 meters high road embankment stopped tsunami at about 4km inland
- Lots of local residents evacuated to the top of road embankment  
(Sendai, the Great East Japan Earthquake)



# 4<sup>th</sup> Message to be conveyed to the world through HELP

**Reconstruction and recovery based on the principal of preventing recurrence of future disasters in order to enhance long-term safety against disasters**

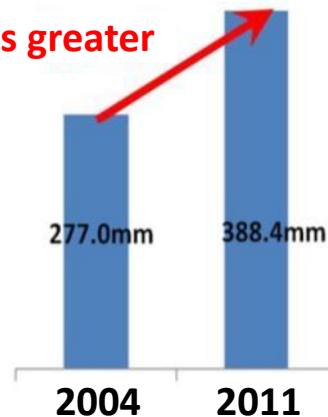
○River improvement after a disaster, aiming to prevent disaster recurrence, contributed to dramatically reducing flood damage.  
(Igarashi and Karita Rivers of Shinano River System)



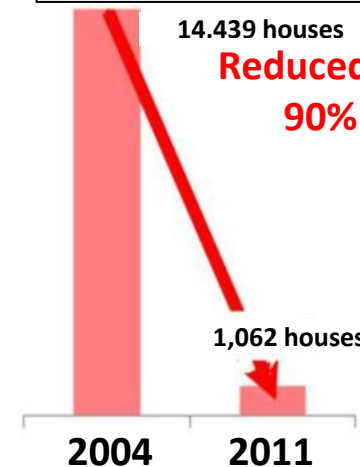
2days basin average rainfall  
(Teiseki Bridge)

Number of Inundated houses

1.4times greater



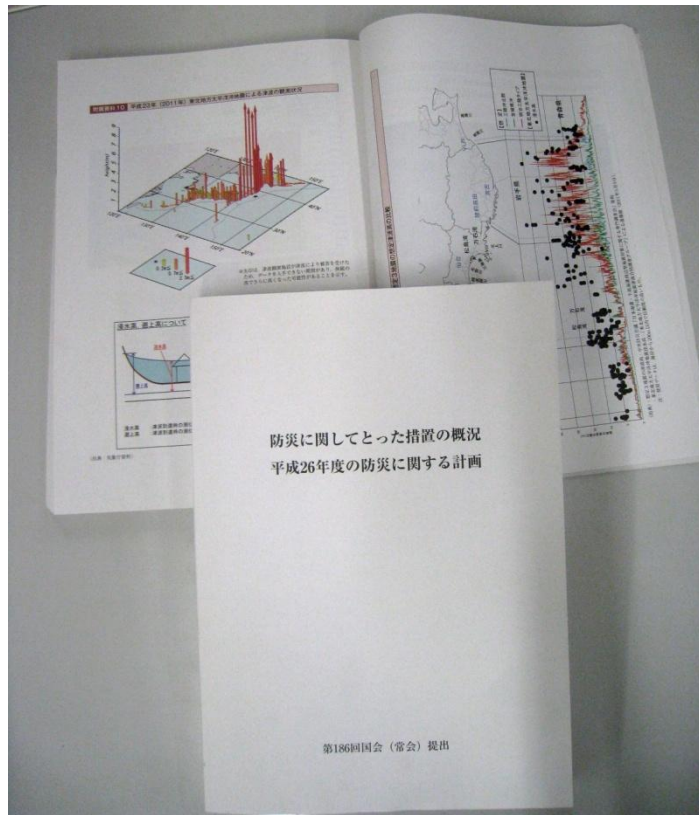
14,439 houses  
Reduced by  
90%





# Fifth Message to be conveyed to the world through HELP

Introducing a mechanism for continuously accumulating disaster records and statics for promoting disaster management



White Paper on  
Disaster Management



Disaster record of  
the Great East Japan Earthquake



## **Summary Message to be conveyed to the world through HELP**

- Strengthening disaster management investment for “disaster prevention” for protection of economic development gains and consistent progress of the economic growth**
- Appropriately combining structural and non-structural measures for protecting human lives and properties from disasters**
- Incorporating disaster risk reduction, not only in “disaster management” projects but also in all other sectors for minimizing disaster impacts**
- Reconstruction and recovery based on the principal of preventing recurrence of future disasters in order to enhance long-term safety against disasters**
- Introducing a mechanism for continuously accumulating disaster records and statics for promoting disaster management**