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Moving Forward As One SENDAI

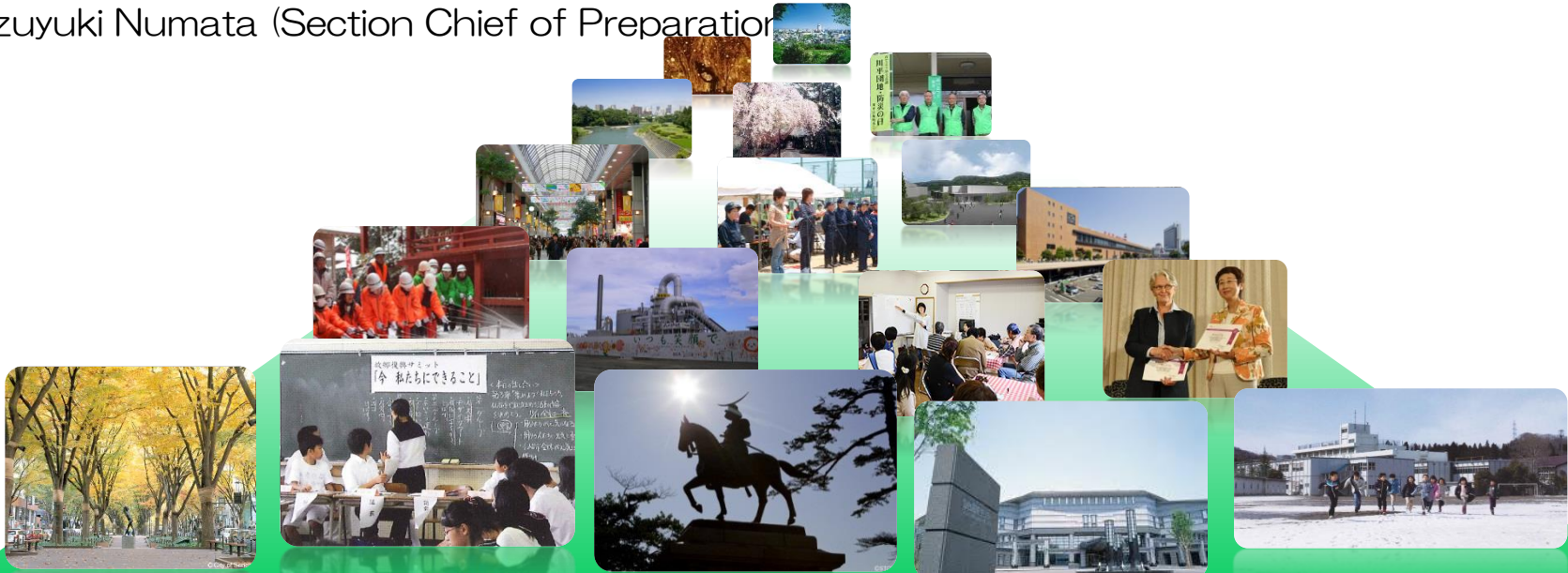
The 3rd UN World Conference on Disaster Risk Reduction ~Message from Sendai, Tohoku

Host City For



UN World Conference on
Disaster Risk Reduction
2015 Sendai Japan

UN World Conference on Disaster Risk Reduction
Local Preparation Office of the 3rd UN World
Conference on Disaster Risk Reduction, Sendai City
Kazuyuki Numata (Section Chief of Preparation)



1 The 3rd UN World Conference on Disaster Risk Reduction



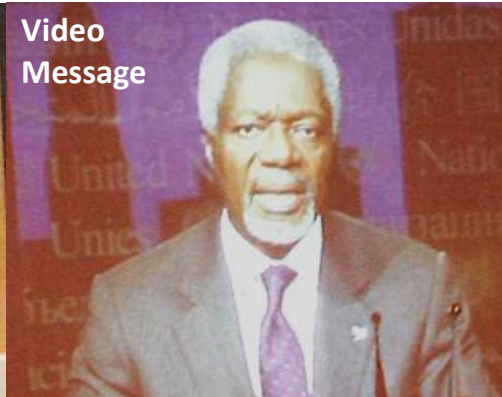
Outline of the Conference

• **Organizer: United Nations**

• **Objectives: To review the progress of the Hyogo Framework for Action (HFA), to further implement the HFA, and to develop the next strategy.**

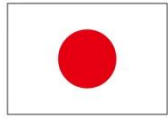
All UN member states, international organizations, and NGOs will participate!

193 countries and regions, **over 5000** participants
(Main conference)



※2005 Conference in Kobe City

Expectations Towards Japan and Sendai



All 3 conferences held in Japan



- Know-how on disaster risk reduction that we learned and improved from many disaster experiences
- World's only city with a population of 1million that has experienced M9.0 earthquake
- Action of evacuation decided their fate. What is the lessons-learnt from the experience that can disseminate to the world?

The international community has expectations for the experience and knowledge of Japan and Sendai regarding disasters and DRR.
It is the area we can demonstrate our **presence and leadership!**

Schedule

2015

3/14
SAT

3/15
SUN

3/16
MON

3/17
TUE

3/18
WED

Main Conference



★ Opening Ceremony

Inter-governmental meetings
various meetings

★ Closing Ceremony

Official visit

Related Events



General Forum

Symposium and Seminar for Citizens

Exhibition

3/19
THU

Welcoming Events



★ Welcoming Reception

Japanese Cultural Experience

Program for Spouses

Information Center, Hospitality

Welcoming Decorations

★ Excursion

2 Importance of investing continuously in Disaster Risk Reduction



Miyagi-ken-oki Earthquake (1978)

Time June 12, 1978 5:14pm

Scale Magnitude 7.4

Damage



Completely destroyed 4,385
Partially destroyed 86,010



Destroyed brick walls etc.
11,740



Deaths 16



Injuries 10,119



Destroyed brick walls



Collapsed building

1981 Major amendment in Building Standard Law regarding earthquake resistance standard

Major disaster reduction policies in Sendai (1978~)

- Anti-seismic enforcement of buildings built before amendment of building standard law
- Lifeline with anti-seismic structure and its multiplexing
- Removal of brick walls with high risk of collapsing
- Improve DRR education and drills
- Wider collaboration with other cities

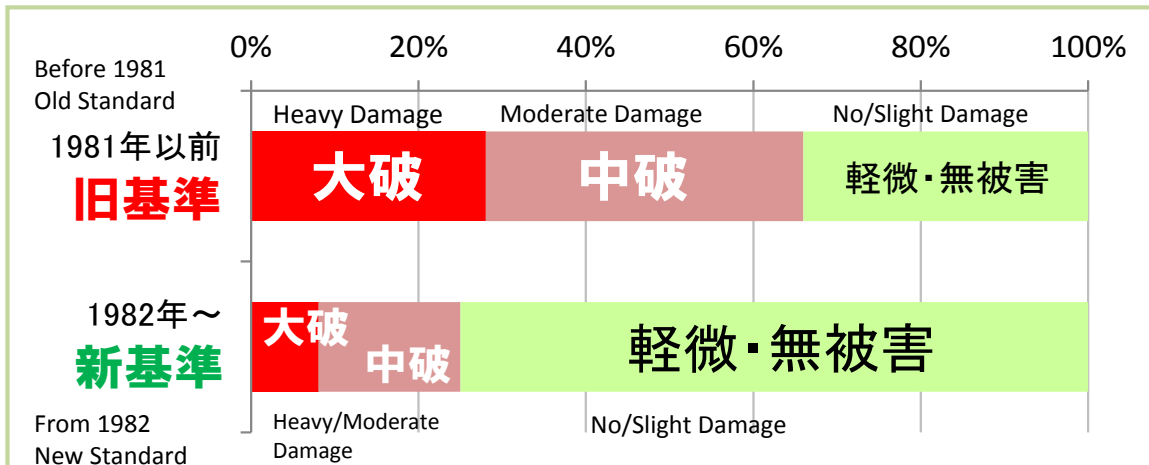


Drill in kindergarten

Importance of anti-seismic structure

It is highly important for buildings to be earthquake-proof

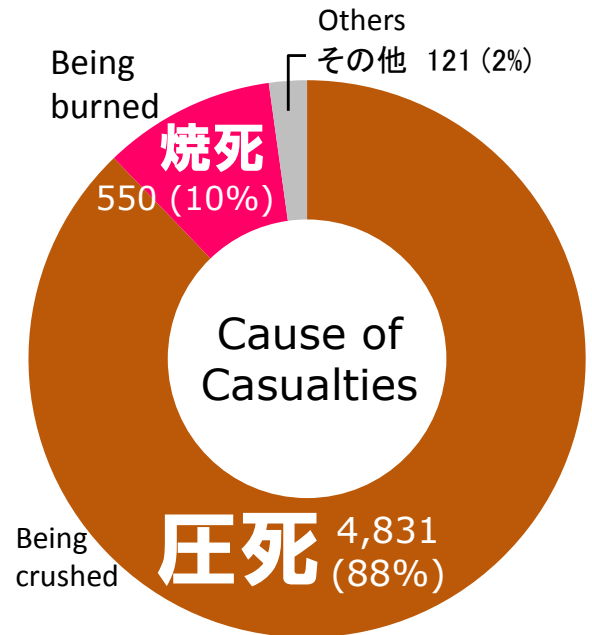
In the Great Hanshin-Awaji Earthquake, 80% of the deaths were caused by building collapse. About 70% of the buildings constructed under the **old standard (before 1981)** were heavily damaged!



Source: Interim report by the survey committee of the building disaster by the Great Hanshin-Awaji Earthquake Building and Disaster, 1995

Under the amendment of the Building Standard Law in 2000, **further reinforcement** of the earthquake resistant standard of wood-frame buildings was made.

For example, it became necessary to have a basic structure/foundation according to the resistance of land. Regulation on balance of arrangement for earthquake-proof walls was developed.



Police White Paper, Fiscal 1995

Commitments by Sendai City on earthquake proof retrofit (Under Old Standard)

Private Buildings

Subsidies for earthquake resistance survey: Wood-framed houses and apartments, condominiums
Subsidies for earthquake-proof retrofit: Wood-framed houses and apartments

City-owned Buildings

- **City's elementary, junior and senior high schools, special schools for the handicapped, etc. (1,119 in total) were 100% earthquake-proof before the Great East Japan Earthquake and Tsunami.**
- **There were no injuries among students due to building collapse by the 2011 disaster.**
- **As well as to protect children's lives, earthquake resistant structure for schools is important to enable schools to function as evacuation center.**

- **Earthquake resistance surveys for non-school buildings owned by the city were also conducted.**
- **If the building did not meet the new earthquake resistant standard, the city decided either to carry out retrofit work, reconstruct, or shutdown the property.**
- **There were no cases of termination of administrative functions due to building collapse of city-owned buildings by the 2011 disaster.**



An elementary school that went under additional earthquake-proof work

Enforcement of Urban Infrastructure

Enforcement of urban infrastructure beforehand was the key to success.

DRR measures were implemented to some extent, based on the lessons learned from the Miyagi-ken-oki Earthquake (1978).

Gas

- **Service to 310,000 households was stopped. Recovered completely 37 days after the disaster**
- **No damages to polyethylene gas pipes, highly resistant to earthquakes**



Polyethylene gas pipes had no damages

Waterworks

- **Water supply: service to 23,000 households was stopped. Recovered in 18 days**
- **Sewerage: No damages to earthquake resistant facilities (Huge damage by the tsunami)**

Brick walls

- **Subsidies for removal and switching to hedges**
- **No casualties due to destroyed brick walls. There are still many remaining, a future issue.**

Investment in developing disaster-proof urban infrastructure can be highly effective and valuable.



Water supply recovered in 18 days

3 Importance of preparation for response procedures under emergencies including needs assessment

Disposal of Disaster Waste

Volume of rubble in Sendai city approx. **1,35** million tons

(4 year's worth of disposal)



- Dec. 2011** Removal was completed.
- Sep. 2013** Incineration was completed.
- Mar. 2014** Disposal was completed. (including restoration of rubble storage site)

Aim : to recycle over 50 % of total rubble

As of Mar. 2014 recycling rate ; 72%

Total disposal volume **1,37 million tons**

Sendai Method (disposal inside the city)

Affected site

burnable
non-burnable
recyclable } roughly separated



rubble storage site

Three storage sites in the eastern coastal area (total 100ha) and temporary disposal facilities were made. Rubbles were separated into over 10 types such as concrete, home appliances, wood, etc.



(temporary incinerator)



(damaged vehicles)



(home electric appliances)



(metal)

Disposal of Disaster Waste (2)

Complete Stop in Waste Disposal

- Mar. 11 Human waste disposal facilities were fully destroyed due to tsunami
All waste incineration plants made emergency stops and were damaged due to vibration from the earthquake
- Mar. 12 Collection of human waste from temporary toilets at evacuation centers began
- Mar. 13 Garbage collection at evacuation centers began
- Mar. 14 Plants resumed operation
- Mar. 15 Temporary waste storage sites where citizens bring in disaster waste by themselves opened (5 in the city)
Collection of household garbage and human waste resumed
- Mar. 24 Collection of wet household goods etc. in areas affected by the tsunami began
- Mar. 28 Temporary recovery of human waste disposal site
- Mar. 30 Rubble storage site made available to public
Removal of disaster waste in areas affected by the tsunami began

Environmental-friendly Measures

- Asbestos ▪ ▪ ▪ Monitoring at all areas within the city. Scattering asbestos waste from pulling down damaged houses removed and sealed on the spot, taken directly to final disposal site, then buried.
- Soil Contamination ▪ ▪ ▪ Asphalt paving and anti-leak sheet lining at rubble storage sites
- Dioxins ▪ ▪ ▪ Same level of exhaust control facilities as existing waste disposal plants

Disaster Waste Handling System

Feb. 2007 Sendai City developed a disaster waste management plan
To prepare for the next Miyagi-ken-oki earthquake, **estimation method for the amount of disaster waste and the dimensions of temporary storage sites**, as well as sorting categories and handling system of disaster waste was developed



March 11, 2011 The Great East Japan Earthquake
Based on damage assessment, discussion on the disaster waste handling system began

Mar. 31, 2011

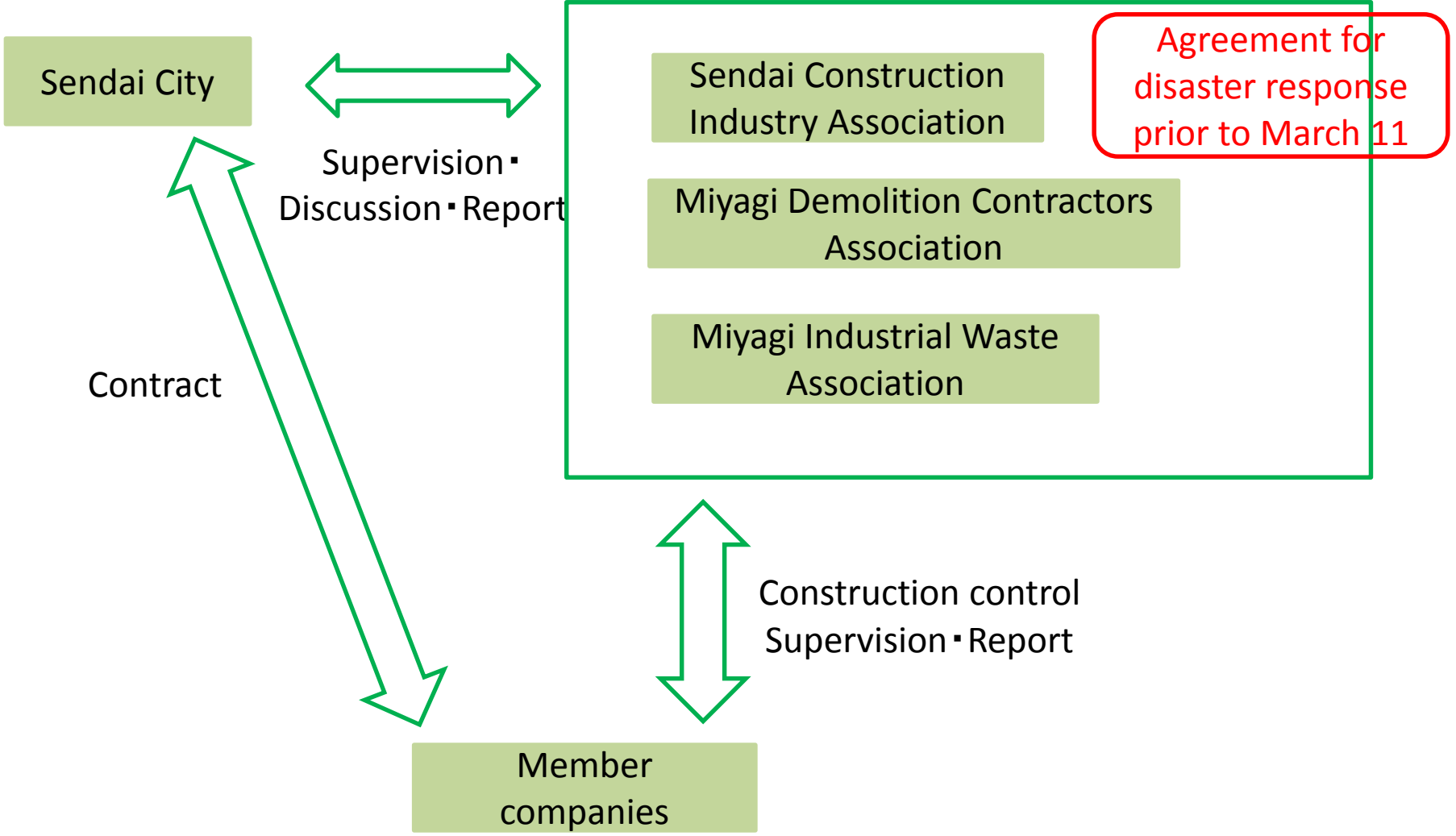
According to the management plan, the volume of waste was estimated based on the survey of damage

Apr. 1, 2011 **Disaster waste handling policy was decided**

For prompt handling, it's necessary to capture the extent of the damage and take necessary actions precisely and quickly

Therefore, it is efficient to prepare the procedure of needs assessment after a disaster beforehand

Cooperation with local companies



Business with local companies ⇒ local rehabilitations lead to local economic recovery
Cooperation in normal periods ⇒ quick response in the event of a disaster