

“How to plan and decide on investments?”
“How to make best use of climate finance?”

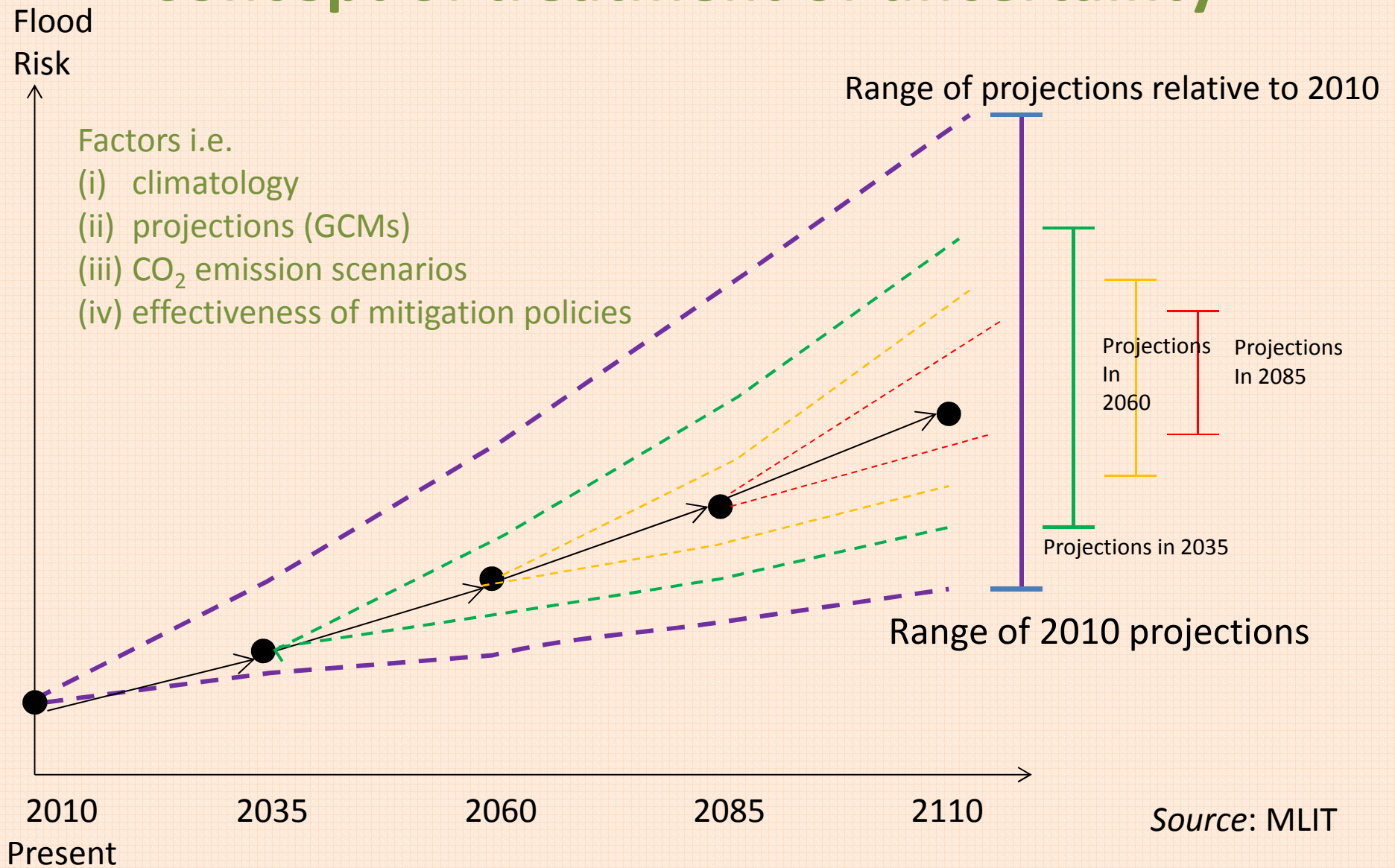
--How to prepare for uncertain or unexpected events--

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Workshop on “Meta-Guidelines” for Water and Climate Change Adaptation
1st -2nd October, 2012,
the University of Tokyo, Japan



Concept of treatment of uncertainty



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What the disaster taught Japan, and what it can teach other countries

From experiences of the Great East Japan Earthquake, we can learn

- What uncertain or unexpected events are.
- How we should prepare for uncertain or unexpected events.



Great East Japan Earthquake

- Low probability, high impact
- High level of complexity
- Widespread impact due to globalized supply chains

Japan's DRM system

- Investment in structural and non-structural measures
- Culture of preparedness and learning from past disasters
- Multi-stakeholder involvement
- Legislation, regulation, and enforcement
- High-tech, sophisticated instruments

Risk assessment and communication

Coordination

Protection of vulnerable people

ISSUES

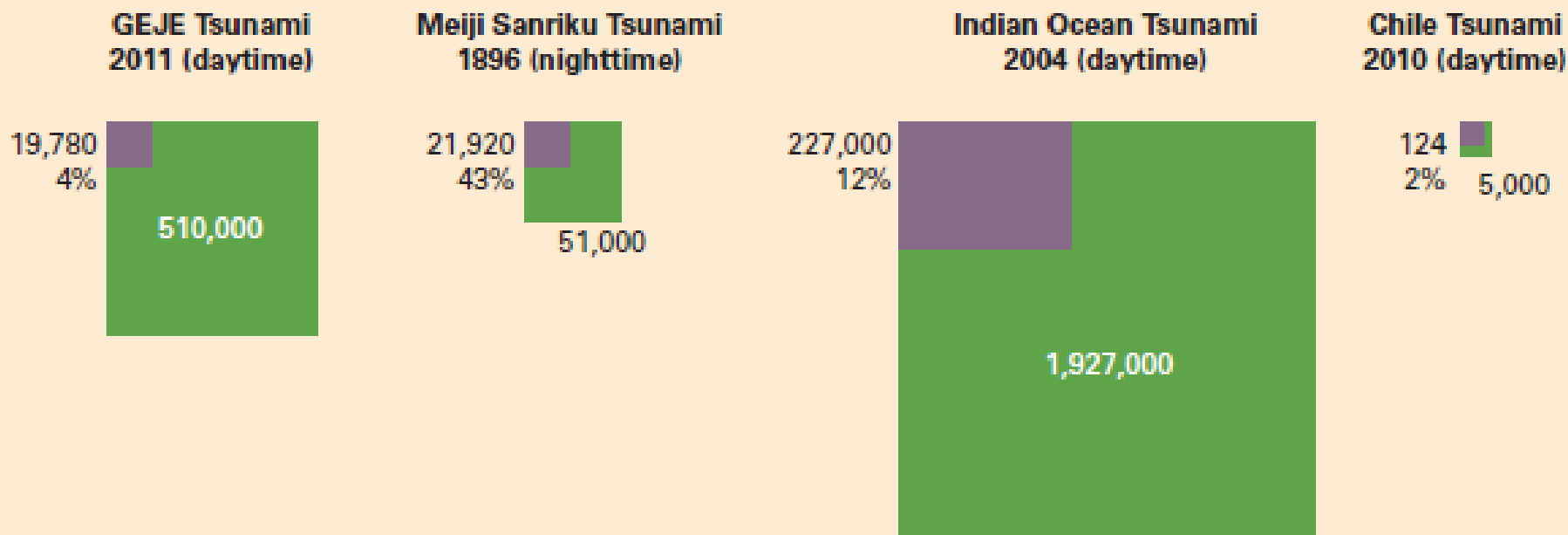


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Lesson 1: Preventive investments pay, but be prepared for the unexpected



- Constructed 300km dikes with cost of USD 10bill
- Monitoring and warning systems: USD 20 million/Year
- Hazard mapping, simulation, education at school.....



Lesson 2: Learning from disaster is key, as Japan has shown for the past 2,000 years

- **Kamaishi miracle** is not really a miracle at all.
- **Fire corps** saved uncountable number of people's lives.



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Lesson3: DRM is everyone's business

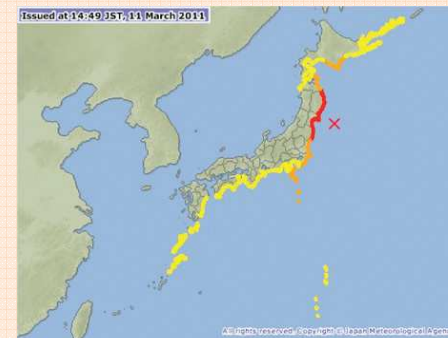
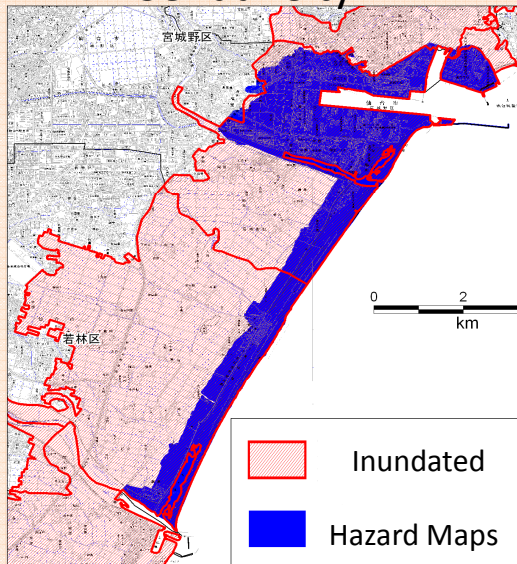


Issue 1

Risk assessment and communication

- Assessing risks and communicating them clearly and widely helps citizens make timely decisions to protect themselves
 - Hazard maps can give the public **a false sense of safety**, if not properly communicated
 - Better management of information and **communication is crucial in emergencies** and recovery operations

Sendai City



14:49
3 minutes following earthquake

- Observed Mj 7.9.
- Issued tsunami information:
3 meters in Iwate and Fukushima,
and 6 meters in Miyagi.

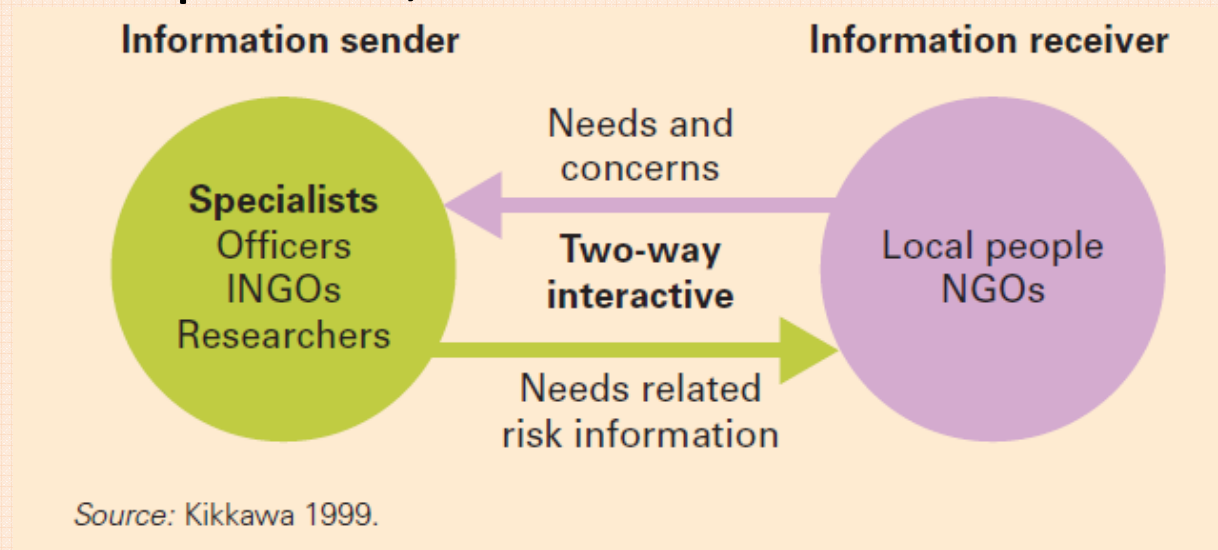


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- Never top-down, but **interactive communication**.



- Governments and community members should
 - (i) be aware of **limitations of technology**, and
 - (ii) Never stick to **a single scenario**.



Issue 2 and 3

- **Coordination** mechanisms must be developed and tested in normal times, so that they are ready for use in an emergency
- **Vulnerable** groups must be protected—and engaged

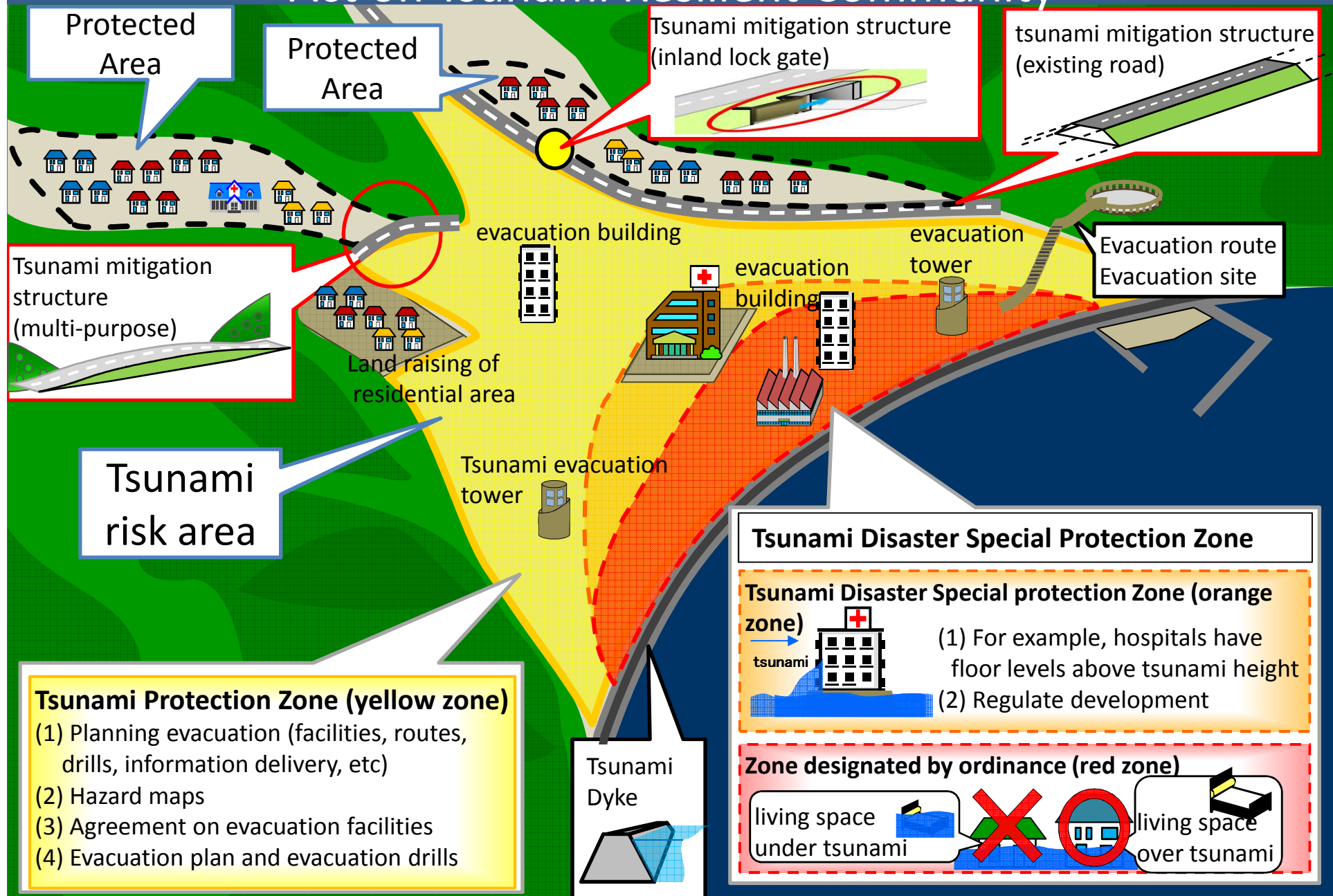


Conclusion: Extreme disasters underscore the need for a holistic approach to DRM

- Exclusive reliance on structural measures ultimately prove ineffective
 - Resilient structure: complexity and residual risk. “fail gracefully”
 - supplemented with **nonstructural** measures
 - understand **uncertainties of estimation** of events



To prepare for unexpected Act on Tsunami Resilient Community



Protected Area

Protected Area

Tsunami mitigation structure (inland lock gate)

tsunami mitigation structure (existing road)

Tsunami mitigation structure (multi-purpose)

Land raising of residential area

Tsunami risk area

evacuation building

evacuation building


evacuation tower

Evacuation route
Evacuation site

Tsunami evacuation tower


Tsunami Disaster Special Protection Zone

Tsunami Disaster Special protection Zone (orange zone)

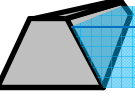
tsunami → 

(1) For example, hospitals have floor levels above tsunami height
(2) Regulate development

Zone designated by ordinance (red zone)

living space under tsunami   living space over tsunami 

- Tsunami Protection Zone (yellow zone)**
- (1) Planning evacuation (facilities, routes, drills, information delivery, etc)
 - (2) Hazard maps
 - (3) Agreement on evacuation facilities
 - (4) Evacuation plan and evacuation drills

Tsunami Dyke 

**DISASTER RISK
MANAGEMENT**
is a combination of

Risk Identification

Risk assessments (community-based, probabilistic modeling); risk mapping; information campaigns; public outreach; etc.

Risk Reduction

Structural and non-structural measures; land use planning; policies and regulation; infrastructure retrofitting; etc.

Preparedness

Civil protection systems; pre-positioning emergency response equipment; early warning systems; contingency planning; etc.

Financial Protection

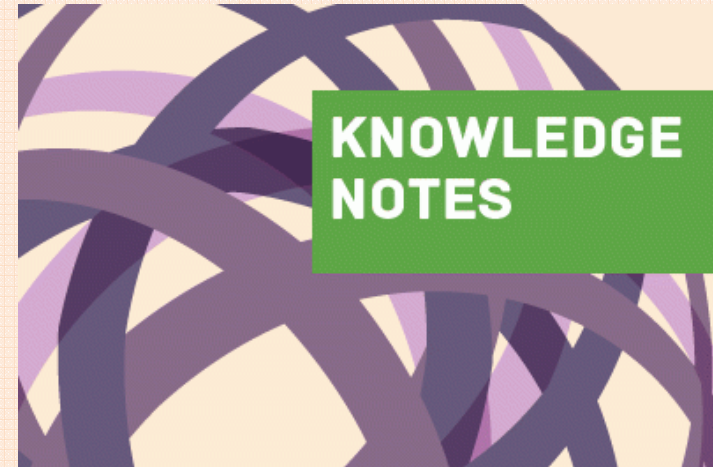
Assessing and reducing contingent liabilities; budget appropriation and execution; ex-ante and ex-post financing instruments; etc.

Resilient Reconstruction

Resilient recovery and reconstruction policies; ex-ante design of institutional response mechanisms; etc.

INSTITUTIONAL, POLITICAL, NORMATIVE, FINANCIAL CONTEXT





<http://wbi.worldbank.org/wbi/megadisasters>

Thank you

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