

Southeast Asia In Focus Forum:

Building resilient cities

Jun 4, 2014

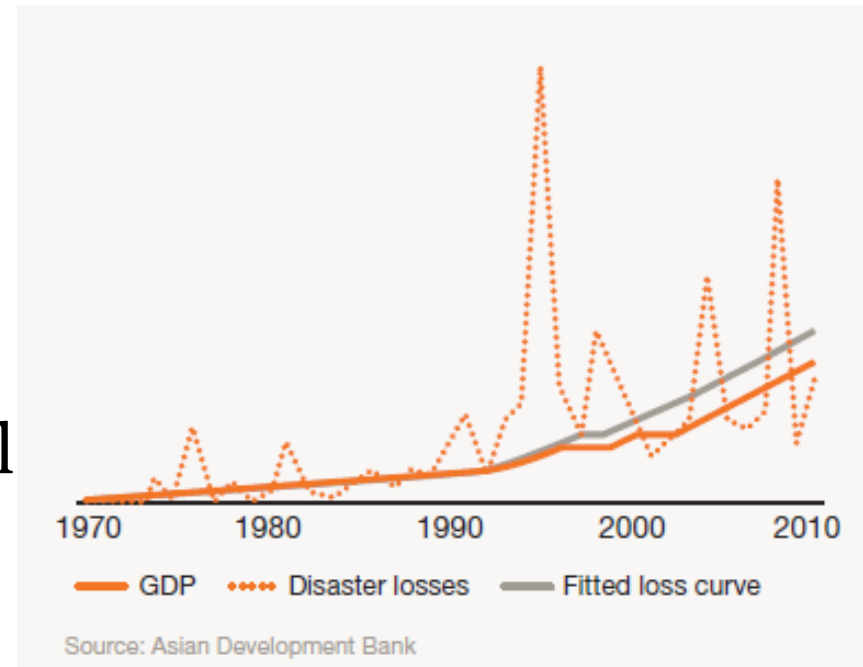
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Partner

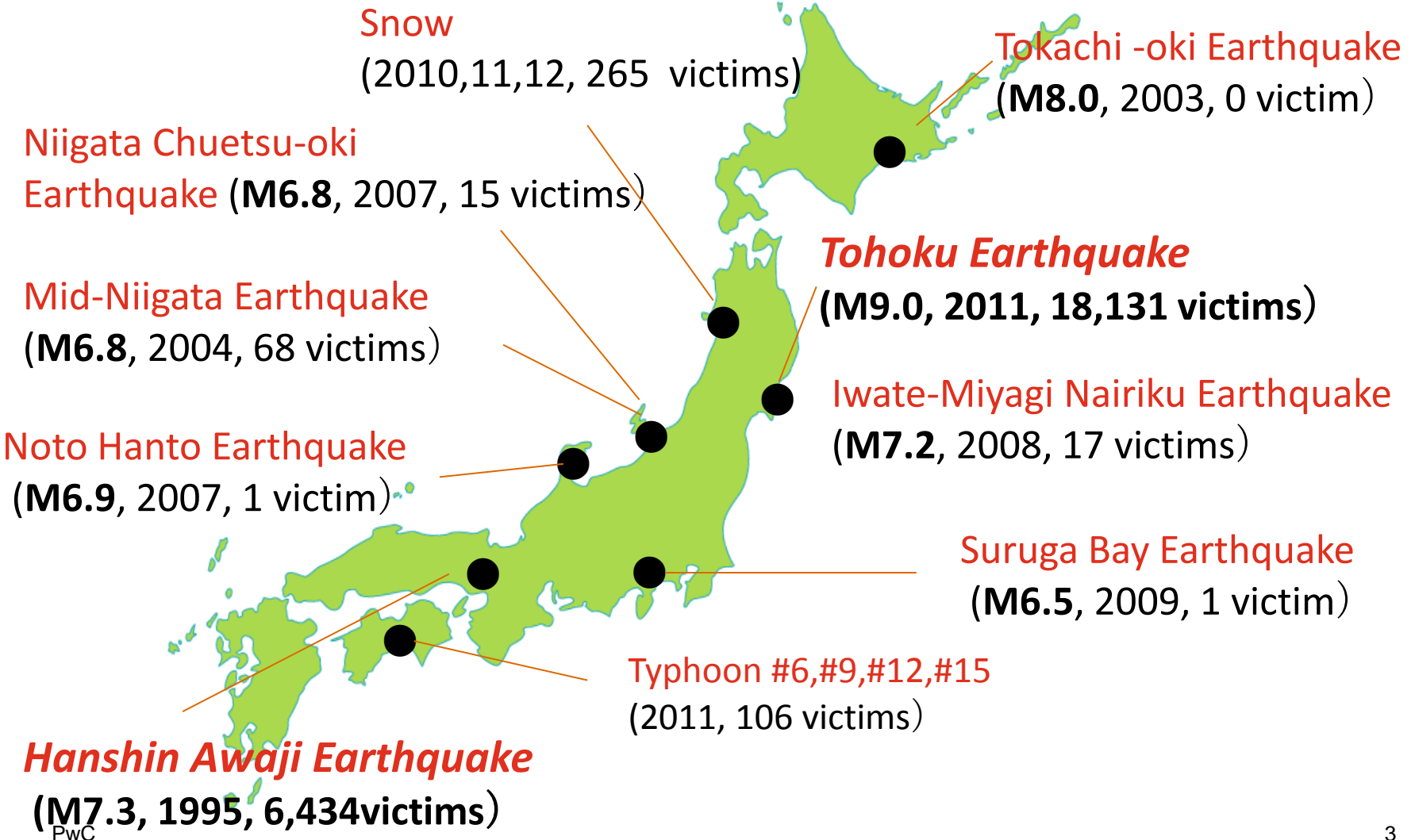
PricewaterhouseCoopers

Disasters are particularly devastating in Asia

- **1.7 million** hazard-related deaths in the Asia-Pacific region between 1970-2010; **51%** of global total
- Annual cost of disasters:
\$53.8 billion/year
- Growth in direct physical losses is **outpacing** regional GDP growth



Japan is one of the most “disaster-prone” countries in the world



Tohoku Earthquake – a low probability, high-risk event (predicted to occur once every 1000 years...)



Resilient infrastructure minimized the impact and loss of life

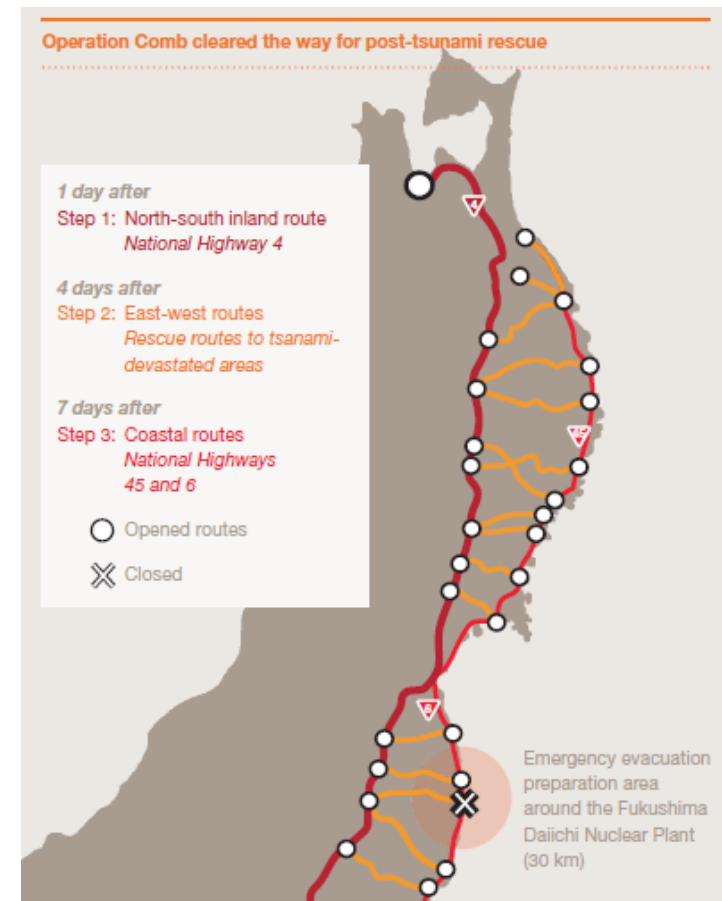
Railways

- ✓ **NO** injuries from Tohoku Shinkansen HSR
- ✓ **NO** derailment, **NO** collapse of tunnels
- ✓ Whole line reopened in **50 days**

Water

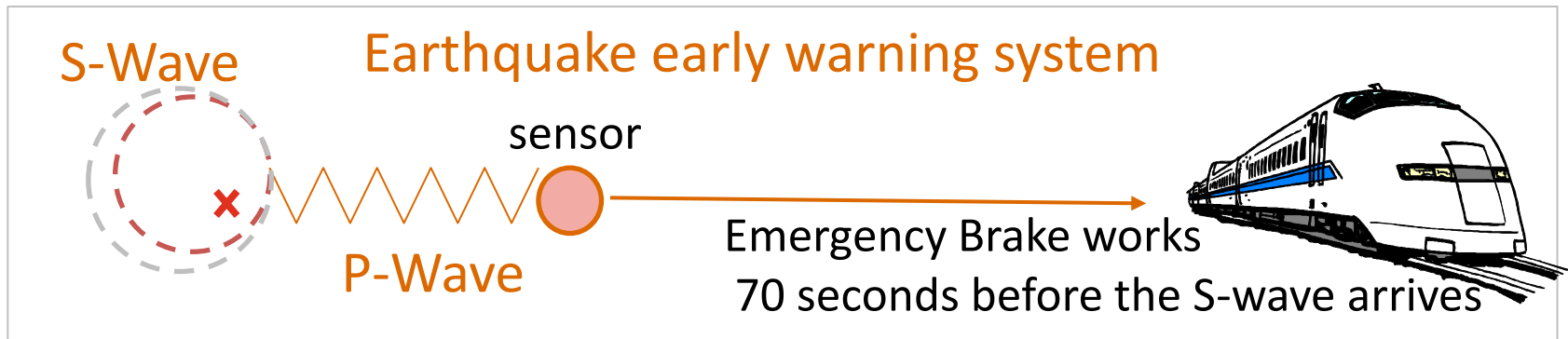
- ✓ **NO** serious damage in **470km water network** of Sendai City
- ✓ Whole service reopened in **20 days**

Roads



5 Lessons from Japan

- **Regulation** – rigorous building codes to resist earthquakes
- **Infrastructure investment** – earthquake-proof public schools/hospitals/social welfare facilities, tsunami walls and floodgates, elastic water pipes, “redundancy”
- **Technology**



- **Public-private partnership**
- **“Preparedness” culture**

Nurturing “preparedness” culture

Sept. 1st: “Disaster Prevention Day”



Evacuation Drill



Emergency response
simulation exercise

Nurturing “preparedness” culture - Raising awareness among citizens



Improving resilience of high-rise apartments - a new incentive system at Sendai City

Certification		Name of Apartment s	Address s	Disaster-prevention Measures
Facility Resilience	Disaster Prevention activities			
2	1	2	1	
★	★	City Tower Sendai Ichibancho Residence	Aoba-ku, 1-1-2 — 31	<ul style="list-style-type: none"> • Emergency generators (for 48 hours) • Availability of emergency supplies (water, first-aid kit box, flashlight, radio)
	★	Lions Station Plaza Tsusumi	Aoba-ku Hayama- cho 1-25	<ul style="list-style-type: none"> • Disaster prevention plan/register • Disaster drills, “soup kitchen”

PwC Disaster Risk Management Framework - through an infrastructure lens

Preparedness

- Disaster risk sources
- Investing appropriately
- Effective collaboration

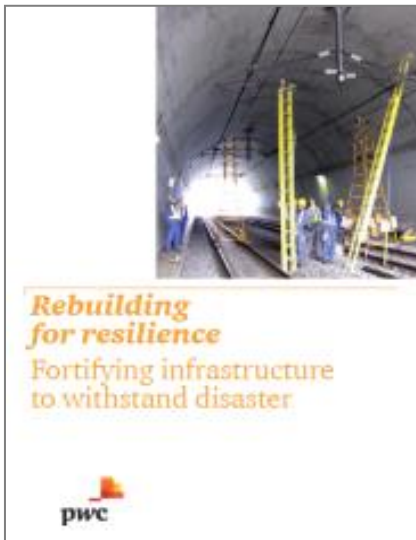
Disaster

Recovery

- Public-Private Partnerships
- Co-designing recovery
- Role of human resilience

Rebuilding

- Interdependent critical infrastructure
- Think global, build local
- Leveraging technology





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