

Early warning and mitigation: Reducing disaster risk

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Agenda

- Risk reduction, not elimination of risk
 - Lives
 - Property
 - Livelihoods
- Hazards most amenable to risk reduction through ICT-based early warning
- Examples of what we can do in
 - Early warning
 - Mitigation

Sri Lanka's biggest natural disasters compared

	Families affected in Sri Lanka	Deaths
1978 East Coast Cyclone & Tidal Surges	250,000	915
2004 Indian Ocean Tsunami	248,266	30,974 (40,000)
	1:1	1:34

Why?

- Early warning reduced deaths in 1978; no early warning in 2004: ~1 in 600 Sri Lankans died
- Damage to property and livelihoods may not have been significantly different in the East Coast

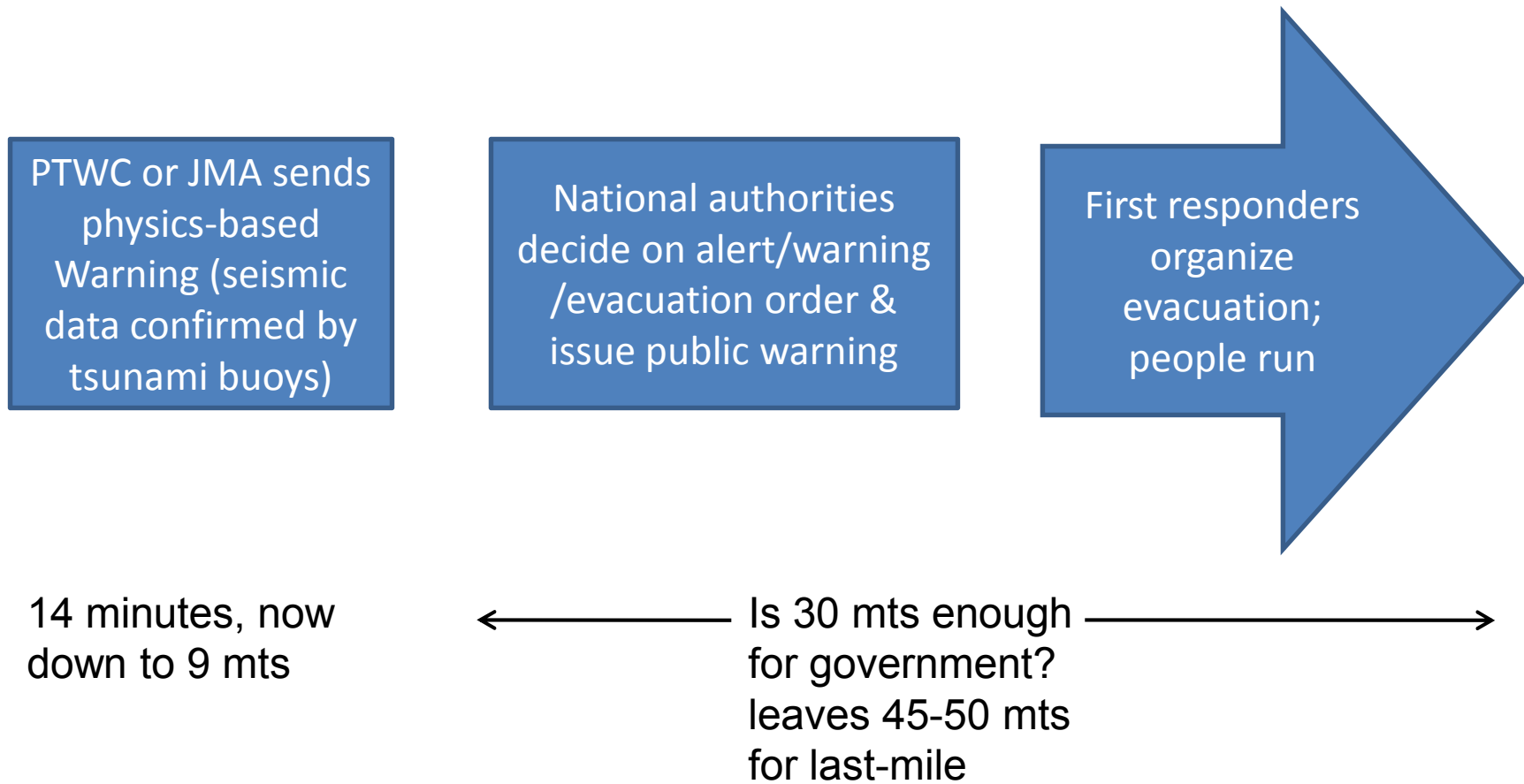
For which hazards will early warning be most effective?

	Warning time less than 60 mts	Warning time more than 60 mts but less than 4 days	Warning time more than 4 days
Large geographical scope	E.g., earthquake	E.g., cyclone/storm, teletsunami, breach of an upriver dam in a large cascaded system	E.g., drought
Local geographical scope	E.g., local tsunami, landslide triggered by floods, single small dam failure	E.g., volcanic eruption, certain forms of floods	E.g., some forms of landslides

The hardest case

- Thankfully we are not subject to local tsunamis
- Teletsunamis originating in Sunda Trench
 - Slim possibility of a fault line south of Sri Lanka that could generate teletsunamis

Teletsunamis: Making the most of 90 minutes



Sri Lanka's mobile networks ready to carry cell broadcasts

- Why is DMC still talking in terms of SMS?
 - SMS is point-to-point; CB is point-to-multipoint
 - SMS is okay for sequential transmission of new year messages from President
 - CB is better when every second counts
- Can the DMC and Met Department commit to getting alert/warning/evacuation order out in 30 mts from time of receipt of JMA/PTWC message?
 - Messages now faster and better

Part of JMA notice 4 mts after the Great Tohoku Earthquake of 11 March 2011

Tsunami Forecast Region	Estimated Tsunami Arrival Time	Estimated Tsunami Height
IWATE PREF.	(*1)	3m
MIYAGI PREF.	15:00 JST 11 Mar	6m
FUKUSHIMA PREF.	15:10 JST 11 Mar	3m

Source: http://www.jma.go.jp/en/tsunami/focus_04_20110311145000.html

Footnote said local tsunami would have made contact in Iwate by 14:50 JST when warning was issued

The cruel paradox

- The more lives we save, the more people without livelihoods we are likely to have
- How can risks to livelihoods be reduced?
 - Tsunamis are highly destructive
- Must be able to restore, if not save, property

Payagala North Railway Station, January 2005



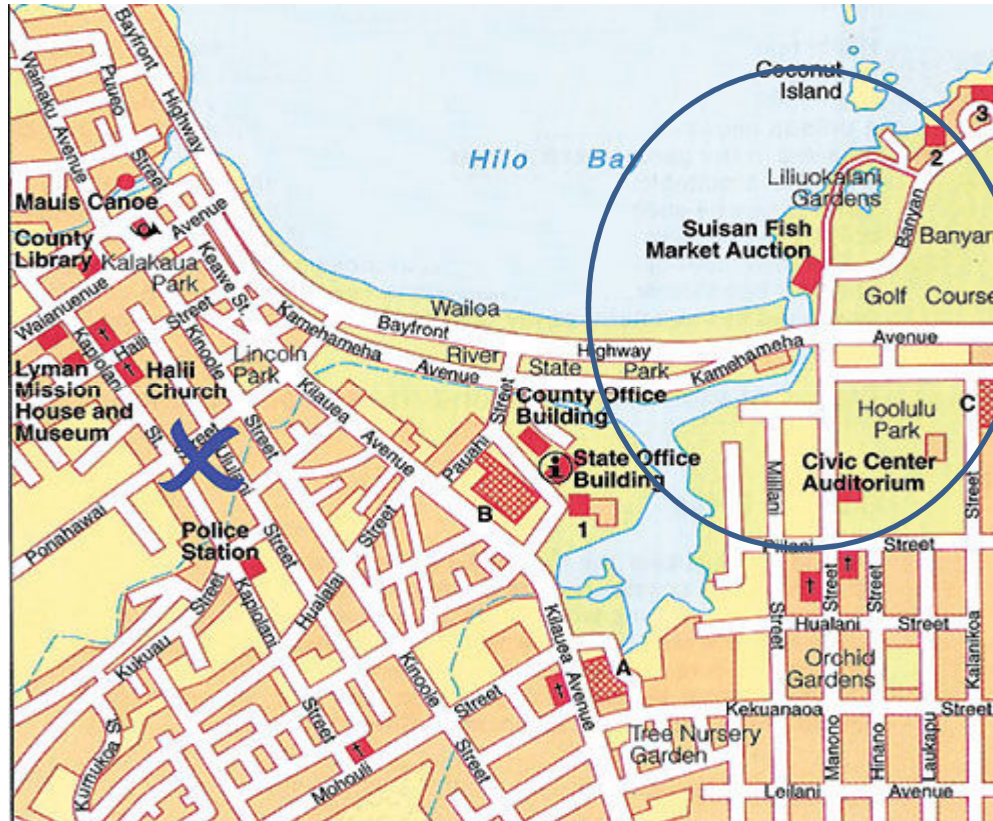
Land-use planning, resilient buildings, & mandatory insurance

- Not withdrawal from sea coasts, but
 - Land-use planning and building codes coupled with mandatory insurance
 - High-risk areas will come with high insurance premia
 - Insurance providers will also enforce building codes

Government's roles

- Publish inundation maps, based on massive amount of data collected after 2004 tsunami
 - Use most vulnerable areas for playgrounds and such

Focal point of tsunami damage in former tsunami capital, Hilo, Hawai'i



Area of maximum tsunami impact

Then, 1960



Now



Government's roles: Building codes

- In consultation with professionals and construction industry, define building codes
 - Lessons from Bawa architecture
 - Concrete
 - Open ground floor areas
 - Pillars supporting upper floors allowing for vertical evacuation

Tsunami survivor (except the French windows on the right)



Mandatory standards for hotels

- Hotels concentrate strangers; need additional care
 - Critically important for new hotels coming up in East Coast
- Standards essential
 - Training, contingency planning, 24/7 helpdesk
 - Annual certification as “disaster ready”