



# **Climate Resilient Cities**

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## A Primer on Reducing Vulnerabilities to Disasters

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Zoe Trohanis

Sustainable Development Department, East Asia  
and the Pacific, The World Bank

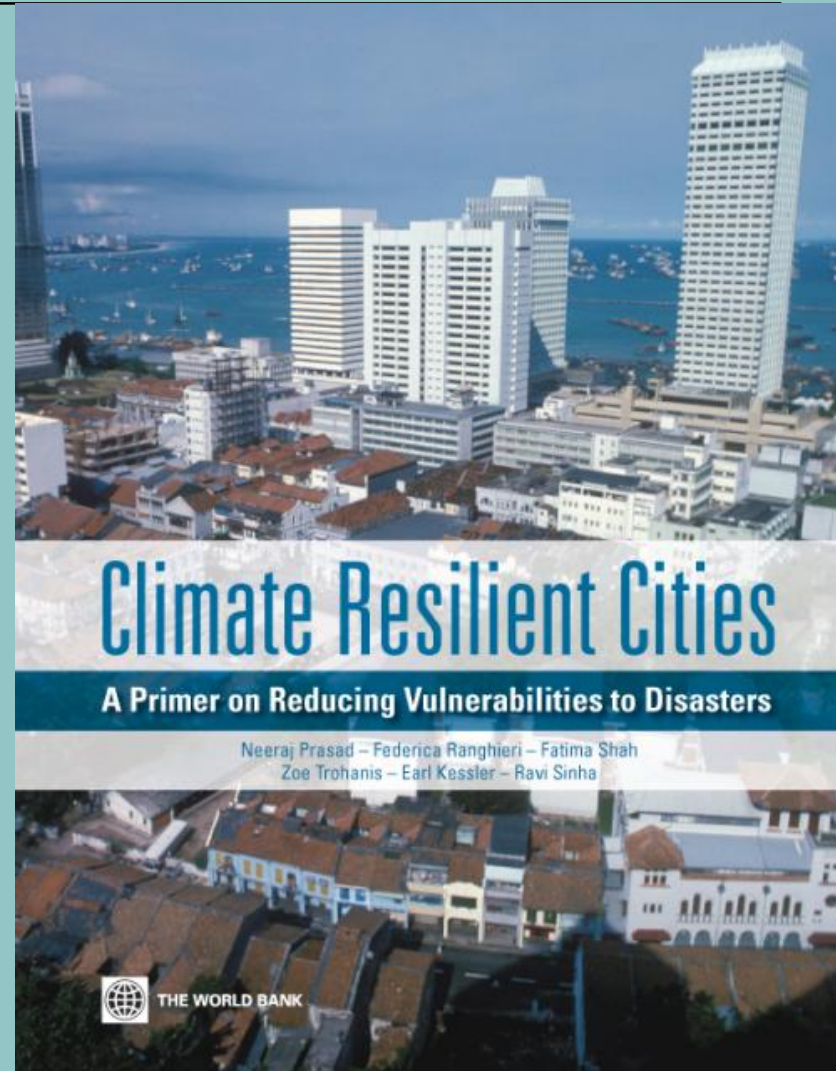
# Overview of presentation

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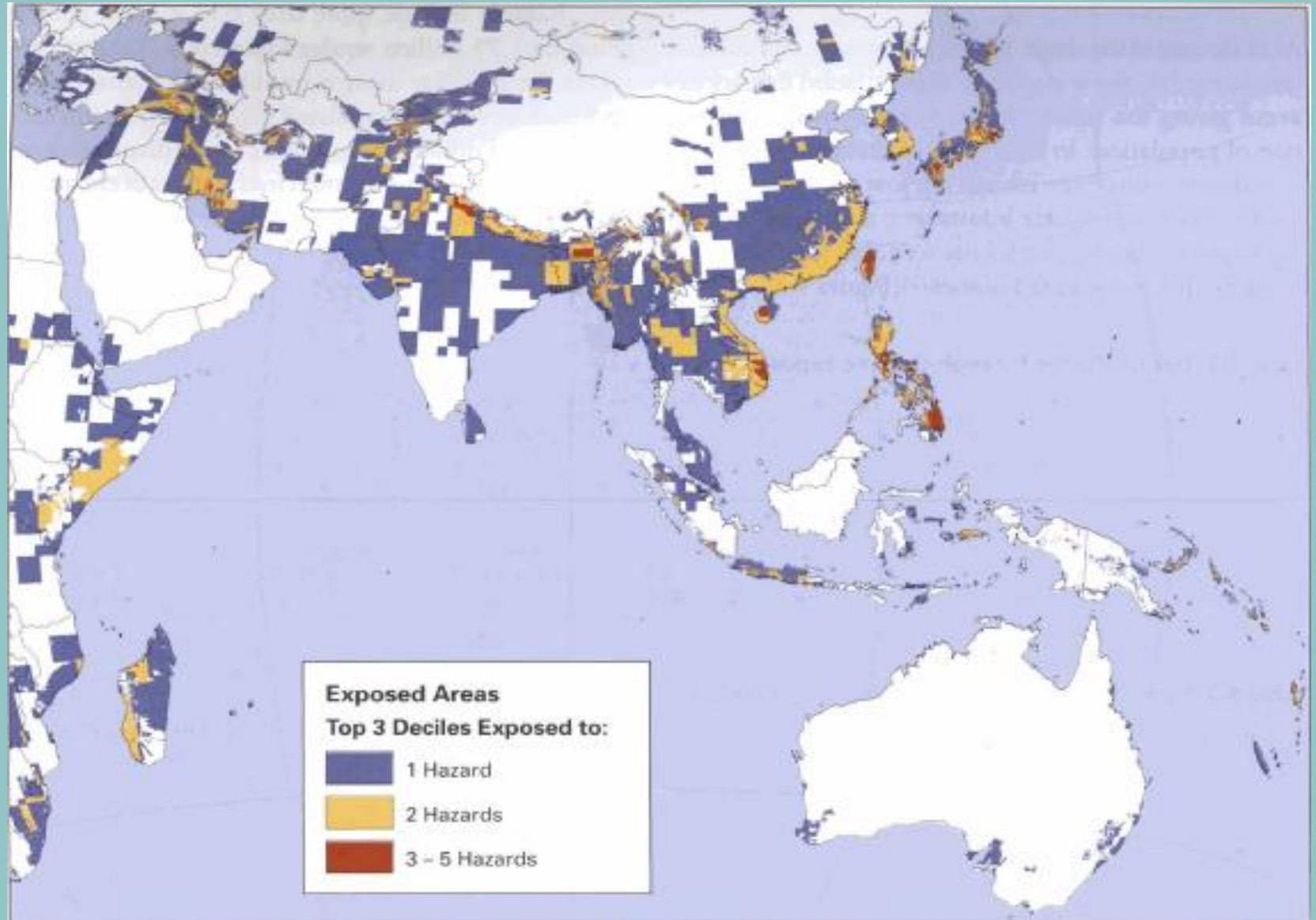
- The “Primer” – What is it? Why have one?
- Climate change and disasters in the region
- Hot spots and identifying priorities
- Now what?

# What is the Primer?

- The Primer outlines and responds to **city typologies**
- It integrates **climate change** with **DRM**
- It provides a “**hot spot**” tool for identifying city-specific **priorities**
- It identifies **adaptation** and **mitigation** strategies, based on lessons from **regional** and **global sound practices**

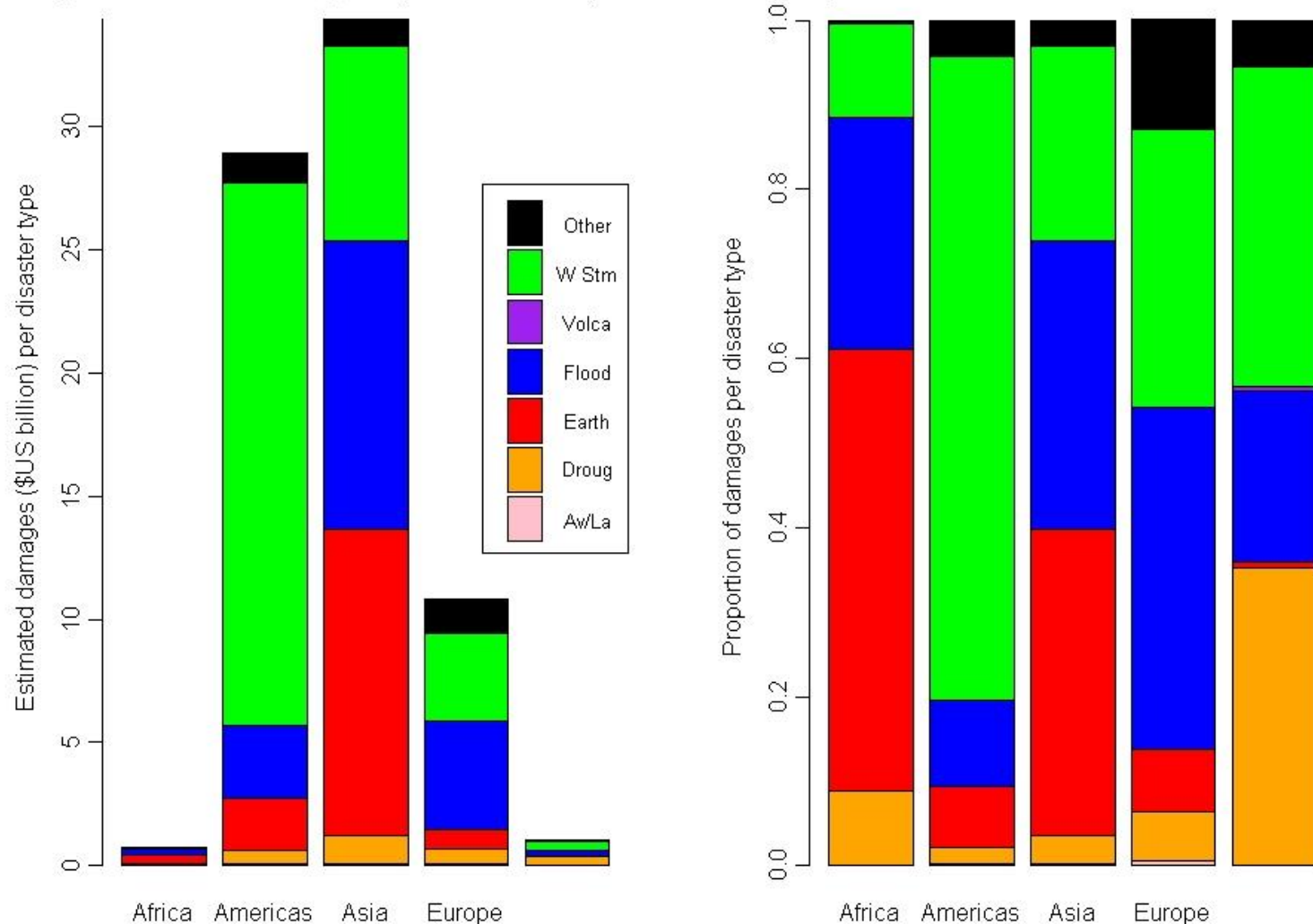


# Region prone to multiple hazards



# Largest amount of damage from several types of disasters

Average annual damages (\$US billion) caused by reported natural disasters 1990-2007



# Climate change and DRM

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- Climate Change exacerbates the frequency and intensity of hydrometeorological disasters
- CC can add new disaster risks
- DRM includes seismic activity/volcanoes while CC also addresses gradual average changes in Climate
- *DRM and CC adaptation greatly overlap and can strategically reinforce each other*

# Why focus on cities?

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- Decentralization and delegation of authority and resources to local governments is on the rise in East Asia
- Cities disproportionately suffer the impacts of climate change and disasters → adaptation
- Cities are also the front line in terms of preventive action and emergency preparedness and response

# Is your city a **Hot Spot**?

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The Primer provides criteria for determination of a **Hot Spot** using its existing information at the city level by weighing:

- Given vs. influentiable characteristics
- Vulnerability to different consequences of climate change
- Preparedness and response capacity to different natural hazards

# City description and size

A. City description	
1. City location.	
a. In a coastal area? (Y or N)	
b. On or near mountain area? (Y or N)	
c. On inland plain? (Y or N)	
d. On inland plateau? (Y or N)	
e. Near to or on a river(s)? (Y or N)	
f. Near earthquake fault lines? (Y or N)	
B. Size characteristics of city	
1. Resident population (VH, H, M, or L) VH = Greater than 10 million H = 2 million to 10 million M = 0.5 million to 2 million L = up to 0.5 million	
2. Population growth during last 10 years (H, M, or L) H = Greater than 10% M = Between 2% to 10% L = Less than 2%	
3. Floating population (VH, H, M, or L) VH = Greater than 30% of resident population H = Between 20%-30% of resident population M = Between 10%-20% of resident population L = Less than 10% of resident population	
4. Area in square kilometers (km <sup>2</sup> )	
5. Maximum population density (day or night) (H, M, or L) H = Greater than 2,000 persons per km <sup>2</sup> M = Between 1,000 to 2000 persons per km <sup>2</sup> L = Less than 1,000 persons per km <sup>2</sup>	

# Governance, management, and financial resources

<b>C. Governance structure as related to disaster risk management</b>	
1. Appointed head of government (Y or N)	
a. Term of assignment (Years)	
2. Elected head of government (Y or N)	
a. Term of elected officials (Years)	
3. Local government office structure: does it have...	
a. Disaster risk management department? (Y or N)	
b. Environment, sustainability or climate change department? (Y or N)	
c. Are (a) and (b) in the same department? (Y or N)	
4. Other government office structure (state, national): does it have...	
a. Disaster risk management department? (Y or N)	
b. Environment, sustainability or climate change department? (Y or N)	
c. Are (a) and (b) the same department? (Y or N)	
<b>D. City management on climate change and disaster risk management</b>	
1. Responsibilities clearly specified? (Y or N)	
2. Responsibility for climate change management established? (Y or N)	
3. Responsibility for disaster risk management established? (Y or N)	
4. Authority to contract for services? (Y or N)	
<b>E. Financial resources</b>	
1. Total budget	
2. From local taxes and levies (% of total)	
3. From state and national government grants & devolutions (%)	
4. From domestic market – bonds & loans (%)	
5. From international market (%)	
6. From external or multi-lateral lending agencies (%)	

# Built Environment

F. Built environment	
1. Does the city have urban growth Master Plans? (Y or N)	
2. Does the city have urban development plans and land-use plans? (Y or N)	
a. Population in authorized development (% of total)	
b. Population in informal colonies (% of total)	
c. Population density of informal colonies (H, M, or L)	
H = Population of informal colonies >20% of total	
M = Population of informal colonies <20% but >10% of total	
L = Population of informal colonies <10% of total	
d. Population in old tenements and historical development (% of total or H, M, or L using ratings in 2c)	
3. Does the city have building codes? (Y or N)	
a. What is level of compliance? (% compliant buildings)	
4. Observed vulnerability of buildings in past natural disasters (extent of disruption of building functionality)	
a. Informal buildings (H, M, or L)	
H = Greater than 15% of informal buildings highly vulnerable	
M = Between 5% and 15% of informal buildings highly vulnerable	
L = Less than 5% of informal buildings highly vulnerable	
b. Historic buildings (H, M, or L)	
c. New & formal developments (H, M, or L)	
H = Greater than 5% of new & formally developed buildings highly vulnerable	
M = Between 1% and 5% of new & formally developed buildings highly vulnerable	
L = Less than 1% of new & formally developed buildings highly vulnerable	

# Hazards and disaster response

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<b>I. Threat of natural hazards</b>	
1. Earthquake? (Y or N)	
2. Wind storm? (Y or N)	
3. River flood? (Y or N)	
4. Flash rainwater flood or extreme precipitation? (Y or N)	
5. Tsunami? (Y or N)	
6. Drought? (Y or N)	
7. Volcano? (Y or N)	
8. Landslide? (Y or N)	
9. Storm surge? (Y or N)	
10. Extreme temperature? (Y or N)	
<b>J. Disaster response system</b>	
1. Does a disaster response system exist in the city? (Y or N)	
2. Is the response system comprehensive and equipped for all natural hazards specified? (Y or N)	
3. Is the disaster response system regularly practiced? (Y or N)	
4. Is the disaster response system regularly updated? (Y or N)	

# Climate change impacts

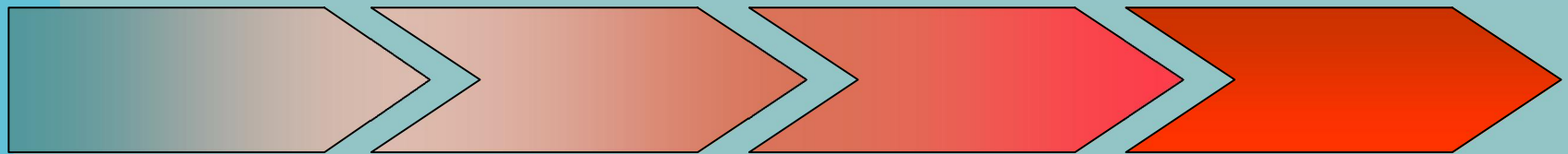
K. Climate change impact	
1. Is the impact of climate change on the city known? (Y or N)	
2. Are the following sectors vulnerable to the consequences of climate change?	
a. Built environment? (Y or N)	
b. Cultural and religious heritage? (Y or N)	
c. Local business, industry and economy? (Y or N)	
d. Energy generation and distribution system? (Y or N)	
e. Health-care facilities? (Y or N)	
f. Land use? (Y or N)	
g. Transportation system ? (Y or N)	
h. Parks and recreation areas? (Y or N)	
k. Tourism? (Y or N)	
3. Is climate change assessment based on local studies instead of regional/global models? (Y or N)	
4. Does the city have a climate change strategy (maybe, as a component of national policy)? (Y or N)	
5. Does the city have climate change programs in place? (Y or N)	
6. If Yes, do the climate change programs consider:	
a. Mitigation? (Y or N)	
b. Adaptation? (Y or N)	
c. Resilience? (Y or N)	

# Is your city a **Hot Spot**?

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**RESILIENT**

**HOT**



Based on the completed Matrix and rating levels, the city should determine their **vulnerability assessment**.

The greater the number of adverse conditions that are satisfied the “hotter” the city’s categorization is as a Hot Spot.

The level of “hotness” can be used by the city to **prioritize** its activities and to motivate integration of climate change impacts and disaster risk management into development plans.

# Moving from Assessment to Action!

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- **Hot Spot** assessment can be used to prioritize vulnerabilities, not judge
- Specific local action programs can draw upon experience of other cities
- Not all actions are expensive, neither time intensive
- No-regrets strategies are important and can be complemented by specific investments

# Now what?

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In **Vietnam** we are:

- Working on the hotspot methodology with 3 cities
- Identifying strategic priorities and opportunities for investment to reduce vulnerability

In the **Philippines** we are:

- Planning a workshop among stakeholders to validate adequacy of existing frameworks and tools for DRM/CC at LGU levels
- Build module on climate change into CDS 4
- Work with sample of pilot LGUs (including provinces, municipalities and cities)

# Climate Resilient Cities

[www.worldbank.org/eap/climatecities](http://www.worldbank.org/eap/climatecities)

Email: [climatecities@worldbank.org](mailto:climatecities@worldbank.org)

