



Reducing Vulnerabilities to Climate Change and Disasters: Focus on institutional structures

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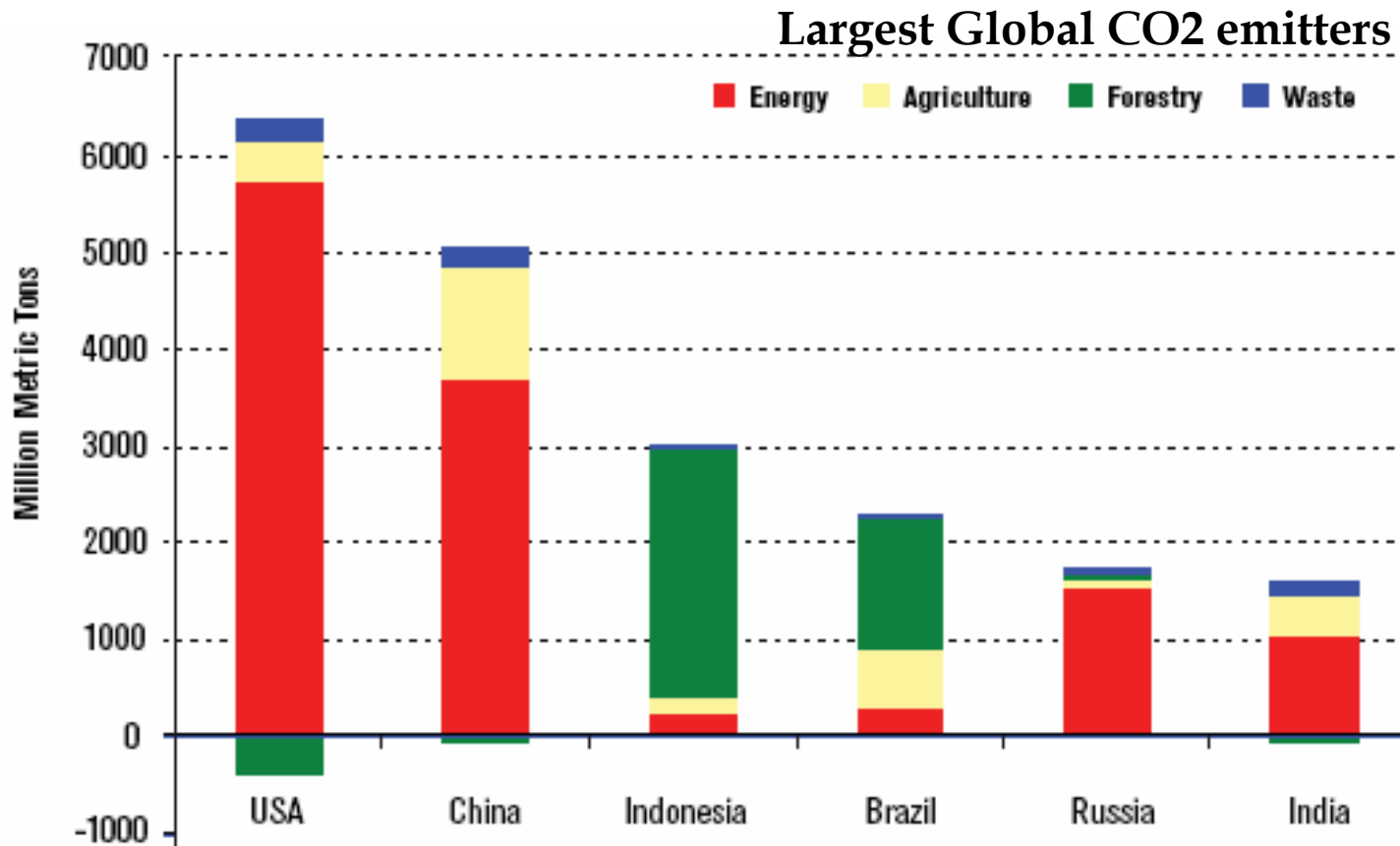
Presentation Overview

- Climate change and disasters in Asian cities
- Impacts and challenges
- Basis for evaluation and action
- Case studies
- The way forward
- Questions



1 Global Climate Changes from Man-Made Activities

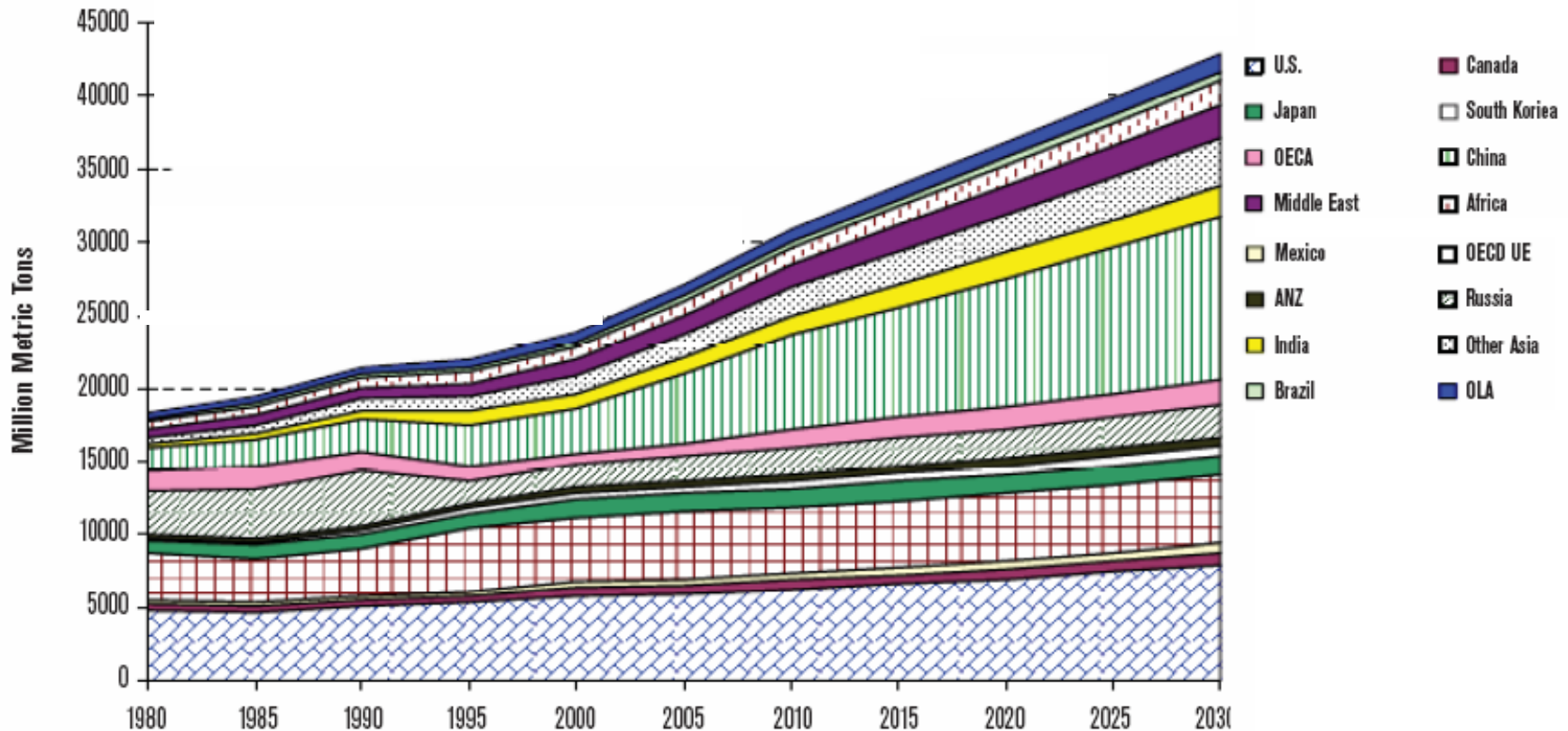
- Undeniable evidence that global climate is changing
- This change is human-induced



Source: World Bank, *East Asia Environmental Monitor: Adapting to Climate Change* (Washington, D.C. 2007) and IFA, *World Energy Outlook* (Paris, France 2007) for energy except for Indonesia, which uses 2005 PIE data.

2 Asia Emissions Growing

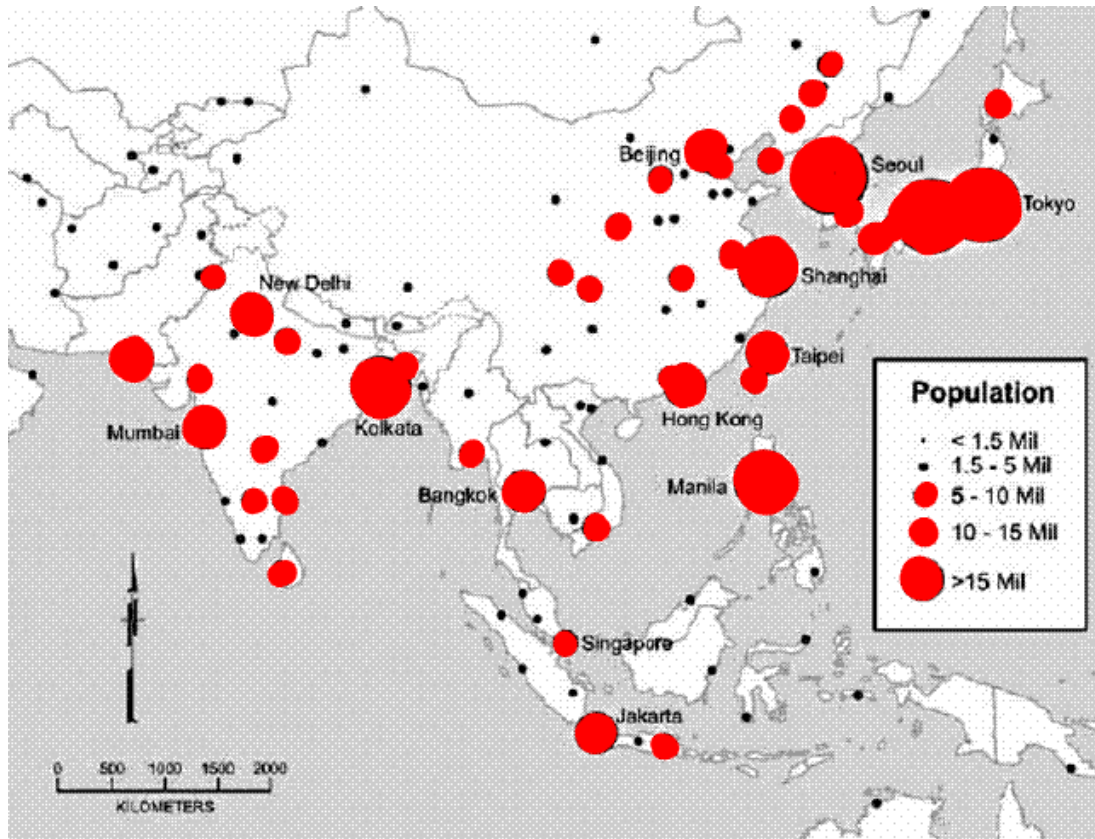
- Asia is rapidly becoming a major contributor to Greenhouse Gas emissions
- In 2000, East Asia contributed 18.7 percent of global emissions from fossil fuels; in 2025 China to increase emissions by 118 percent



Source: Energy Information Administration (www.eia.doe.gov, 2007) for historical emissions; and IEA, *World Energy Outlook* (Paris, France, 2007) for projected emissions.

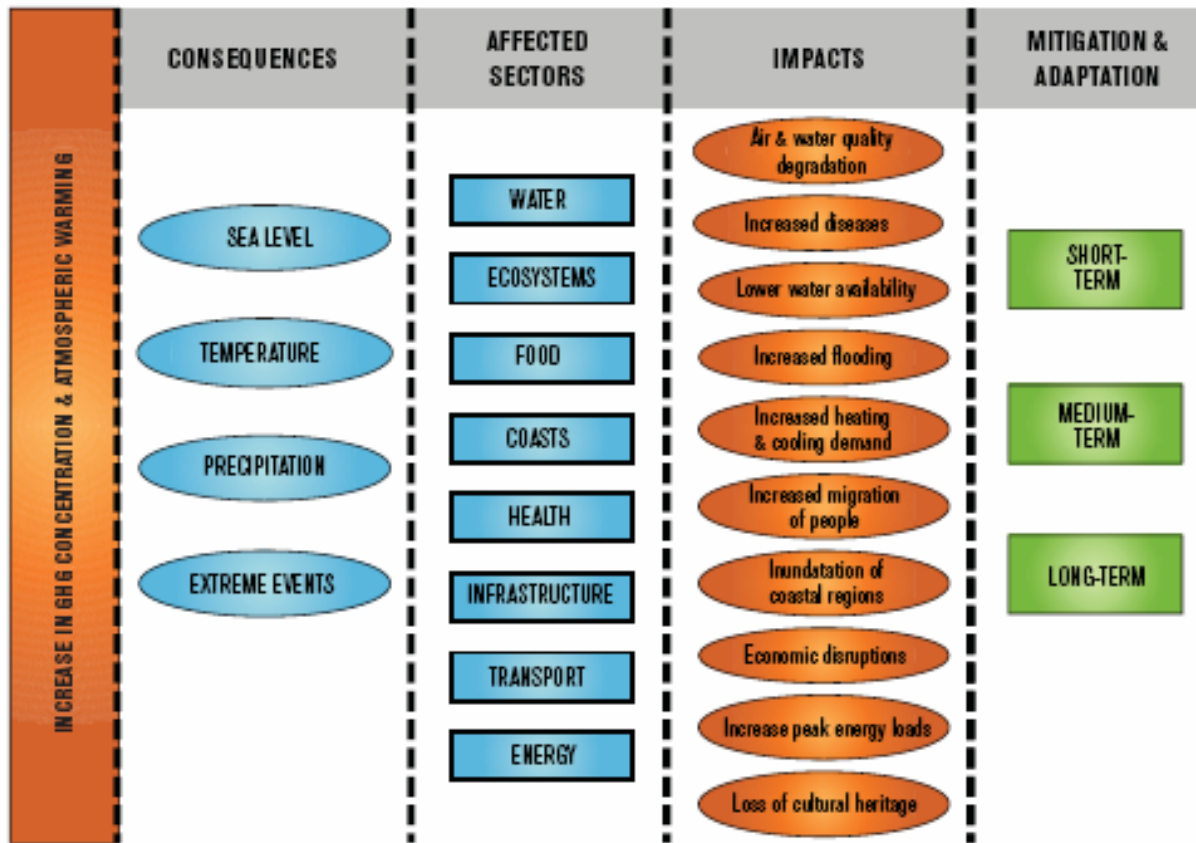
3 Urbanization in Asian Cities

- Concentration of people in cities is increasing their vulnerabilities to natural hazards, civil strife, and climate change impacts
- In Asia there are more than 30 mega cities (populations more than 5 million)



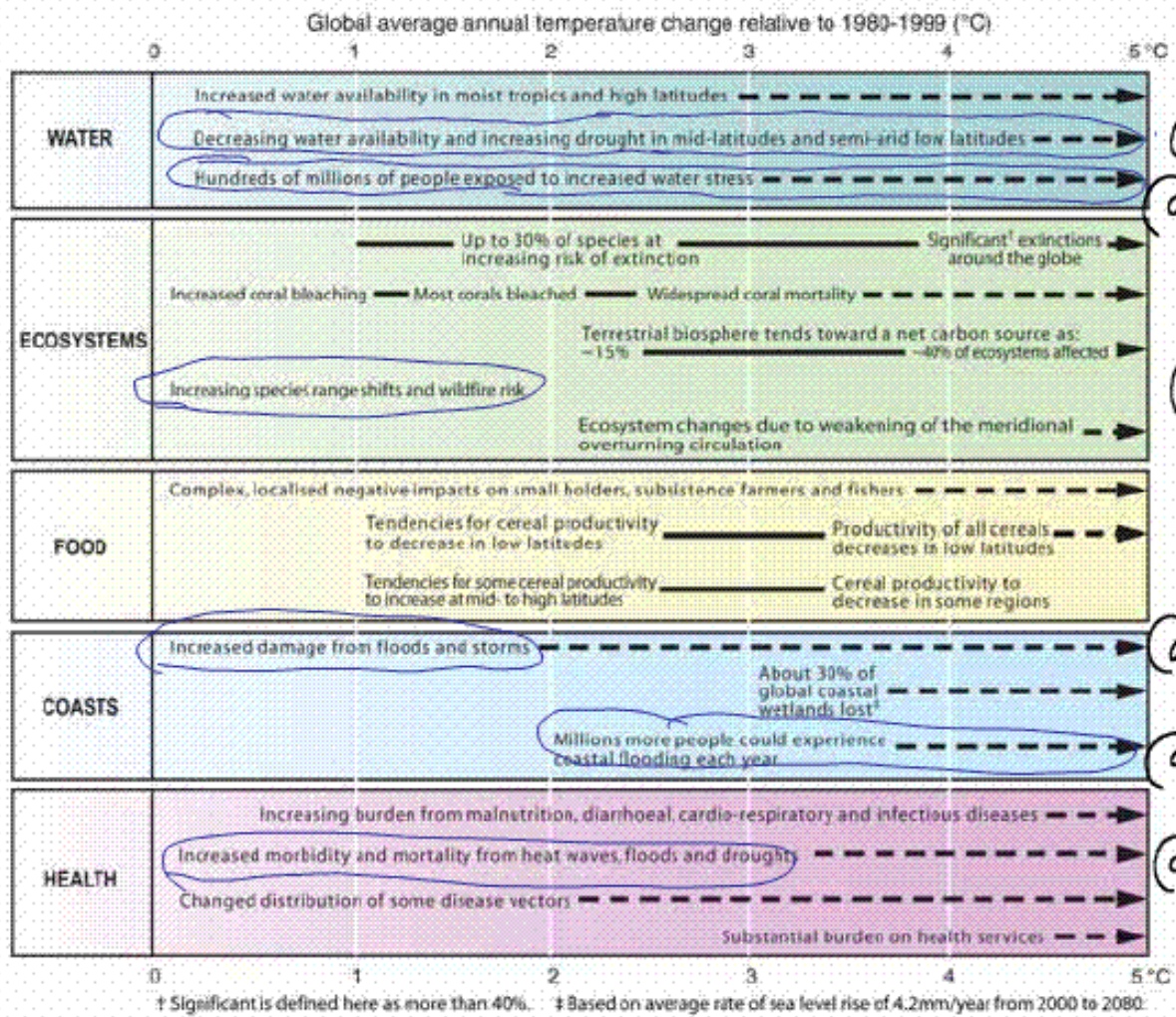
5 Impacts of climate change and extreme events

- The increase in GHG concentration and atmospheric warming impacts sea level, temperature, precipitation, and extreme events
- This negatively affects sectors and quality of living in cities



Positive feedback effects

6 How small changes in temperature will ↑ disaster risks



When it will start:
 @ < 4.5°C
 @ < 3°C

@ 0-2°C

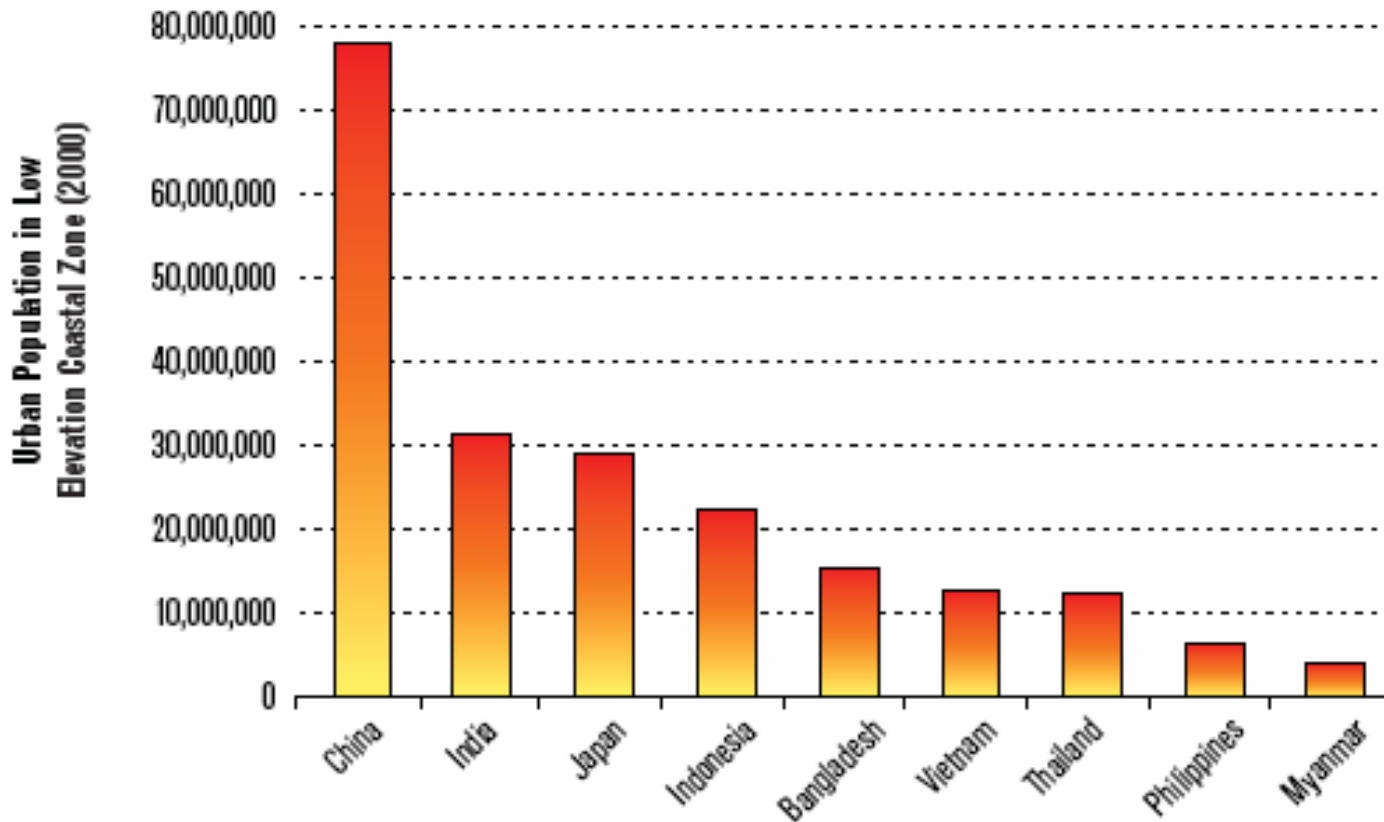
@ = 2°C

@ 3.7°C

@ 3.2°C

7 Huge impacts in coastal areas of Asian countries

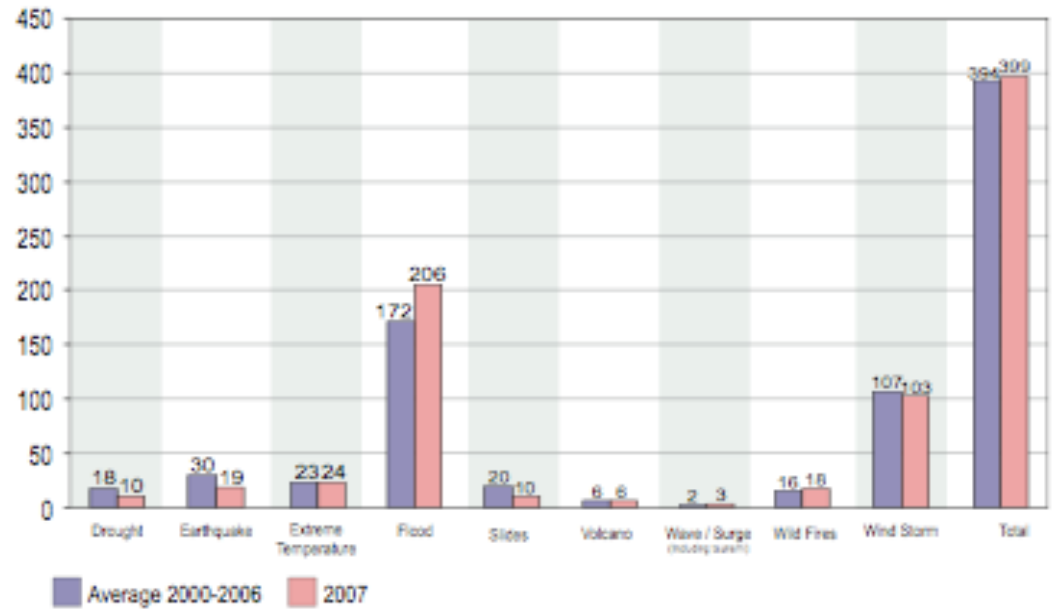
Coastal population of select countries that are highly vulnerable to sea-level rise



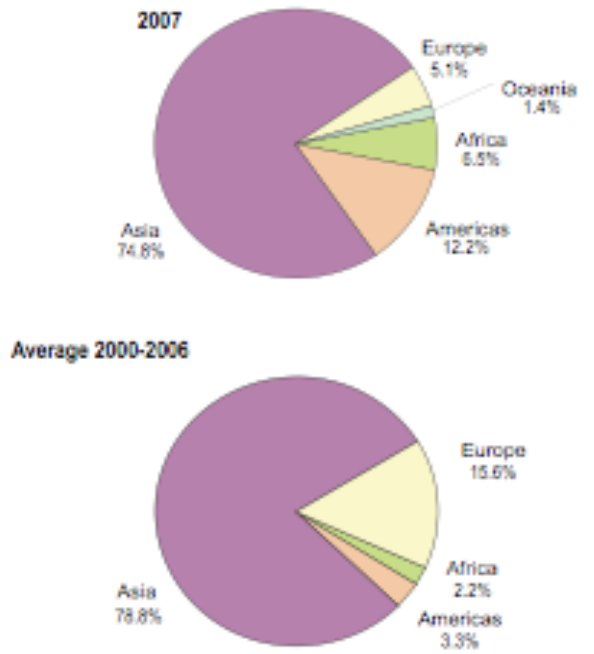
Source: G. McGranahan, D. Balk, and B. Anderson, Low Elevation Coastal Zone (LECZ) Urban-Rural Population Estimates, Global Rural-Urban Mapping Project (GRUMP), Alpha Version, Palisades, NY: Socioeconomic Data and Applications Center (SECAC), Columbia University, 2007.

8 Disaster impacts in East Asia are too high!

Natural disaster occurrence by disaster type

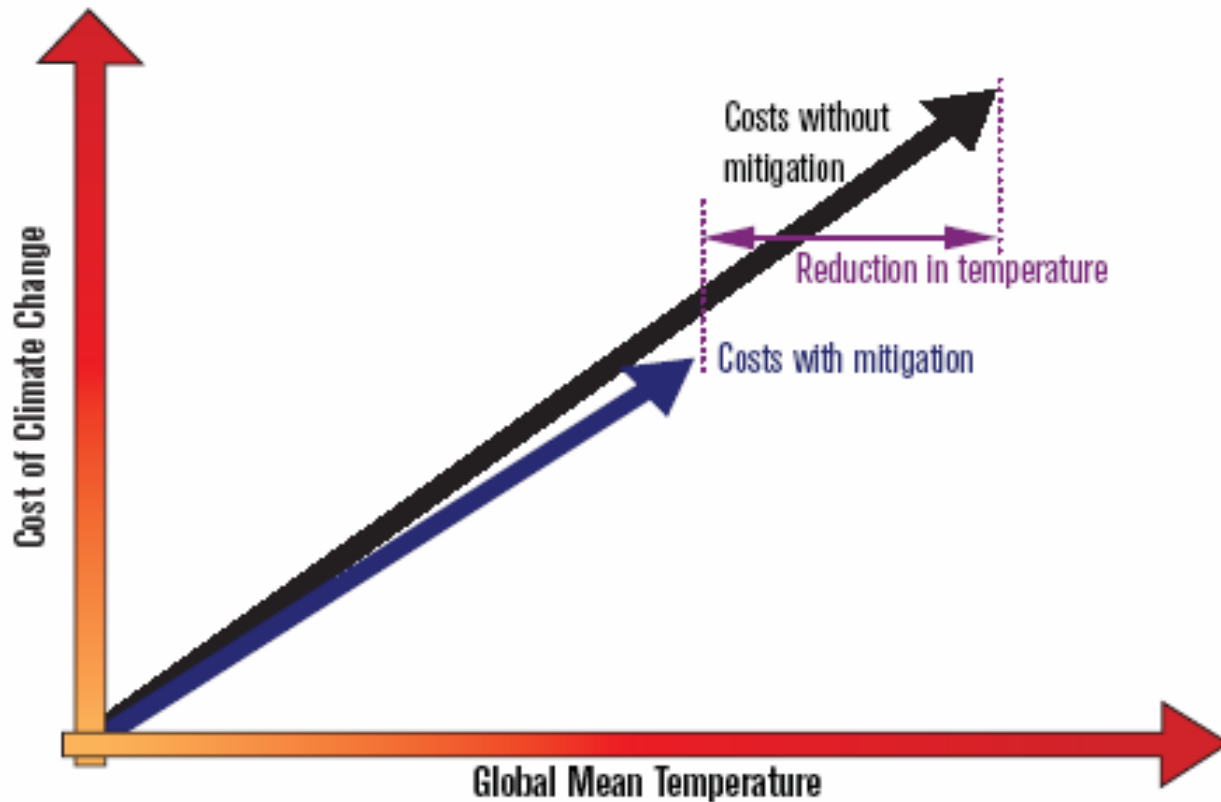


Percentage of people killed by natural disasters by region



9 The case for mitigation

- Reducing the production of GHGs, i.e. mitigation climate change impacts, would not only be cheaper in the long-run however, also lead to a reduction in temperatures



10 Knowledge gaps in the area of climate change & disasters

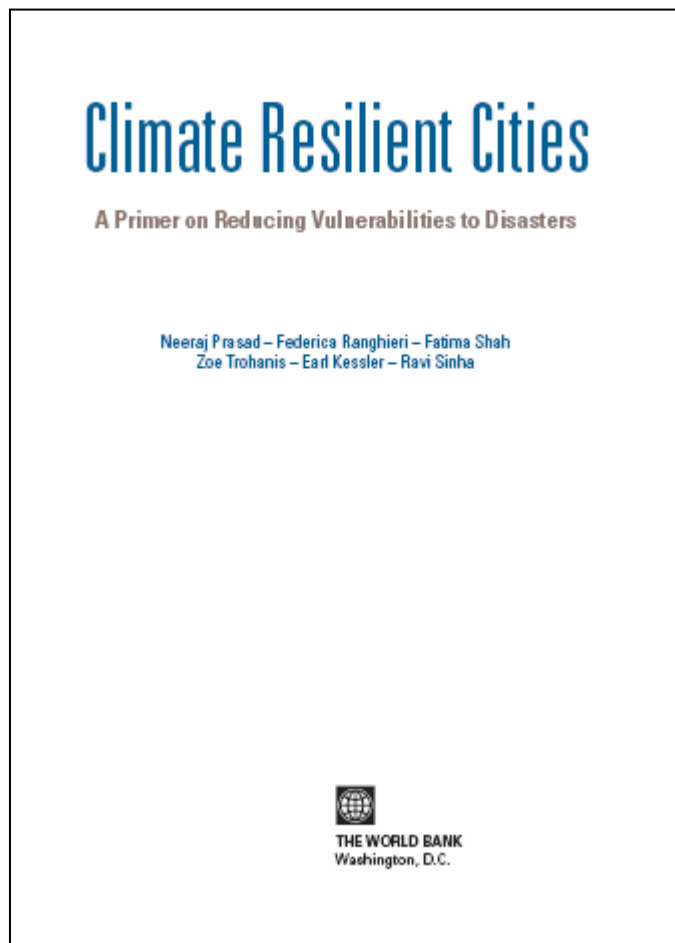
Adequate evidence

- Climate change and man-made causes
- **Global temperature increase**
- Urbanization in cities
- **Impacts of climate change on urban and rural areas**
- Climate change - disaster - development
- **Economic rationale for mitigation**
- Future forecasts of temperature increases and associated impacts

Knowledge gaps

- **Are we really prepared for climate change impacts?**
- How to really deal with climate change impacts and sound practices **
- **Tools for assessing how much climate change is impacting specific cities and their sectors**
- Processes for prioritizing interventions
- **\$\$ required for mitigation**
- Scalability of interventions
- **Replicability in and across regions**
- Interventions that address both climate change and disasters
- **Who's going to do it! Roles, responsibilities, and accountability**

11 “Climate Resilient Cities: A Primer on Reducing Vulnerabilities to Disasters” Report



- Report by World Bank and UNISDR (2008)
- Focus on climate **change adaptation** & **disaster risk reduction** in East Asia region
- Moving from theory to practice
- Tool for city level managers to develop a strategy for adaptation and mitigation
- For both cities in beginning and advanced stages in dealing with climate change and disaster risks
- Presents a “hotspot” tool for identifying city-specific priorities for action
- Presents “no regrets” endeavors

12 “Hotspot” exercise – the heart of decision-making

Resilient

Hot



1. Hotspot exercise 2. Creating a city information base 3. Learning from sound practices

Given

- Geographical location
- City size and growth rate
- Governance structure
- Disaster history

“Influentiable”

- City management
- Financial resources
- Built environment
- Disaster response systems
- Economic impact of disasters

Hotspot assessment excerpt

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. 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	

13 Example 1: Good organization structure

Seattle/King City, Washington

USA

- City developed a comprehensive sensitivity assessment, adaptation capacity assessment, vulnerability assessment, cross-sector interaction assessment
- Devised a strategy for maximizing limited means by pooling resources with neighbouring local governments

Example 2: Sound institutional mechanism

Singapore

Singapore

- Developed the National Climate Change Strategy through a consultative, multi-stakeholder approach
- Leadership by ministerial committee on climate change chaired by the Deputy Prime Minister of Singapore
- This ensures that climate change will have strong institutional support



14 Example 3: Sound institutional mechanism

Makati City, Philippines

- Philippines
- Strong institutional mechanisms for facilitating action on climate change and disaster risk management with the Makati City Disaster Coordination Council
 - Representation of all relevant departments of the national and city government

Example 4: Ownership by line departments

Tokyo

Japan

- Ownership by line departments with capacity and authority to ensure proper coordination between various agencies
- Programs report to and are monitored by high-level institutional mechanisms



15 Example 5: Preparing a climate change strategy

Tokyo

Japan

- The Tokyo Climate Change Strategy defines a policy for the 10-year project for a carbon-minus Tokyo
- Encompasses measures the government intends to carry out over the next 10 years

Example 6: Generating public awareness

Rockville, Maryland

USA

- Rockville sponsors and facilitates dialogue and discussion on sustainability and environmental issues
- Publishes yearly reports on progress, recommendations, and goals
- Engages community in all aspects

Example 7: Accounting and reporting for mitigation

Singapore

Singapore

- Companies such as Singapore Airlines, ST Microelectronics, Sony Electronics, City Developments issue environmental reports on GHG emissions



16 Example 8: Catastrophic risk financing and transfer

Bogota, Colombia

- Colombia
- Developing a risk financing strategy for losses arising from natural disasters which will provide the city with a financial strategy that guarantees appropriate resources needed for disaster reconstruction or rehabilitation

Example 9: Climate change mitigation – energy sector

Albuquerque, New Mexico

- New Mexico
- Developing public-private partnerships for the promotion of alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, etc
 - Also energy audits, conversion of outdated lighting
 - Dedicated budget and resources

Example 10: Climate change mitigation – transport sector

Jakarta, Indonesia

- Indonesia
- Making high-occupancy highway lines in rush hours
 - Dedicated bus lanes

17 Example 11: Climate change mitigation – built environment

Albuquerque, New Mexico

- Energy Conservation Code calls for commercial and multifamily residual buildings to be 30 percent more efficient than previously
- Single-family homes to be insulated and more heat efficient

New Mexico

Example 12: Climate change mitigation – forestry/greenery

Hanoi, Vietnam

- Planting and upkeep of upstream protection forests
- Afforestation program targeting 5 million hectares

Vietnam

Example 13: Climate change mitigation – finance

Albuquerque, New Mexico

- Using bonds for financing programmes

New Mexico • Also, water rebates for home owners to switch to efficient systems

18 Example 14: Adaptation – infrastructure sector

Nam Dinh Province, Vietnam.

Vietnam

- Building large and medium scale reservoirs to retain flood waters
- Strengthen dike management and protection works

Example 15: Adaptation – water conservation and flooding

Singapore

- Diversifying water supply sources

Singapore

- Creating new catchment areas

Example 16: Adaptation – public health

Singapore

- Comprehensive vector surveillance program

Singapore

- Also, water rebates for home owners to switch to efficient systems

19 “Menu Card” or “building blocks” for interventions

“Appetizers”

“Entrée”

“Dessert”

Organizational Structure

Institutional mechanisms

Forest mitigation

Transport sector mitigation

Public health adaptation

Climate change strategy

Ownership by line departments

Built environment mitigation

Financial resources

Water conservation

Public awareness

Accounting and reporting

Energy sector mitigation

Risk Financing

Infrastructure Adaptation

And in each section, you have a variety of proven interventions to choose from!

20 The Road Ahead - ideas to think about ...

- 1 Case evidence is strong enough for action:
 - Asian urban growth
 - Capacity gaps in cities
 - ↑Vulnerabilities
 - Local decentralization
 - Financial pressures
- 2 Climate change adaptation and disaster risk reduction – main crux now for the development of Asian cities
- 3 Key is the local level to build resilient cities
- 4 CCA and DRR are complex problems involving all sectors
 - require innovation and ingenuity
 - takes time and need to start now
- 5 Paradigm shift
 - takes time and needs to start now

21 The Road Ahead - ideas to think about ...

- 6 Cities need to know how much they are really affected by climate change
 - Hotspot analysis
 - Intellectual capital to deal with these complex problems

- 7 Once we know, what do we do?
 - Prioritize actions - there are both urgent and important areas that need to be looked at
 - “No regret” interventions recognizing opportunity costs associated with interventions

- 8 Leveraging experiences of others but not following a “one size fits all” approach

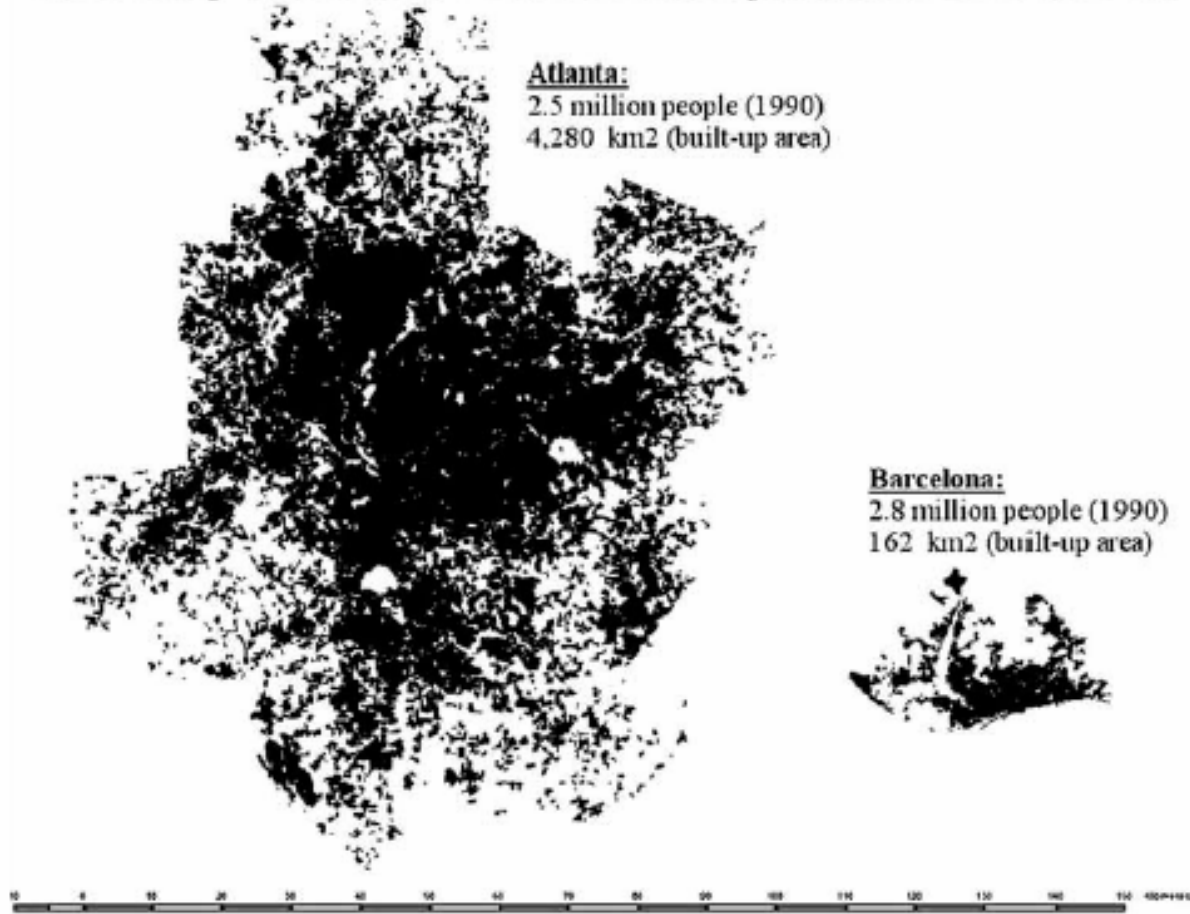
- 9 Need to go beyond “token” and “pilot” projects - taking good projects and replicating & scaling

22 The Road Ahead - ideas to think about ...

- 10 Need to consciously go beyond the same theoretical areas to most challenging areas in climate change adaptation and disaster risk reduction
- 11 Kalamazoo! Stating hard truths as they are!
- 12 Need for monitoring and evaluating of progress and gaps
- 13 Need to factor positive feedback effects in the system
- 14 Remember how long the environmental movement took!!

23 Urban footprints of cities - we have an option

The Built-up Area of Atlanta and Barcelona Represented at the Same Scale



Source: Bertaud, A. and T. Pote, Jr. *Density in Atlanta: Implications for Traffic and Transit* (Los Angeles: Reason Foundation, 2007).

DRR building blocks

Thank You!

www.unisdr.org

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