Urban Resilience and Disaster Vulnerability in the Asia-Pacific Region

Rajib Shaw
E-mail: shaw@global.mbox.media.kyoto-u.ac.jp
Web: www.iedm.ges.kyoto-u.ac.jp/

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  - Disaster vulnerability
  - Resilience
- Regional Task Force

Defining Urbanization

- Urban as infrastructure development
- Urban as industrial development
- Urban as the economic growth
- Urban as socio-political growth

- However, with the growing notion of development, the concept of urbanization is changing…

Concept of Sustainable Urban Development

- 1970s: Urbanization and industrialization
- 1980s: Sustainable development and urban growth
- 1990s: Sustainable cities and eco-cities
- 2000s: Resilient urban growth and urban ecosystem
  - High economic efficiency
  - Social equity in distribution of city development
  - Generation of financial resources
  - Community based approaches

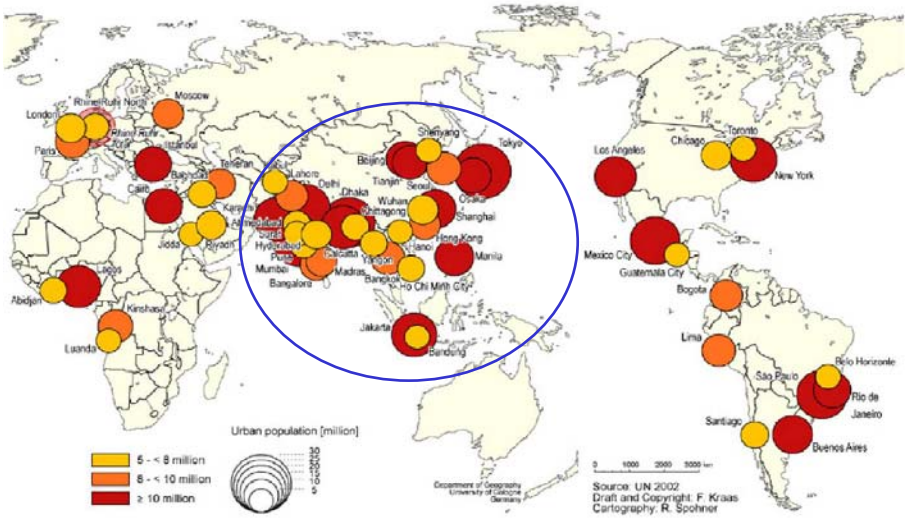
Urbanization and Asia

- Urban Population: 2.5 billion in 1994 to 5.1 billion in 2025
- Developing countries urban population: in 1970, 50% of urban population lived in those countries, which rose to 64% in 1994 and 80% projected in 2020

Population (Million)	1970	1990	2020 (projection)
Total regional population	2148	3403	4843
Total regional urban population	503	1159	2615
Level of urbanization (%)	23	34	54
Cities of over 10 million	2	10	19

Population change in Asia (million)/ ADB

Population Distribution



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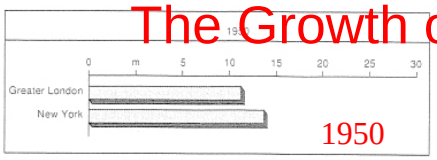
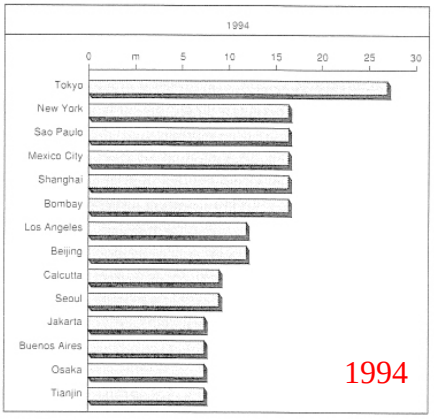
Characteristics of Asian Urbanization

- Functions of several demographic factors
  - Natural increase
  - Rural-urban migration
  - International migration
  - Boundary expansion
- Distribution of urban growth
  - Major informal growth in the outer fringe of the cities and vulnerable areas, along the rivers , mountain slopes, coastal areas
- Labor force trend
  - Urban growth is directly proportional to the growth of labor force
- Emergence of mega cities
  - Mega city size is changing from 8 million (1980s) to 10 million (1990s)
  - Mega city boundary is expanding
- Importance of small and medium sized cities
  - Rapid emerging numbers of small and medium sized cities with high economic and political importance

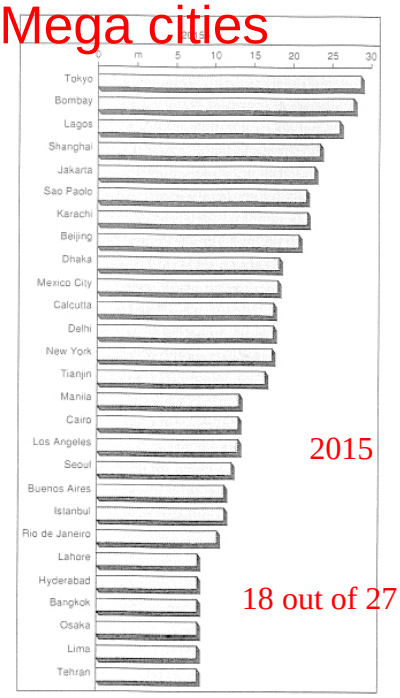
The Growth of Mega cities



1950



1994



2015

18 out of 27

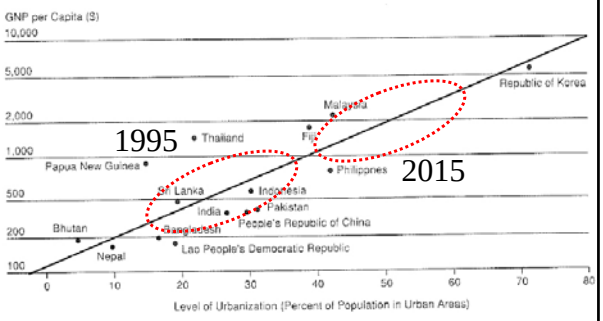
Source: ADB

Asian Mega cities

- Japan
  - Tokyo
  - Osaka
- China
  - Beijing
  - Shanghai
  - Tianjin
- Indonesia
  - Jakarta
- Philippines
  - Manila
- South Korea
  - Seoul
- Thailand
  - Bangkok
- Vietnam
  - Hanoi
  - HCMC
- Bangladesh
  - Dhaka
- India
  - Chennai
  - Delhi
  - Kolkata
  - Mumbai
- Pakistan
  - Karachi

What makes mega city different?

- Economic development
- Level of urbanization
- City size
- Attraction to informal sector industries
- Migration impacts
- Role in global economy
- Quality of life
  - Contrast in lifestyle
  - Urban poverty
  - Environmental impacts



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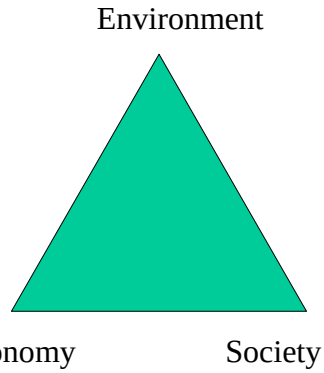
Mega city management issues

- Infrastructure
  - Water supply, sanitation
  - Waste management
    - Sewage: people, industry,
    - Solid waste
  - Drainage
  - Disaster Management
  - Transport
  - Urban slums
    - Health, housing, education
- Management System
  - Environmental control
    - Air, Water, Noise control
  - Financial control
  - Land-use management and control



Re-defining Mega city

- How do we define mega-city?
- It is not only the population, but combination of different aspects
  - Population has been a traditional measure
    - Absolute population or relative population (relative mega-city concept)
  - Economic approach
  - Function approach
  - Ecological approach
  - Societal approach

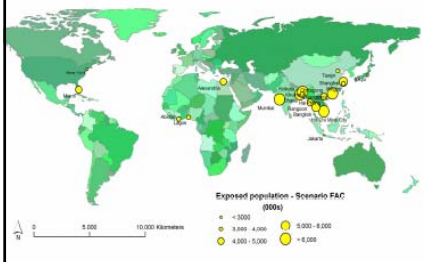
Small and medium cities

- Significant focus has been given on megacities, however small and medium sized cities were rather neglected
- Medium sized cities (of population 500,000 or 1 million) are becoming economically important growth points
- Resource constraint is a crucial issue for the small and medium size cities
- Thus, there needs to be a balanced focus of mega-city and small and medium size cities

Vulnerable Cities of Asia Pacific

15 of top 20 cities ranked in terms of both POPULATION EXPOSED to coastal flooding in 2070 (including both climate change and socio-economic change) and showing present- day exposure.

Source: OECD, Dec 2007



p showing the top 20 cities for exposed population under the future climate socioeconomic change scenario

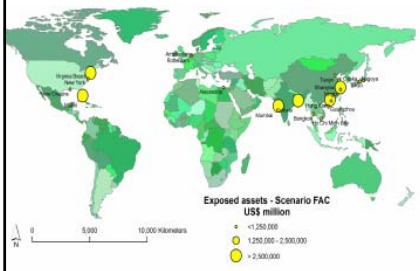
Rank	Country	Urban Agglomeration	Exposed Population Current	Exposed Population Future
1	INDIA	Kolkata (Calcutta)	1,929,000	14,014,000
2	INDIA	Mumbai (Bombay)	2,787,000	11,418,000
3	BANGLADESH	Dhaka	844,000	11,135,000
4	CHINA	Guangzhou	2,718,000	10,333,000
5	VIETNAM	Ho Chi Minh City	1,931,000	9,216,000
6	CHINA	Shanghai	2,353,000	5,451,000
7	THAILAND	Bangkok	907,000	5,138,000
8	MYANMAR	Rangoon	510,000	4,965,000
9	USA	Miami	2,003	4,795,000
10	VIETNAM	Hai Phòng	794,000	4,711,000
11	EGYPT	Alexandria	1,330	4,375,000
12	CHINA	Tianjin	956,000	3,790,000
13	BANGLADESH	Khulna	441,000	3,641,000
14	CHINA	Ningbo	299,000	3,305,000
15	NIGERIA	Lagos	357,000	3,229,000
16	CÔTE D'IVOIRE	Abidjan	519,000	3,110,000
17	USA	New York-Newark	1,540,000	2,931,000
18	BANGLADESH	Chittagong	255,000	2,866,000
19	JAPAN	Tokyo	1,110,000	2,521,000
20	INDONESIA	Jakarta	513,000	2,248,000

Table 1: Top 20 cities ranked in terms of population exposed to coastal flooding in the 2070s (including both climate change and socioeconomic change) and showing present-day exposure

Asset Vulnerability of Cities in Asia Pacific

13 of top 20 cities ranked in terms of ASSETS EXPOSED to coastal flooding in 2070 (including both climate change and socio-economic change) and showing present day exposure.

Source: OECD, Dec 2007

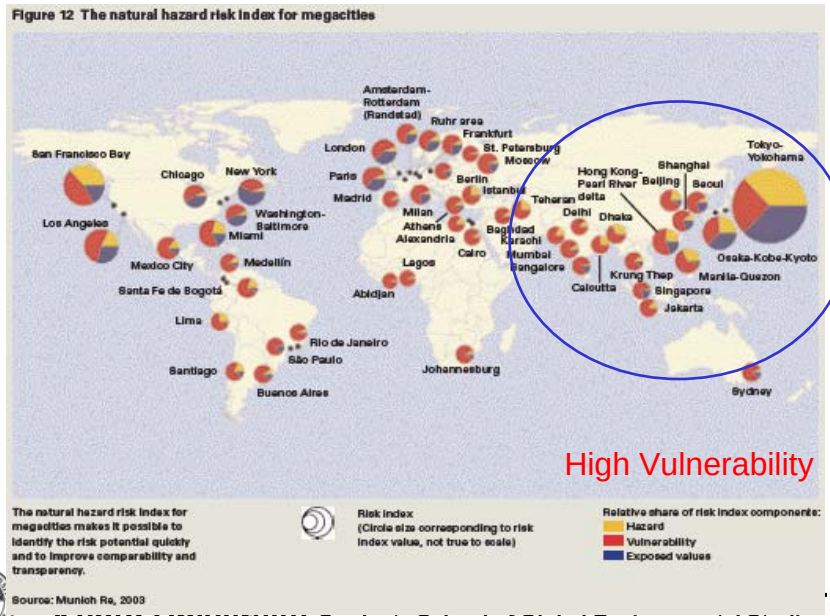


ap showing the top 20 cities for exposed assets under the future climate change
onomic change scenario

Rank	Country	Urban Agglomeration	Exposed Assets, Current ($Billion)	Exposed Assets, Future ($Billion)
1	USA	Miami	416.29	3,513.04
2	CHINA	Guangzhou	84.17	3,357.72
3	USA	New York-Newark	320.20	2,147.35
4	INDIA	Kolkata (Calcutta)	31.99	1,961.44
5	CHINA	Shanghai	72.86	1,771.17
6	INDIA	Mumbai	46.20	1,598.06
7	CHINA	Tianjin	29.62	1,231.48
8	JAPAN	Tokyo	174.29	1,207.07
9	CHINA	Hong Kong	35.94	1,183.89
10	THAILAND	Bangkok	38.72	1,117.54
11	CHINA	Ningbo	9.26	1,073.93
12	USA	New Orleans	233.69	1,013.45
13	JAPAN	Osaka-Kobe	215.52	968.96
14	NETHERLANDS	Amsterdam	128.33	843.70
15	NETHERLANDS	Rotterdam	114.89	825.68
16	VIETNAM	Ho Chi Minh City	26.86	652.82
17	JAPAN	Nagoya	109.22	623.42
18	CHINA	Qingdao	2.72	601.59
19	USA	Virginia Beach	84.64	581.59
20	EGYPT	Alexandria	28.46	563.28

Table 2: Top 20 cities ranked in terms of assets exposed to coastal flooding in the 2070s (including bot
climate change and socioeconomic change) and showing present-day exposure

Natural Hazard Risk Index



Continuum of Risk

Nature of event	Disasters	Small disasters	Everyday risks
Frequency	Generally infrequent	Frequent (often seasonal)	Everyday
Scale	Large or potential to be large: 10+ killed, 100+ seriously injured	3–9 people killed, 10 or more injured	1–2 people killed, 1–9 injured
Impact on all premature death and serious injury/illness	Can be catastrophic for specific places and times, but low overall	Probably significant and under-estimated contribution	Main cause of premature death and serious injury

Source: Provention Consortium, 2007

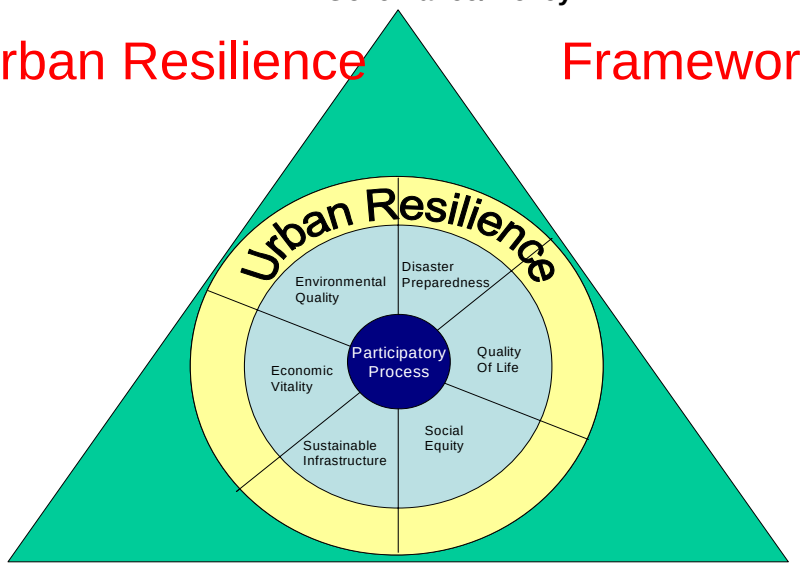
Accumulated Risk

Resilience

- Resilience is the proactive stance to risk
- Resilience to unanticipated change such as natural disaster shocks
- Resilience is important for high vulnerability areas like informal settlements
- Resilience is important for the areas of interaction with eco-system like coast line, mountain areas

Governance/ Policy

Urban Resilience Framework



Learning (Academic Institutions)

Implementation

10 points of Sustainable Urban Management

- Provide a long-term vision for cities based on: sustainability; intergenerational, social, economic and political equity; and their individuality
- Achieve long-term economic and social security
- Recognise the intrinsic value of biodiversity and natural ecosystems, and protect and restore them
- Enable communities to minimise their ecological footprint
- Build on the characteristics of ecosystems in the development and nurturing of healthy and sustainable cities
- Recognise and build on the distinctive characteristics of cities, including their human and cultural values, history and natural systems
- Empower people and foster participation
- Expand and enable cooperative networks to work towards a common sustainable future
- Promote sustainable production and consumption, through appropriate use of environmentally sound technologies and effective demand management
- Enable continual improvement, based on accountability, transparency and good governance

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  - Disaster vulnerability
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- Regional Task Force

Regional Urban Task Force

- Task force is *not* an implementing body
- Members of the task force will implement project, *share* project results, *enhance* networks
- Immediate needs and priorities
  - HFA reporting framework on urban risk
  - Mapping of urban risk and resilience in the Asia-Pacific region

Proposed Task Force Activities

- Networking and knowledge sharing
  - Presentations and participation in the major global and/or regional forum
- Developing knowledge products
  - Knowledge repository, training and capacity building programs
- Initiative and/or provide link to country activities
  - Country specific actions and dissemination