

# KEY INDICATORS

## for Asia and the Pacific

# 2012

43<sup>RD</sup> EDITION

SPECIAL CHAPTER:  
**Green Urbanization in Asia**

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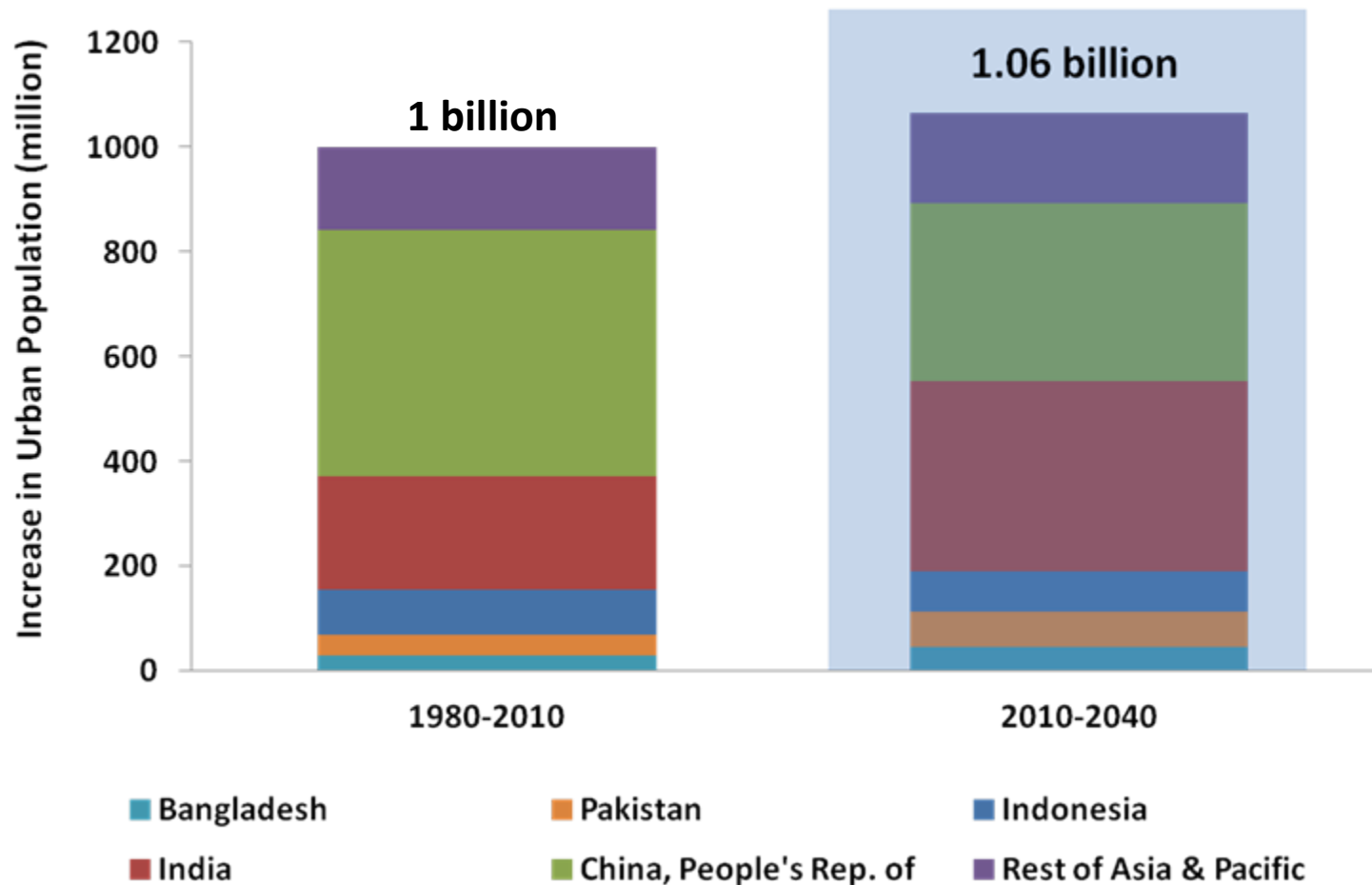
Asian Development Bank

# Main Messages

- **Asia's urbanization is unprecedented & unique in several aspects**
- **... leading to enormous challenges possibly including environmental degradation**
- **But urbanization can help!**
- **To ensure a win-win scenario, green urbanization policies shall exploit unique features of Asia's urbanization and late comer's advantage**

# Asia's urbanization is unprecedented

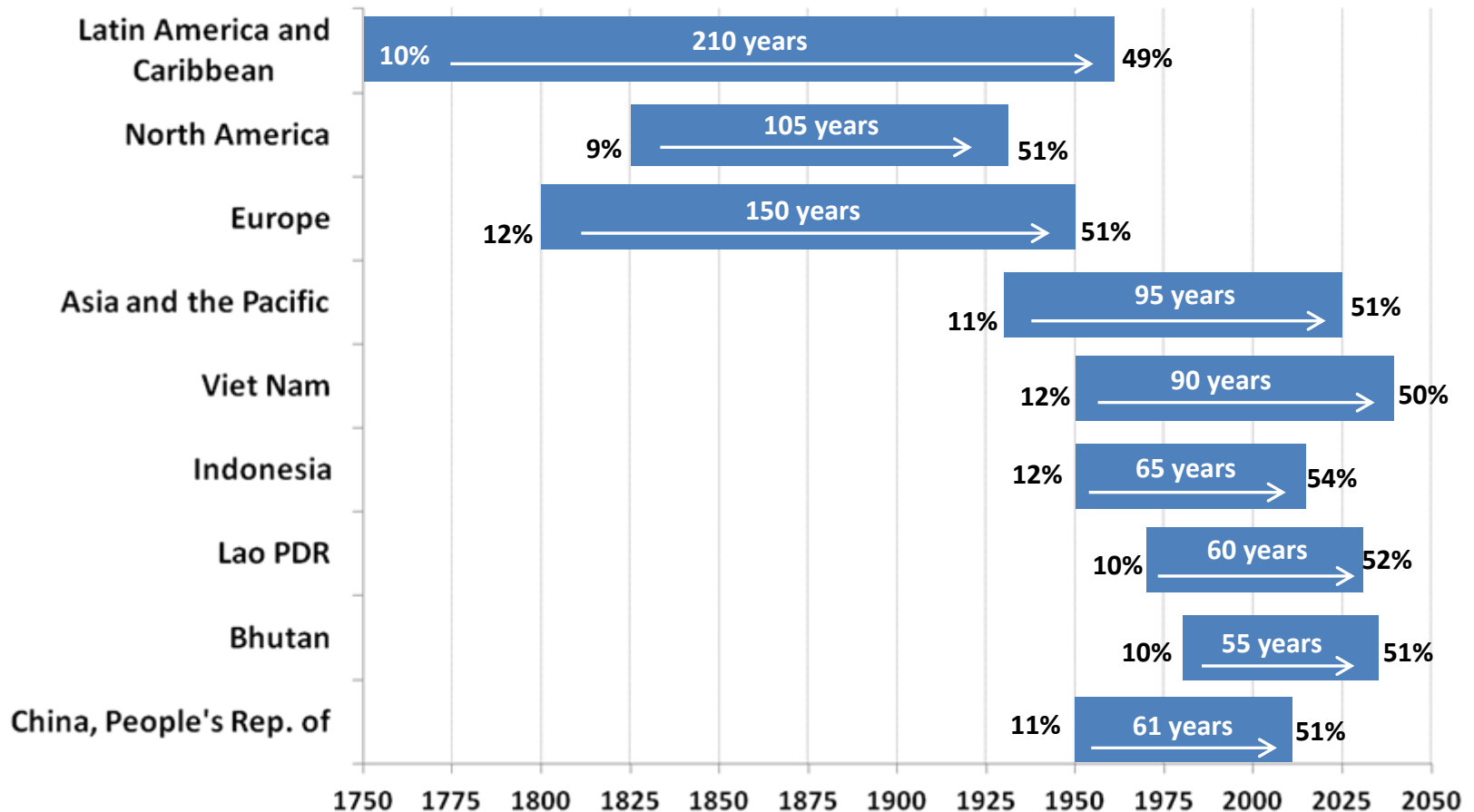
Increase in Urban Population in Asia and the Pacific (millions)



Source: ADB estimates using UN(2012).

# Unique feature 1: very fast speed

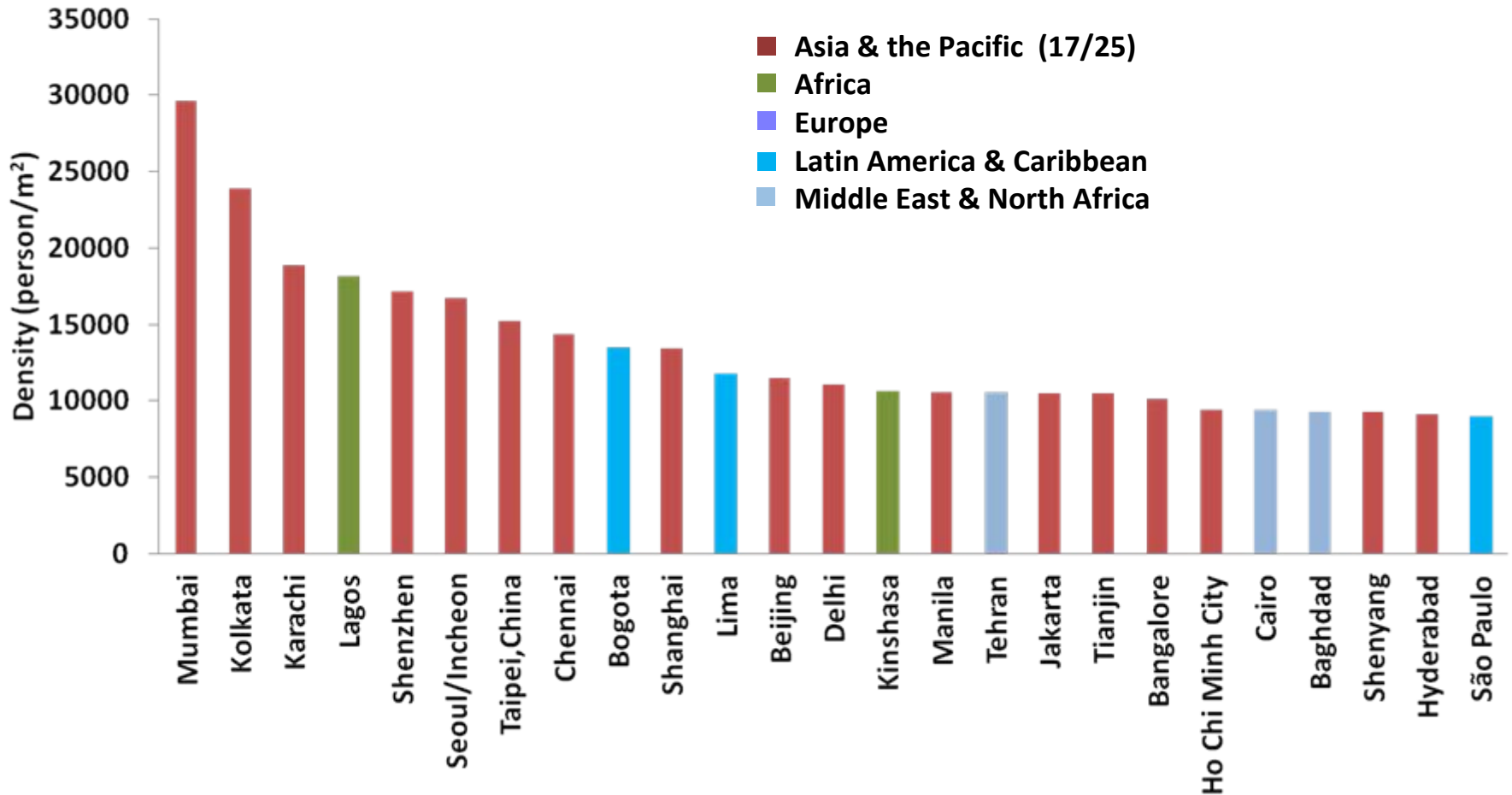
Number of Years from about 10% to 50% of Urbanization Rate



Source: ADB estimates using Bairoch (2008) and UN(2012).

# Unique feature 2: highest densities in the world...

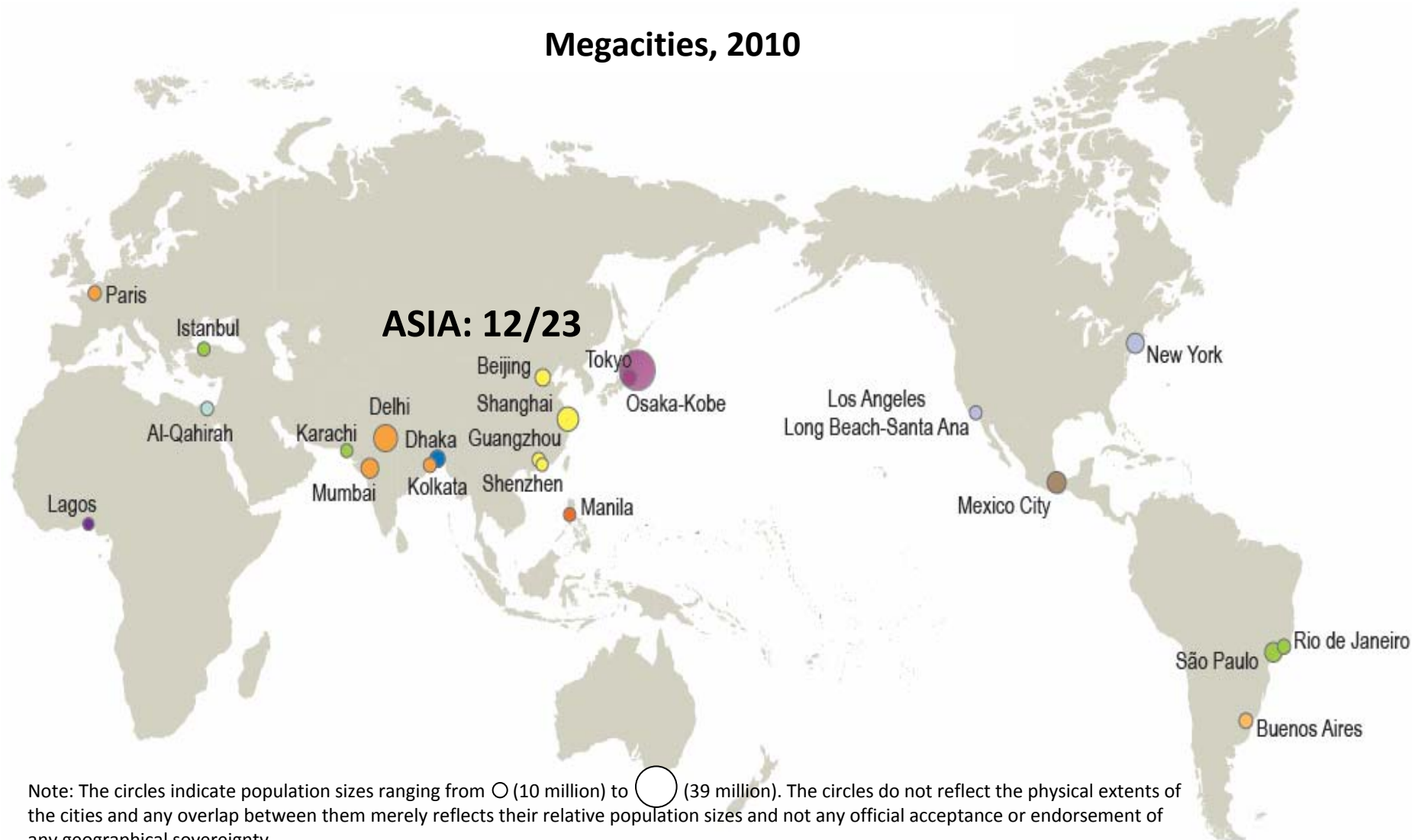
Top 25 World's Cities Ranked by Density, 2007



# Unique feature 3: many megacities

## Megacities, 2010

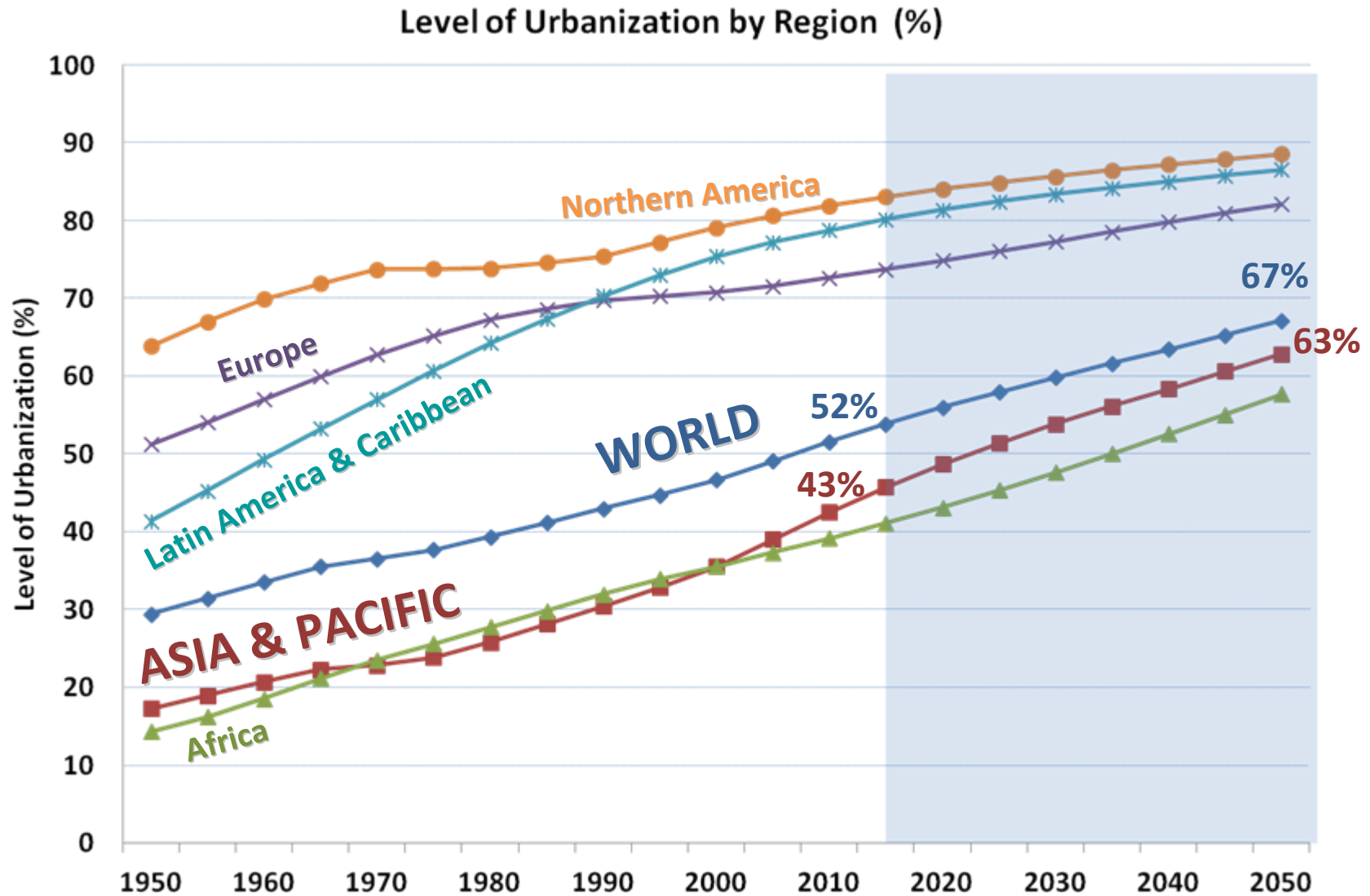
**ASIA: 12/23**



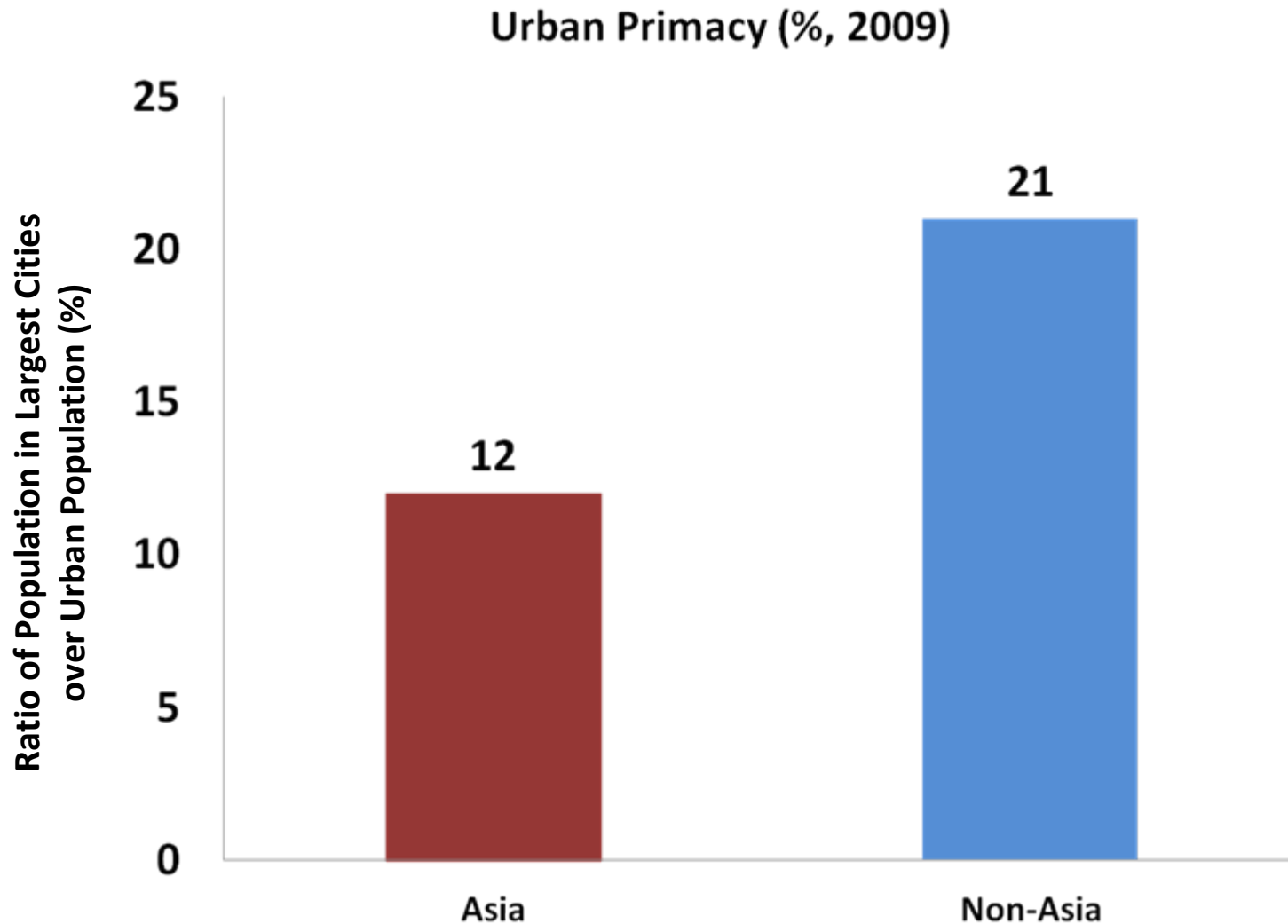
Note: The circles indicate population sizes ranging from ○ (10 million) to ○ (39 million). The circles do not reflect the physical extents of the cities and any overlap between them merely reflects their relative population sizes and not any official acceptance or endorsement of any geographical sovereignty.

Source: UN (2012).

# Unique feature 4: low starting base



# Unique feature 5: the largest cities are likely to grow bigger

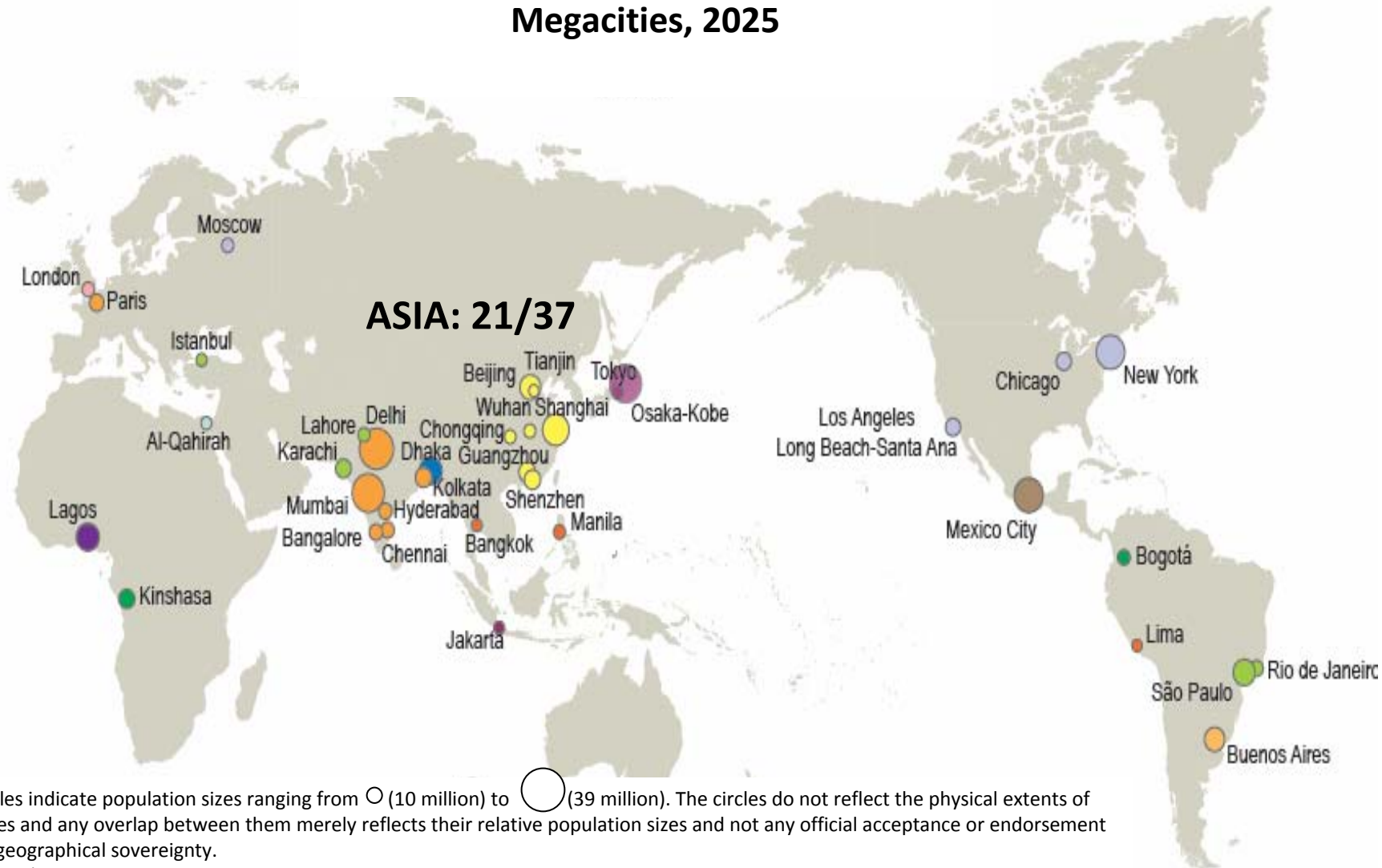


Source: ADB estimates using UN(2012).



# ... thus more and bigger megacities are emerging

## Megacities, 2025



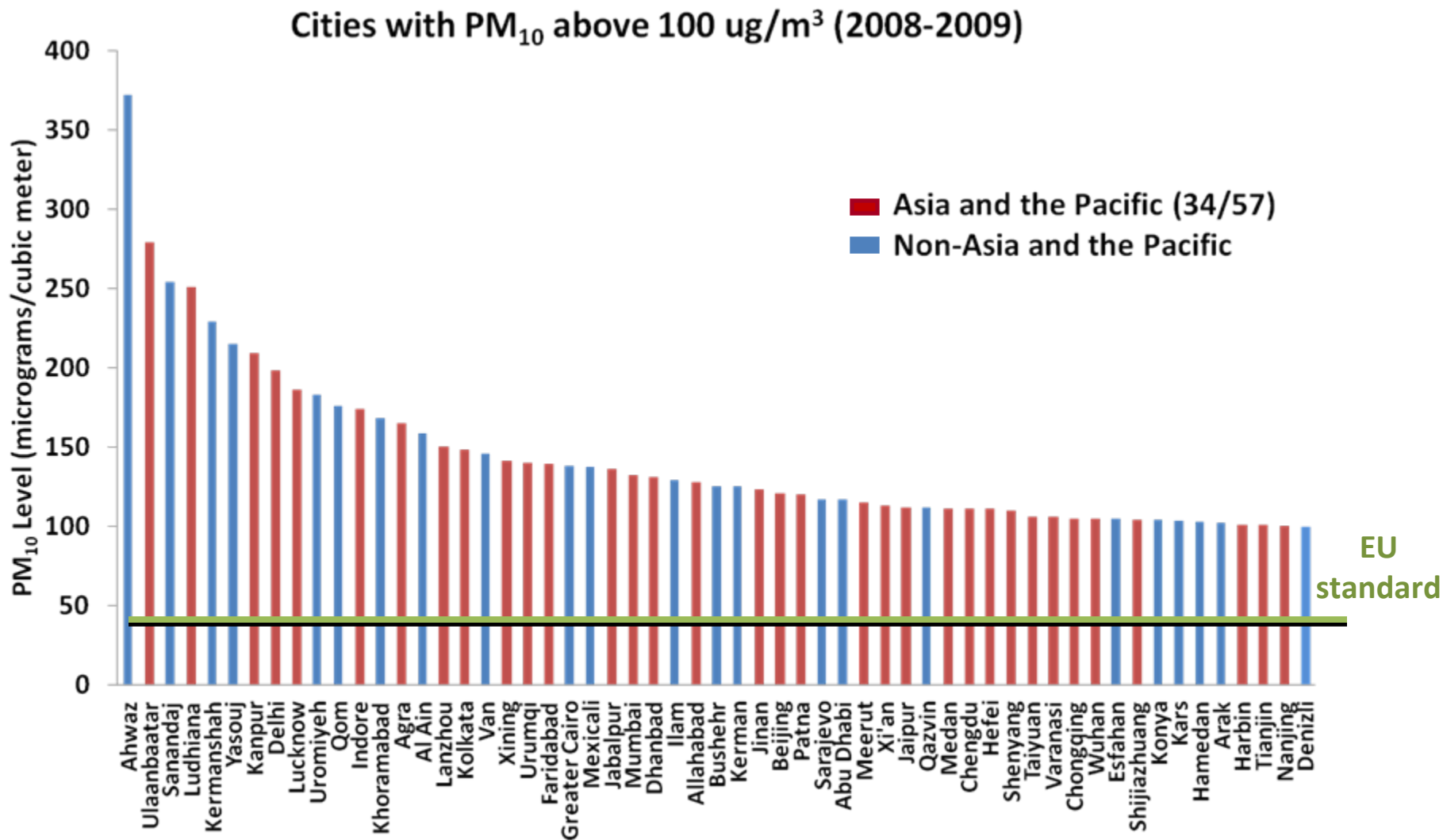
Note: The circles indicate population sizes ranging from  $\bigcirc$  (10 million) to  $\bigcirc$  (39 million). The circles do not reflect the physical extents of the cities and any overlap between them merely reflects their relative population sizes and not any official acceptance or endorsement of any geographical sovereignty.

Source: UN (2012).

# Unprecedented urbanization poses enormous challenges already serious

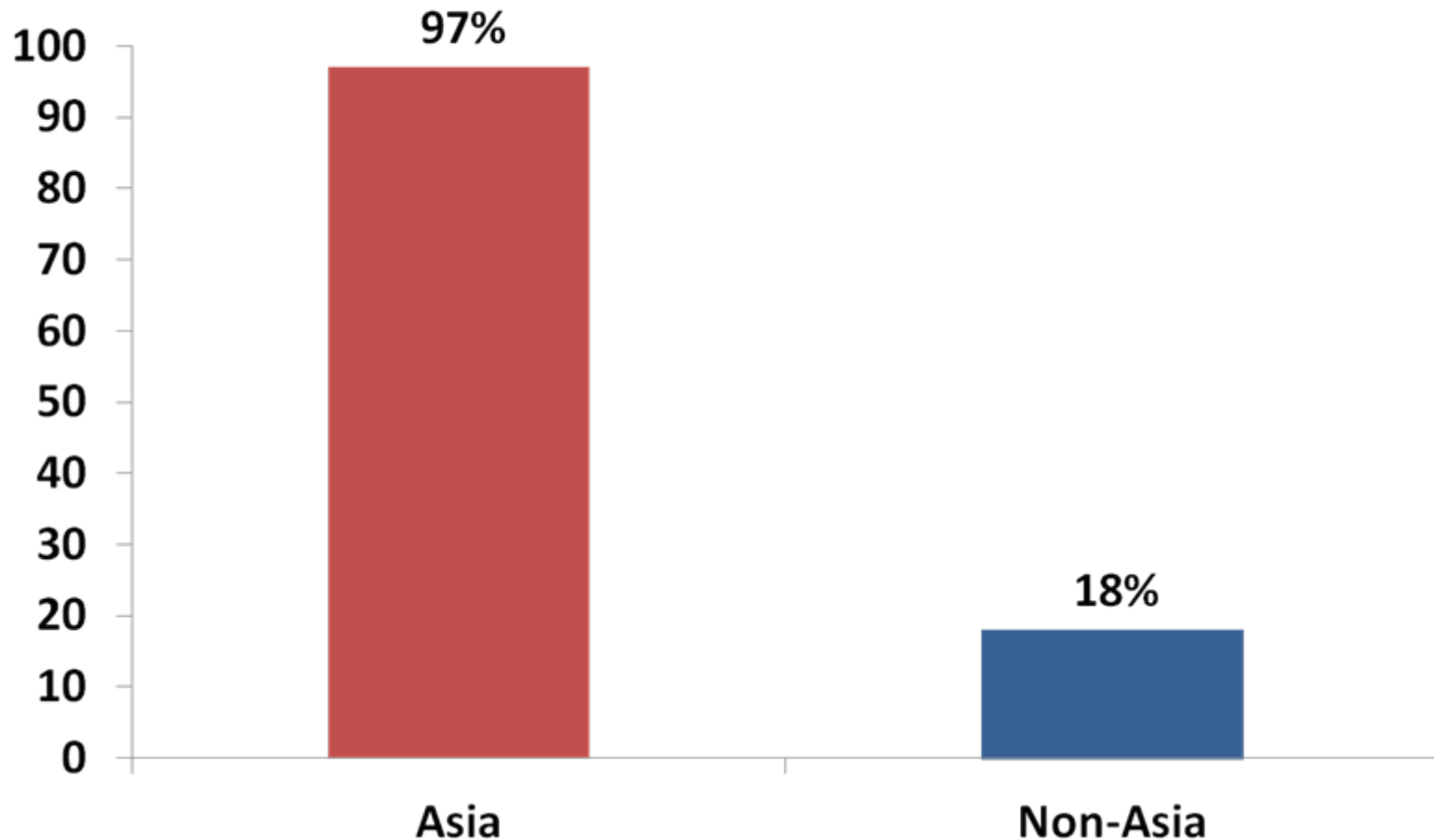
- **Growing inequalities**
- **Rising urban crimes**
- **Expansion of slums**
- **Above all, environmental degradation**
  - **Pollution**
  - **Vulnerability to flooding**

# 67% of Asian (vs. 11% Non-Asian) cities fail to meet EU air quality standard



# CO<sub>2</sub> emissions grow fast in Asia

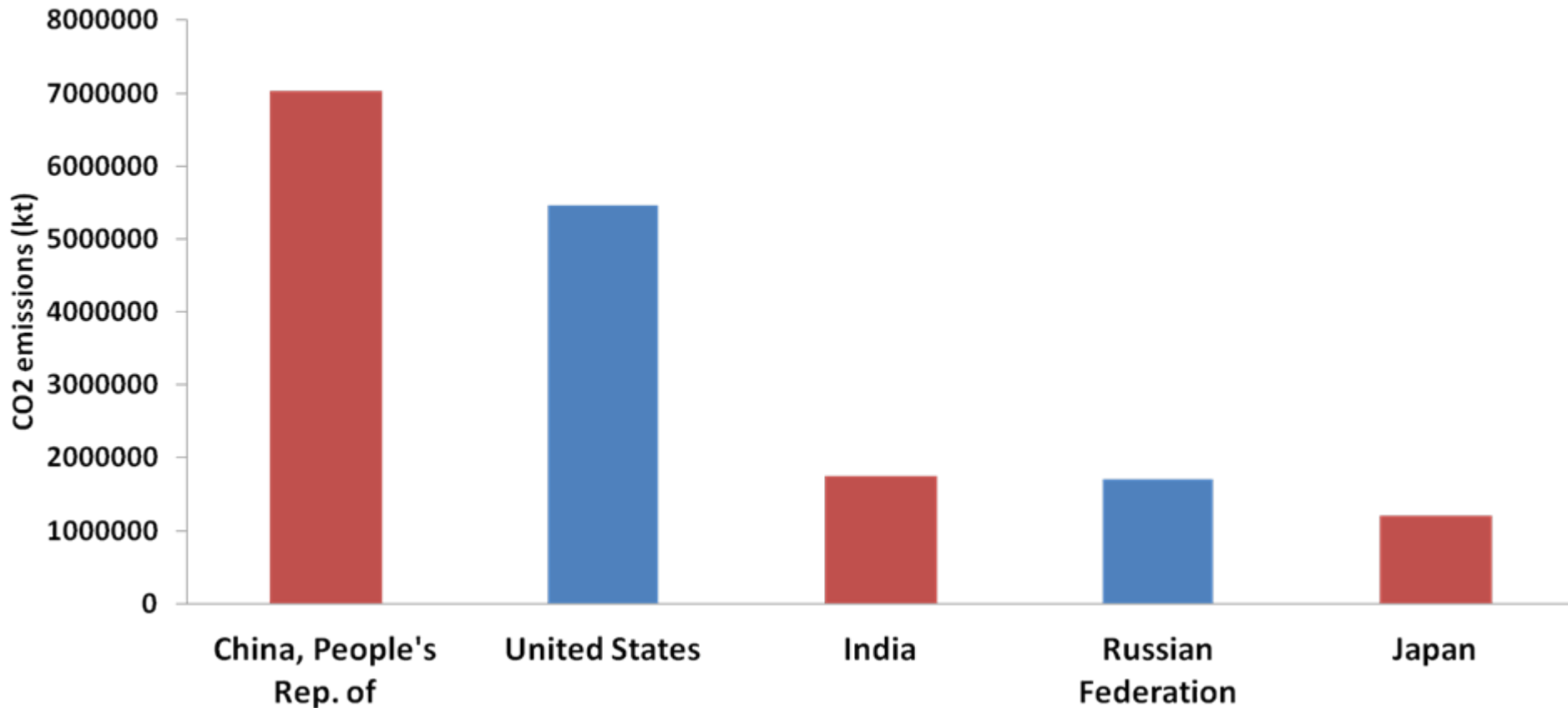
Growth of Per Capita CO<sub>2</sub> Emissions over 2000-2008 (%)



Source: ADB estimates using World Bank (2012).

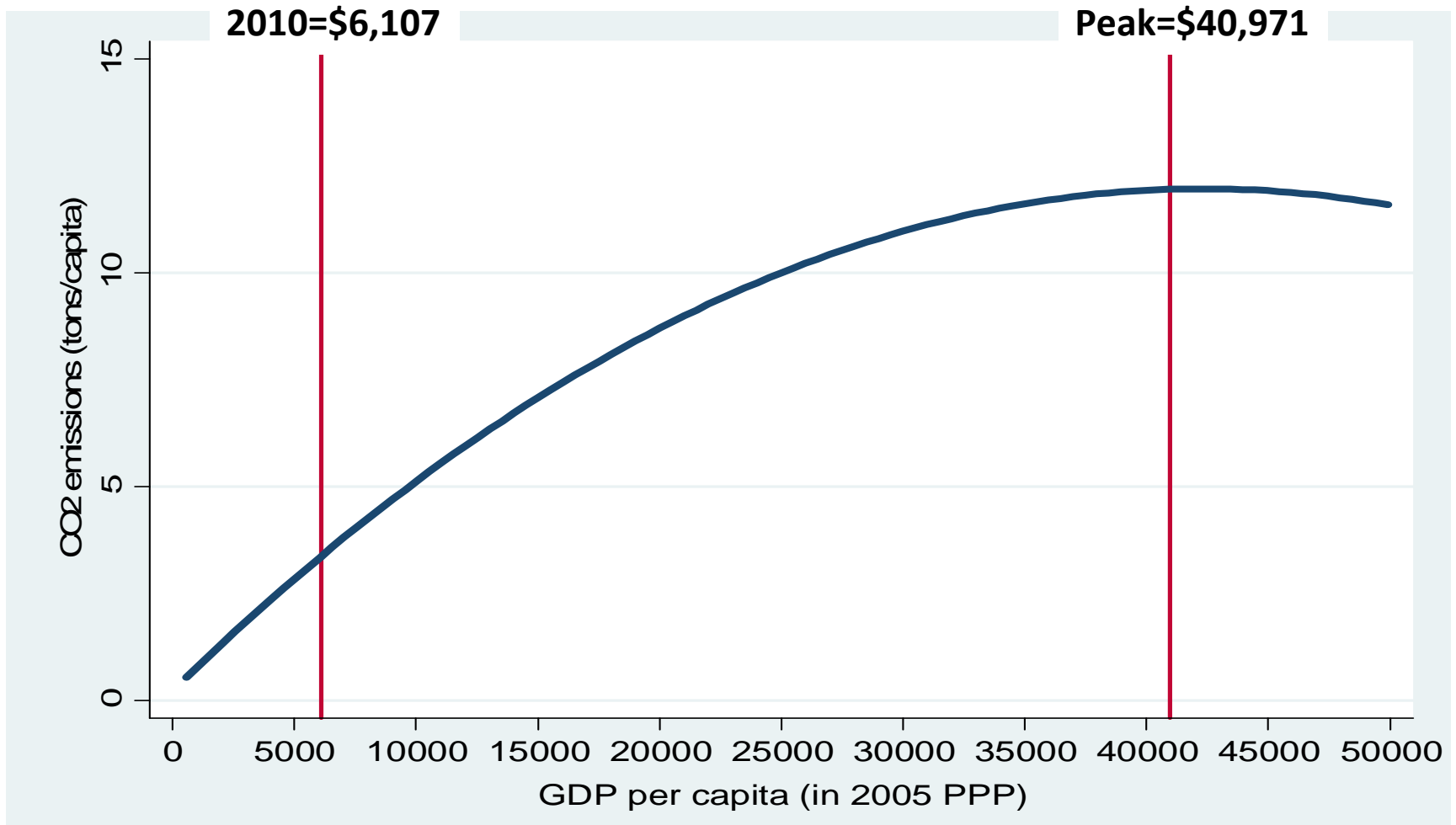
... and three of the top five CO<sub>2</sub> emitting economies are in Asia.

Top 5 Countries in terms of CO<sub>2</sub> Emissions



# Environment may degrade further with growth

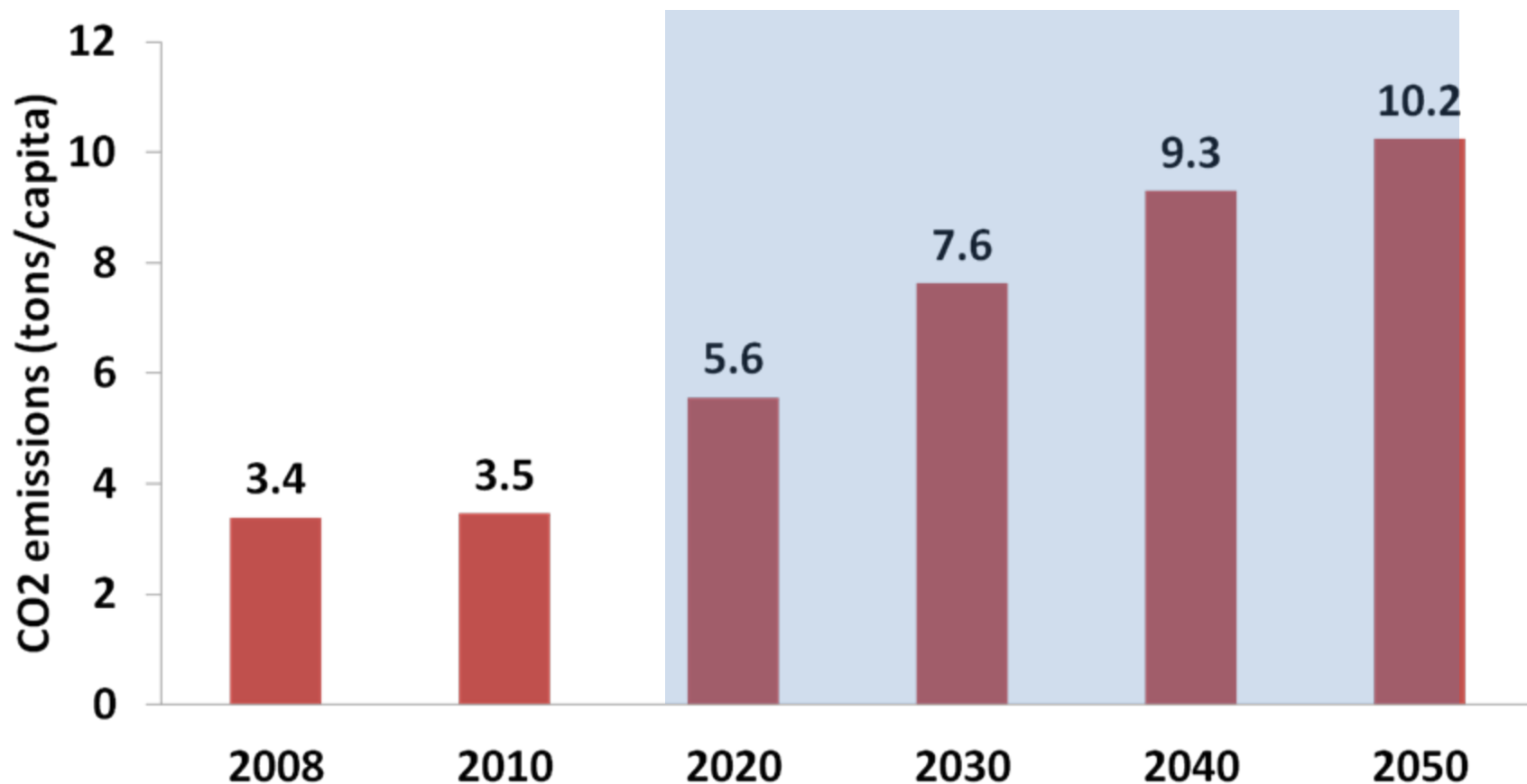
Asia's Environmental Kuznets Curve



Source: ADB estimates using World Bank (2012).

# CO<sub>2</sub> emissions may triple under the business-as-usual scenario

Projected CO<sub>2</sub> emissions based on latest EKC



Source: ADB estimates using World Bank (2012).

# Asia is more vulnerable to coastal flooding

Risk of Coastal Flooding by Region, 2000

	Urban population at Risk (million)	Share of Population at Risk (%)	Urban Area at Risk ('000 km <sup>2</sup> )	Share of Area at Risk (%)
Africa	32	11	18	6
<b>Asia and Pacific</b>	<b>251</b>	<b>18</b>	<b>129</b>	<b>11</b>
Latin America	24	8	42	6
Europe	40	7	56	7

Source: ADB estimates based on McGranahan et al. 2007.



# Coastal flooding is clustered in PRC, South & Southeast Asia: Top 15 cities, 2000

Country	City	Population at risk (%)	Population at risk ('000)	City Area at risk (km <sup>2</sup> )	Area at risk (%)
PRC	Tianjin	100.0	5,500	2081	100.0
PRC	Panjin	100.0	1,000	690	100.0
Bangladesh	Khulna	99.9	1,100	394	99.8
PRC	Nantong	99.8	1,000	286	99.9
PRC	Changzhou	99.0	2,000	362	99.0
PRC	Jiangyin	96.8	1,200	492	96.8
PRC	Suzhou	95.8	1,300	368	91.2
Indonesia	Palembang	94.2	1,300	473	89.5
Thailand	Bangkok	93.3	8,800	4805	80.2
PRC	Wuxi	91.1	1,300	397	91.0
PRC	Shanghai	90.8	14,000	2416	98.2
India	Kolkata	89.0	14,000	1441	62.9
PRC	Ningbo	85.6	1,700	779	85.6
Indonesia	Ujung Pandang	85.4	1,200	295	68.7
Viet Nam	Ho Chi Minh	79.3	4,400	890	72.6

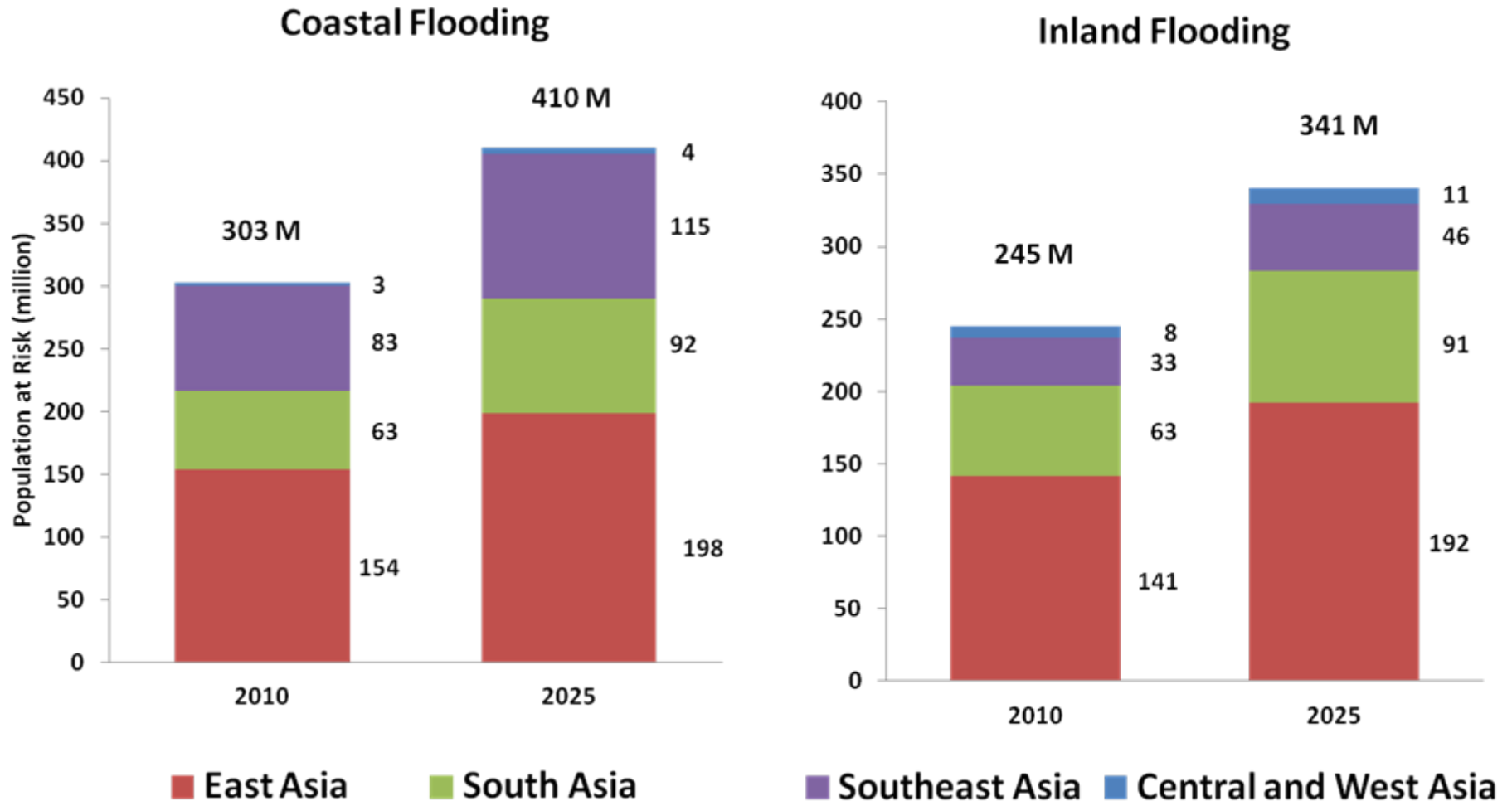
Source: Balk and Montgomery (2012).

# Inland flooding is also serious: Top 15 cities, 2000

Country	City	Population at risk (%)	Population at risk ('000)	City Area at risk (km <sup>2</sup> )	Area at risk (%)
Cambodia	Phnom Penh	99.0	988	204	99.0
PRC	Wuhan	82.0	5300	956	82.0
Indonesia	Palembang	80.0	1100	257	49.0
India	Patna	72.0	1100	436	72.0
Bangladesh	Dhaka	60.0	5400	680	48.0
PRC	Nanjing	56.0	2200	749	56.0
Vietnam	Ho Chi Minh	50.0	2800	306	25.0
PRC	Tianjin	50.0	2800	795	38.0
PRC	Huangshi	50.0	624	170	45.0
PRC	Huainan	50.0	614	277	49.0
PRC	Wuhu	47.0	552	140	48.0
Thailand	Bangkok	46.0	4400	2165	36.0
PRC	Bangbu	44.0	510	198	44.0
India	Guwahati	44.0	507	159	35.0
India	Allahabad	42.0	665	230	43.0

Source: Balk and Montgomery (2012).

# Vulnerability will rise with urbanization



# Unique features of Asian urbanization make challenges more serious...

- **Low level = a long way to go**
- **Fast speed = little time to adjust or learn**
- **More & bigger megacities = hard to manage**
- **More slums = higher vulnerability**

# **But, urban agglomeration can help**

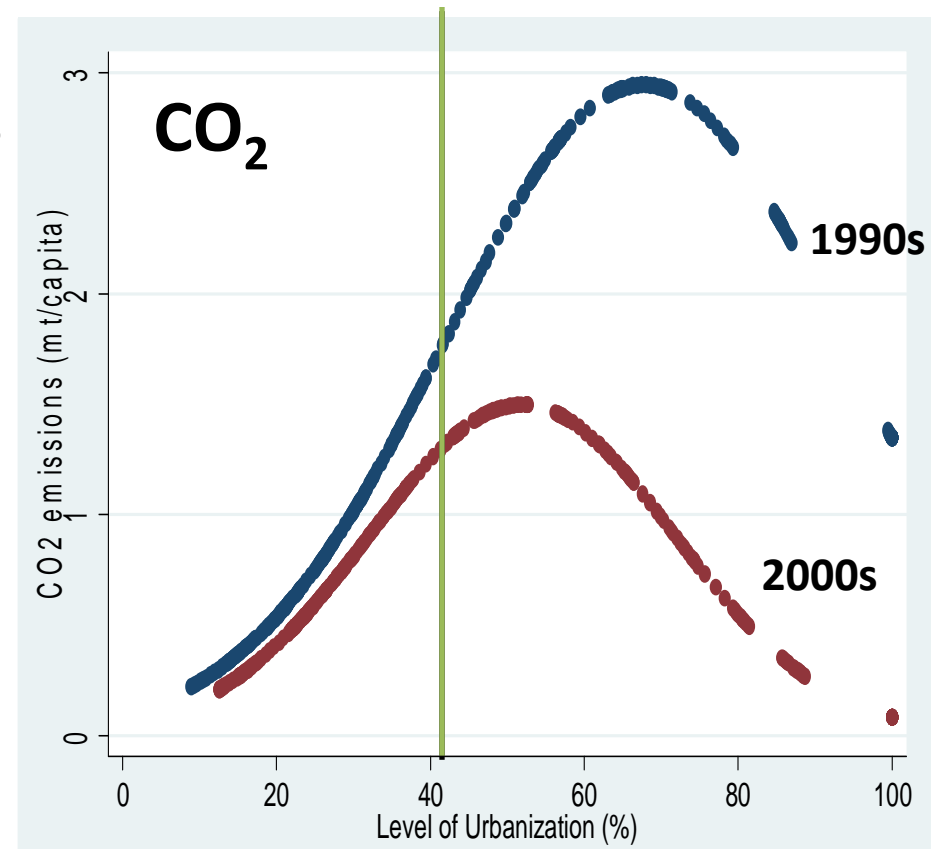
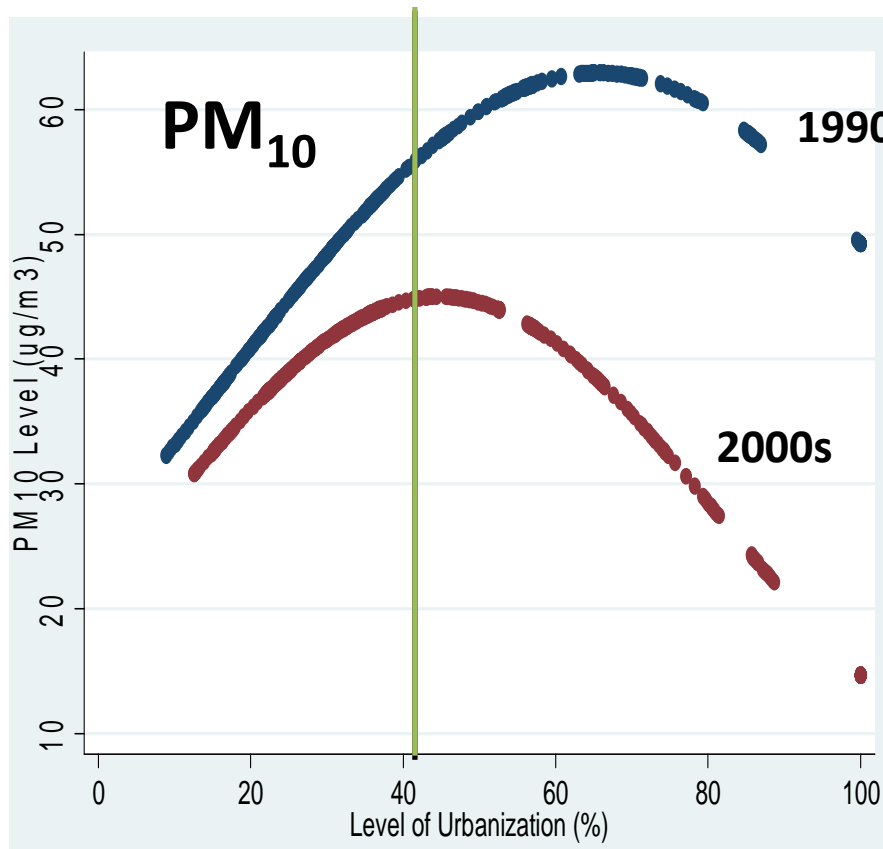
- **Service sector pollutes less**
- **Manufacturers relocate**
- **Efficient provision of infrastructure and services**
- **Better quality of life**
- **Innovation and higher labor productivity**
- **Nurture property owners and middle class**
- **And ...**

# The growth/composition/technical impacts of urbanization on environment

- ✗ The growth impact may be negative**
- ✓ The composition effect is positive**
- ✓ Technical effect is also positive**
- ✓ Most importantly, Asia as a late comer can leapfrog R&D and technology**
- ✓ ... and for adopting regulations timely**

# Environment-Urbanization relation has improved over time

## Environment-Urbanization Curves



# **Green urbanization can help shift the curves further**

- **Unique patterns of urbanization lead to megacities with satellite cities: ToD, BRT, green/compact/eco- cities concepts**
- **Exploit late comer advantage: import or R&D, smart grid, circular economy, clean energy, ....**
- **Timely introduction of regulations, and better financing and transparency: pollution/emission pricing, carbon tax or cap & trade, reduce subsidies, increased block tariffs, ...**



# Conclusions

- **It is counter-productive to contain urbanization, even for environmental concerns**
- **But, urbanization must be steered into a green path that exploits own unique features**
- **Asia can achieve green urbanization!**

**Thank You**  
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