Fostering Growth and Inclusion in Asia's Cities

Asian Development Outlook 2019 Update Theme Chapter

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Asian Development Bank

ADB

Outline

- Urbanization: Some key patterns

- Urban agglomeration economies in Asian cities

- Managing the city as a labor market

- Managing the urban system

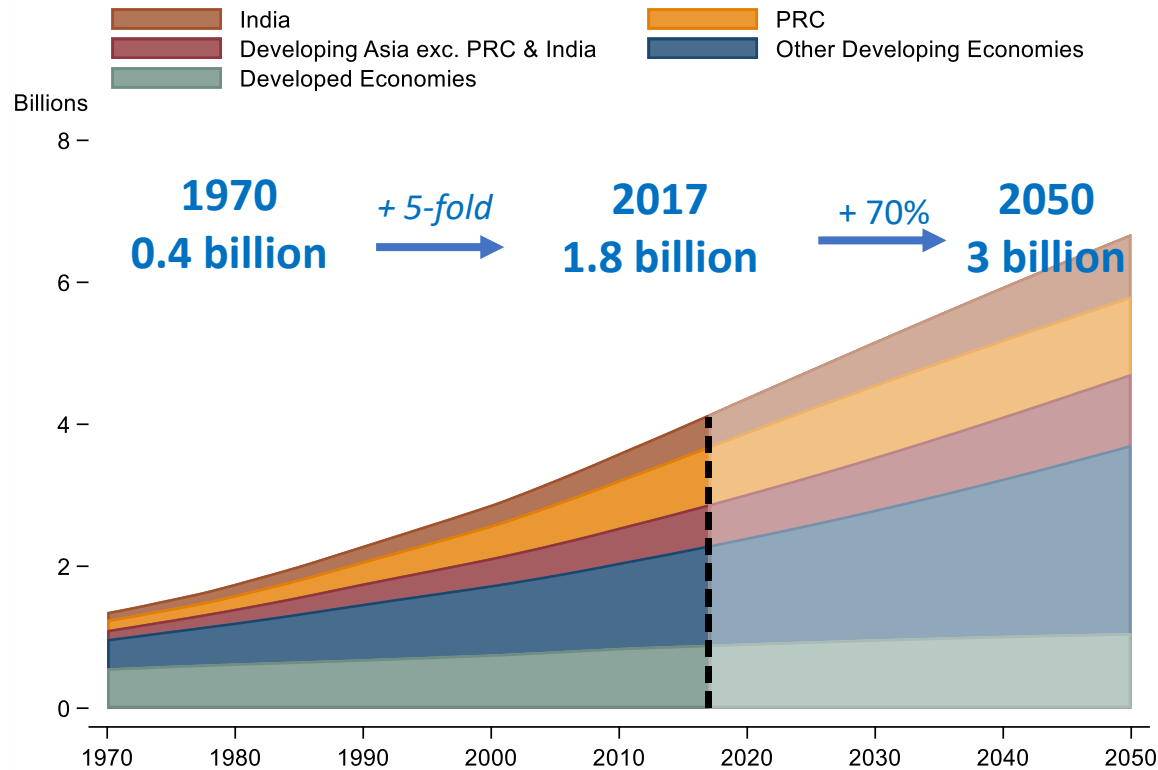- Road safety in developing Asia and ADB's recent efforts
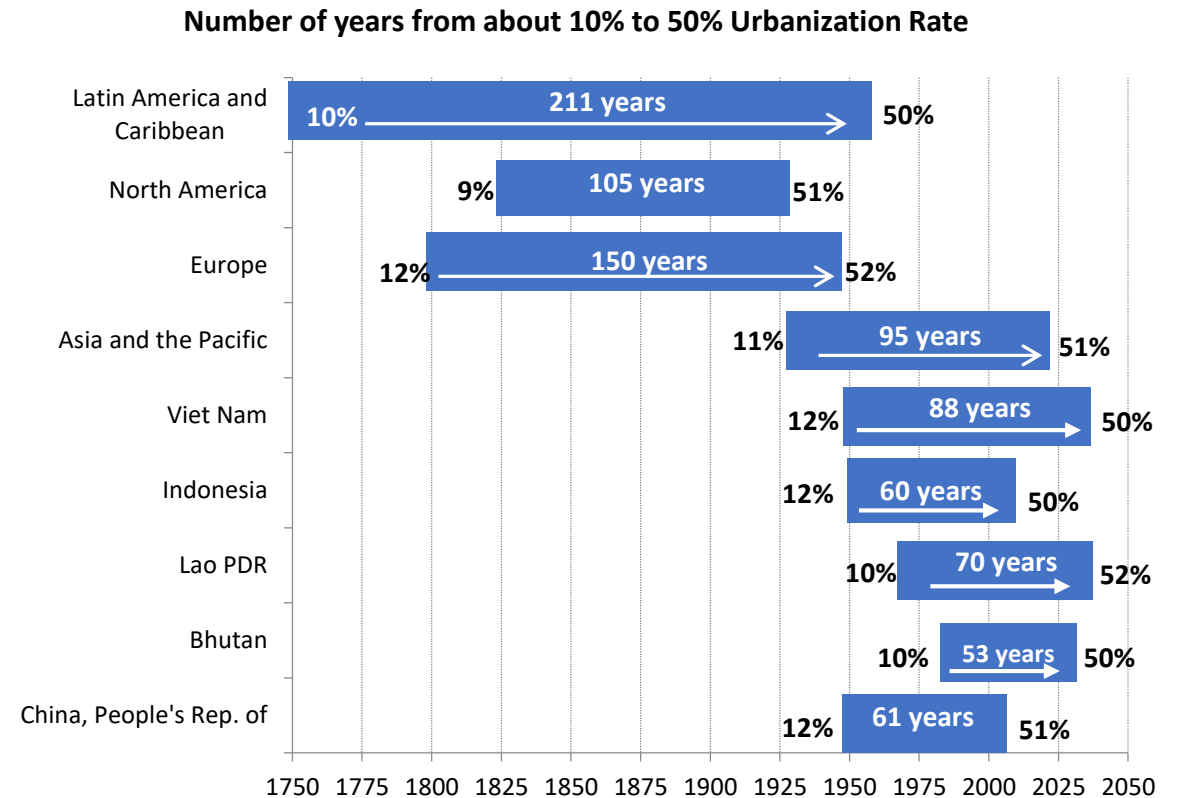
Urbanization: Some key patterns

Developing Asia is urbanizing rapidly

Urban population by region (1970-2050)

Billions

Legend:
- India
- Developing Asia exc. PRC & India
- Developed Economies
- PRC
- Other Developing Economies

1970
0.4 billion

+ 5-fold →

2017
1.8 billion

+ 70% →

2050
3 billion

Y-axis: 0, 2, 4, 6, 8

X-axis: 1970, 1980, 1990, 2000, 2010, 2020, 2030, 2040, 2050

Source: ADB estimates based on World Urbanization Prospects, the 2018 revision.

Number of years from 10% to 50% urbanization rate

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

Region	From %	Years	To %
Latin America and Caribbean	10%	211 years	50%
North America	9%	105 years	51%
Europe	12%	150 years	52%
Asia and the Pacific	11%	95 years	51%
Viet Nam	12%	88 years	50%
Indonesia	12%	60 years	50%
Lao PDR	10%	70 years	52%
Bhutan	10%	53 years	50%
China, People's Rep. of	12%	61 years	51%

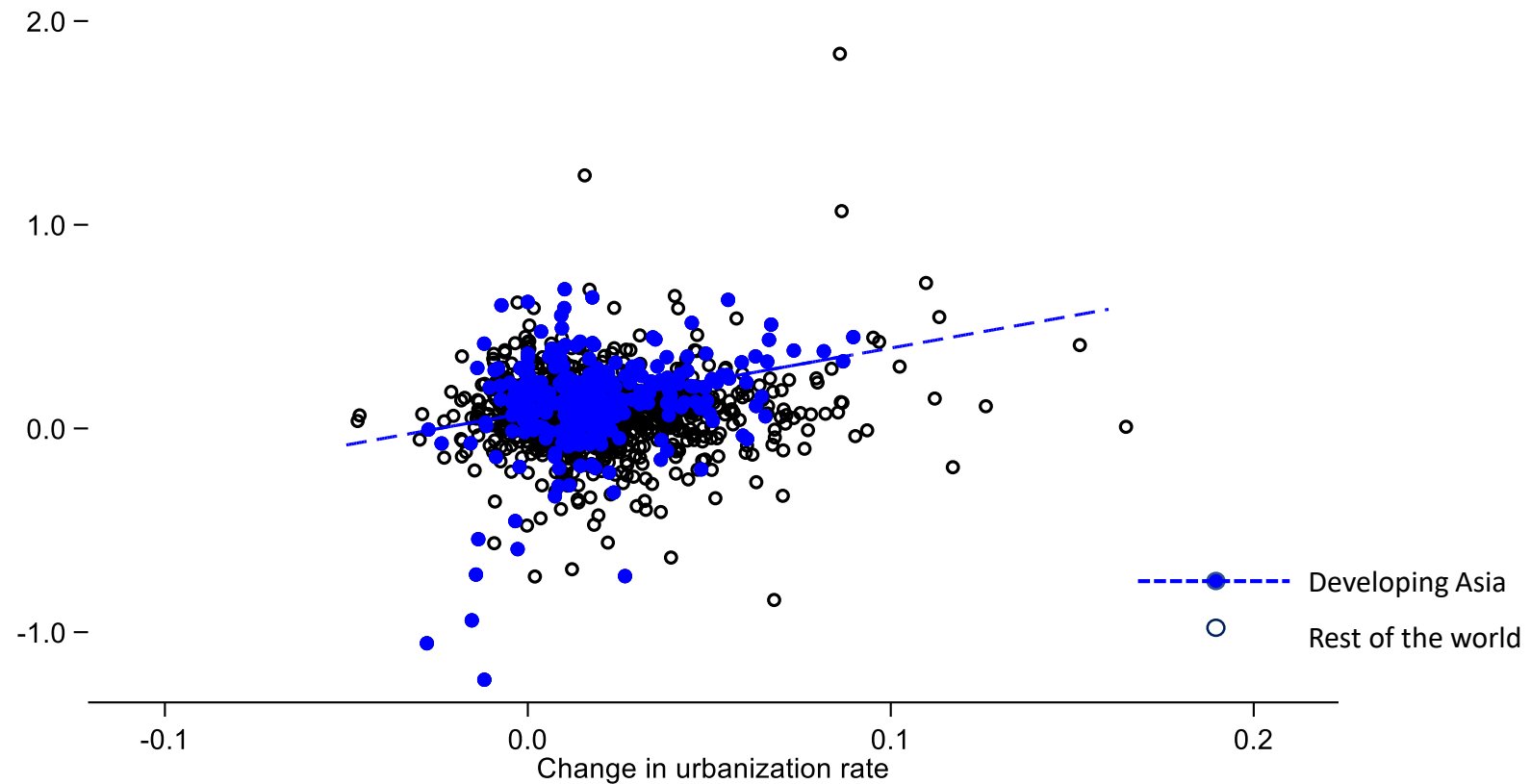X-axis: 1750, 1775, 1800, 1825, 1850, 1875, 1900, 1925, 1950, 1975, 2000, 2025, 2050

Source: ADB estimates using Bairoch (1988) and UN (2018).

Faster urbanization and economic growth are correlated

**Five-year changes in GDP per capita
versus change in urbanization, 1970-2017**


% change in real GDP per capita

Cities are expanding beyond administrative boundaries

- "**Natural cities**" capture actual urban footprint using nighttime lights satellite imagery.

- 1,459 natural cities are identified, hosting 34.7% of the population on 2.3% of land area.

- Natural cities have expanded beyond administrative boundaries.

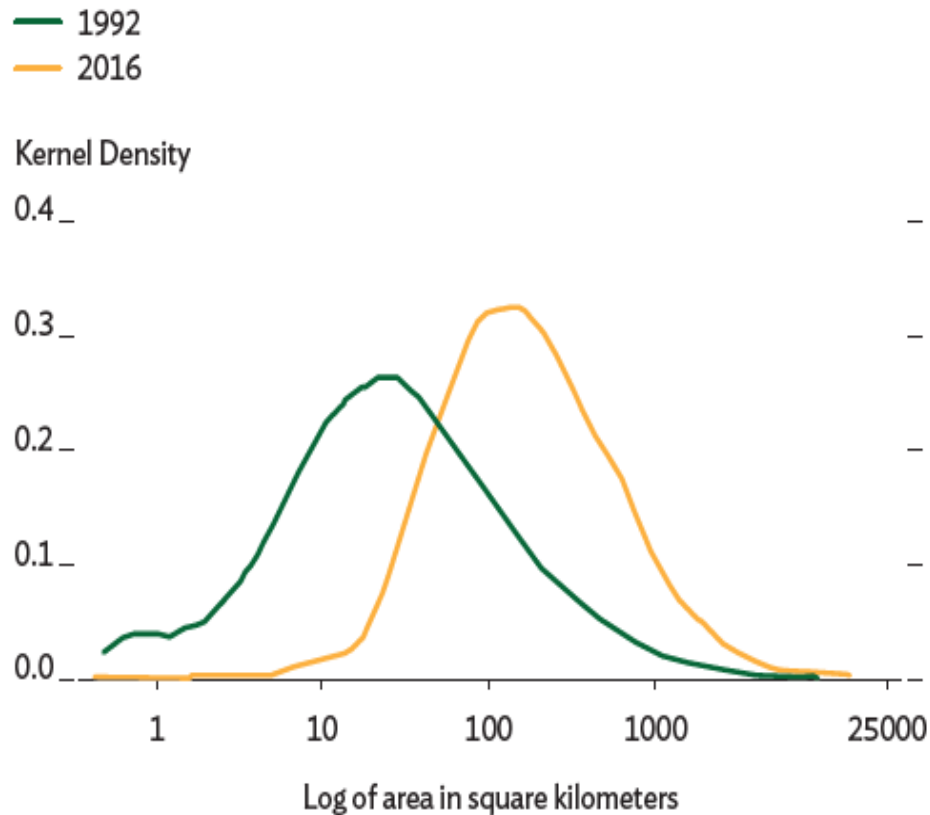- Some have gotten connected to form **city clusters**.
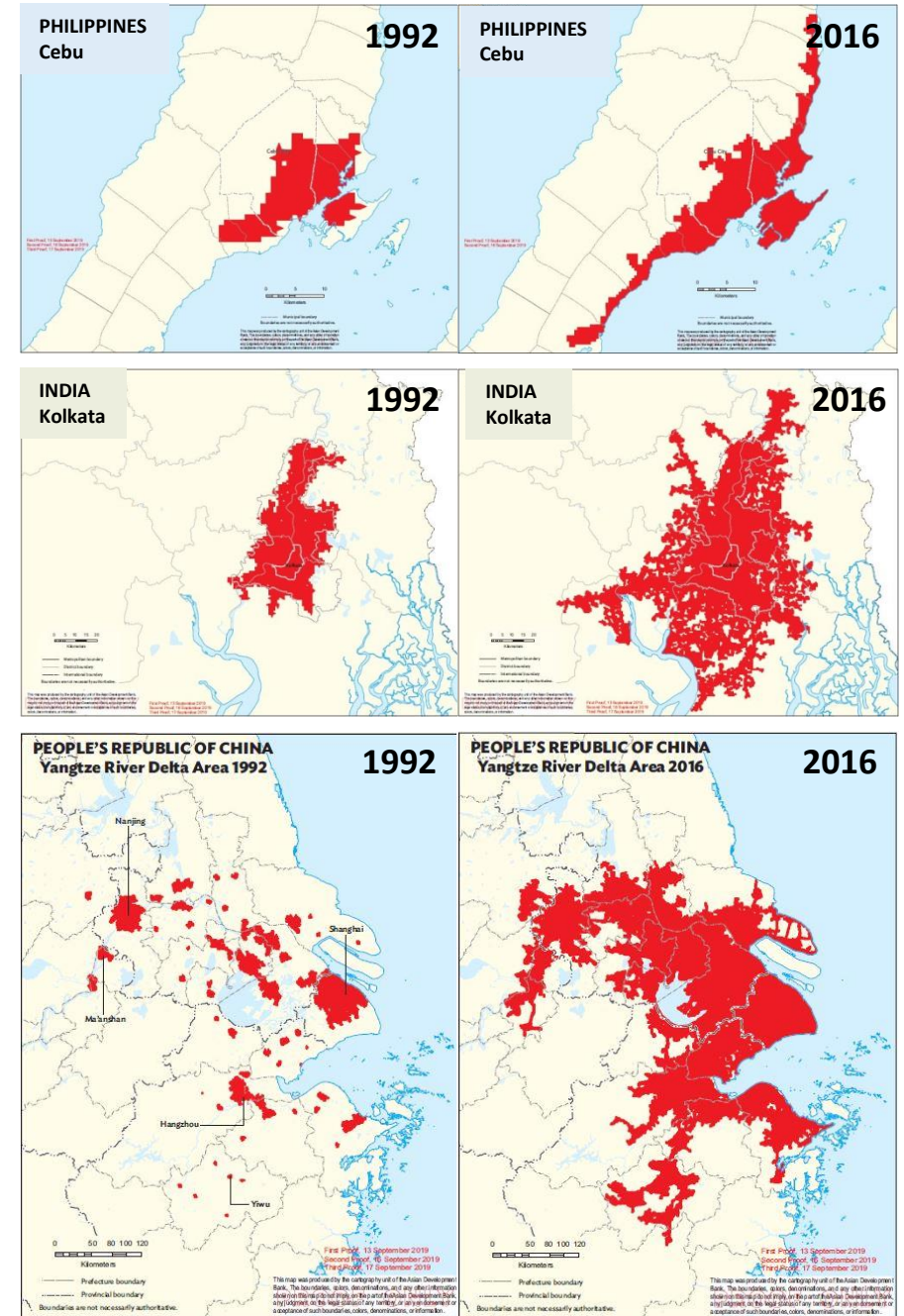
Source: ADB estimates.

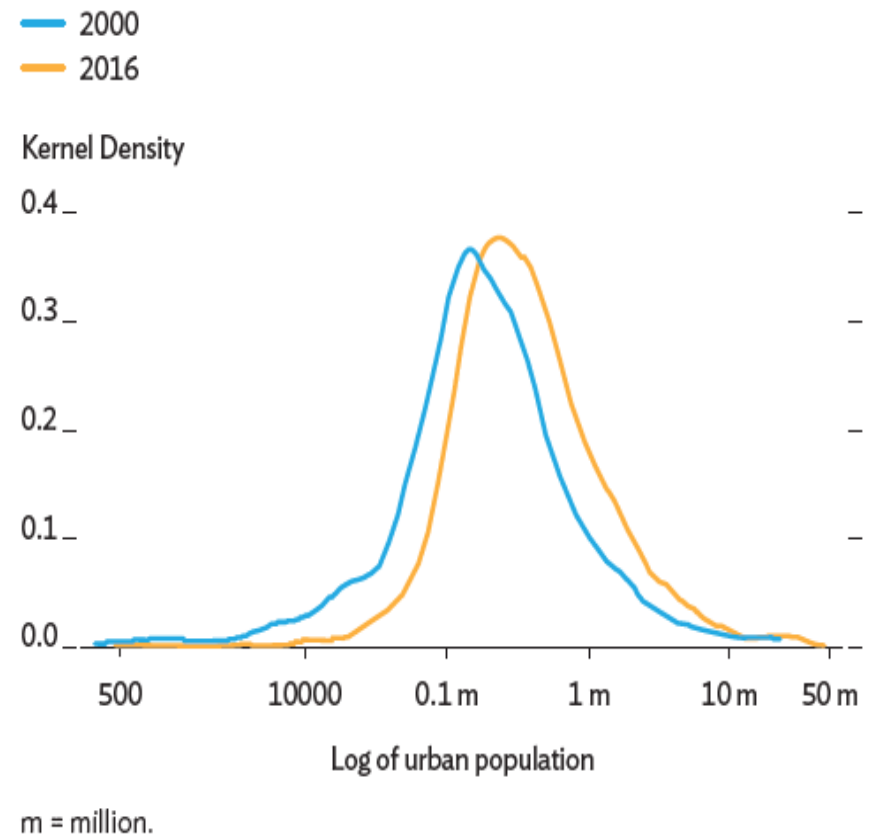# 28 city clusters in developing Asia have a population of 10 million or more

2016

Delhi-Chandigarh

Shanghai-Nanjing

Guangzhou-Huizhou

Source: ADB estimates.
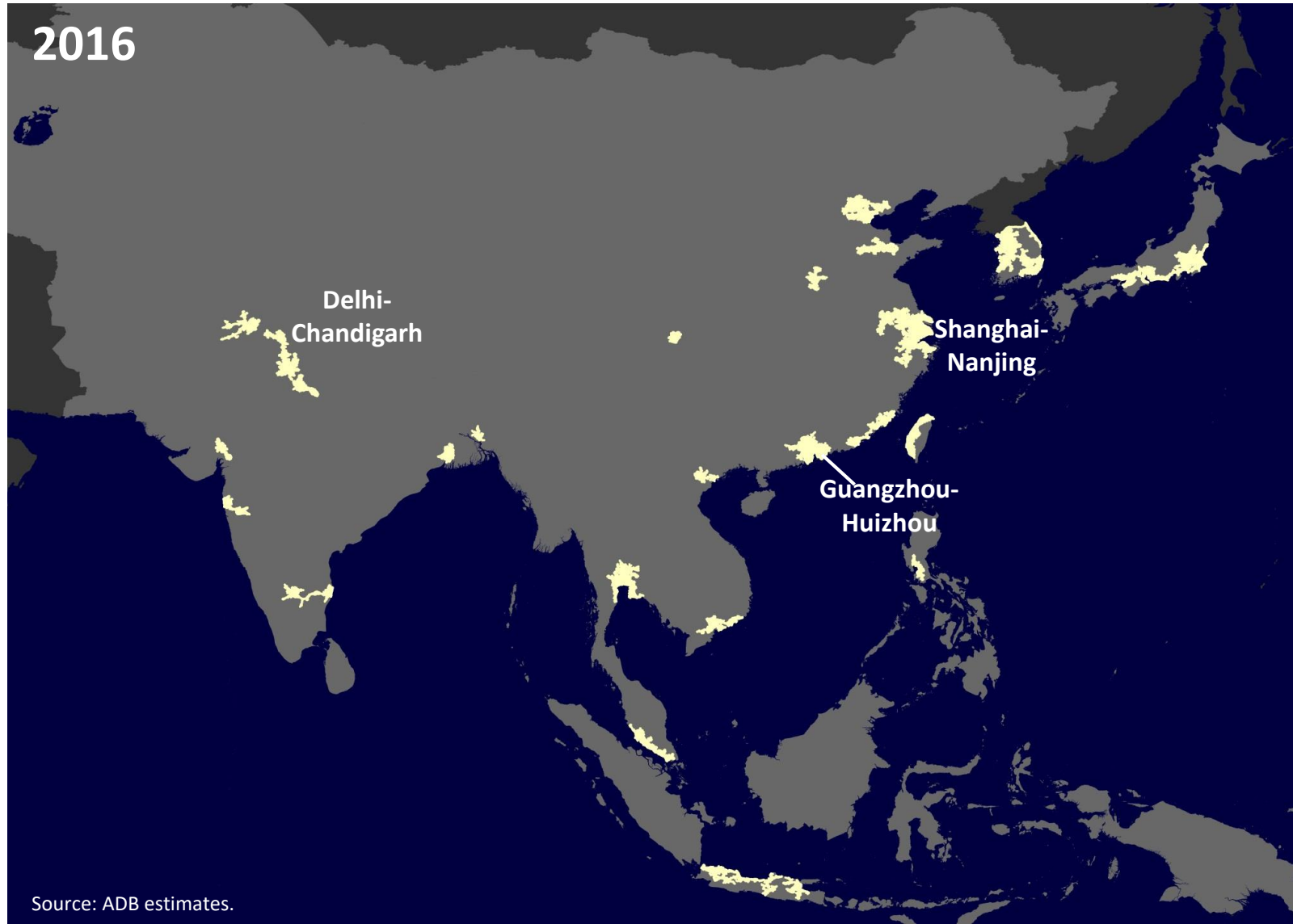
Evolution of city sizes

Distributions of Natural City Size by Land Area

Distributions of Natural City Size by Population

Source: ADB estimates using nighttime lights images from the National
Oceanic and Atmospheric Administration and grid population data from LandScan datasets.

Urban agglomeration economies in Asian cities
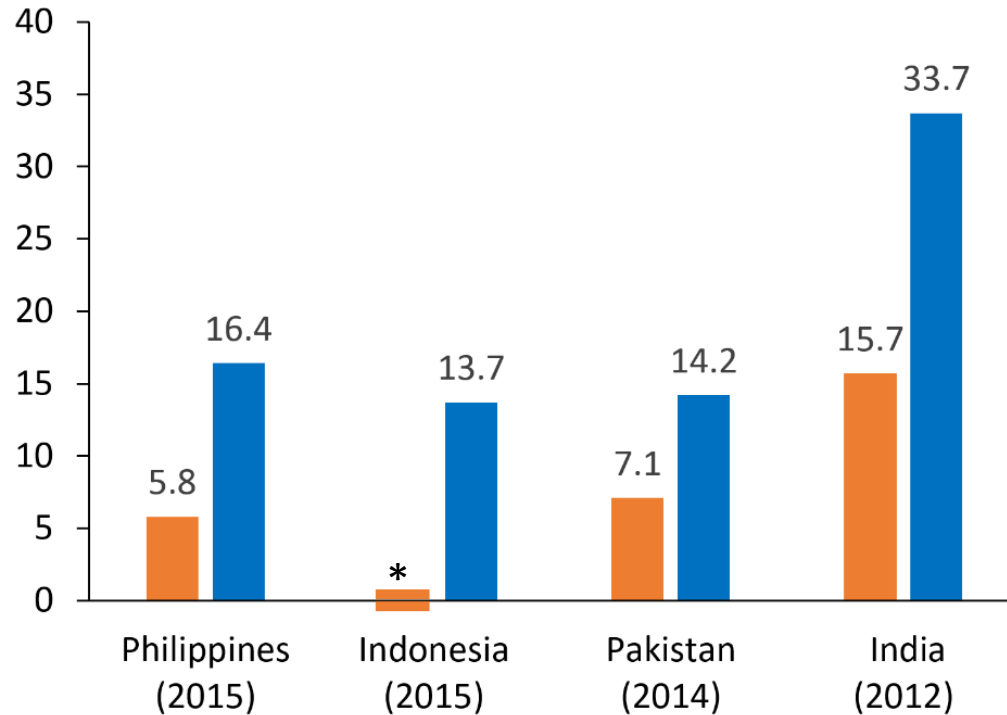
The benefits of agglomeration

Concentration of households and firms enables:

- *Learning* through spillovers of ideas and knowledge
    - Garments in Dhaka, soccer balls in Sialkot, IT startups in Bengaluru

- *Matching* of input-output markets
    - Workers find more suitable jobs
    - Firms locate next to suppliers and buyers

- *Sharing* of resources
    - Infrastructure
    - Tap into wide-ranging expertise
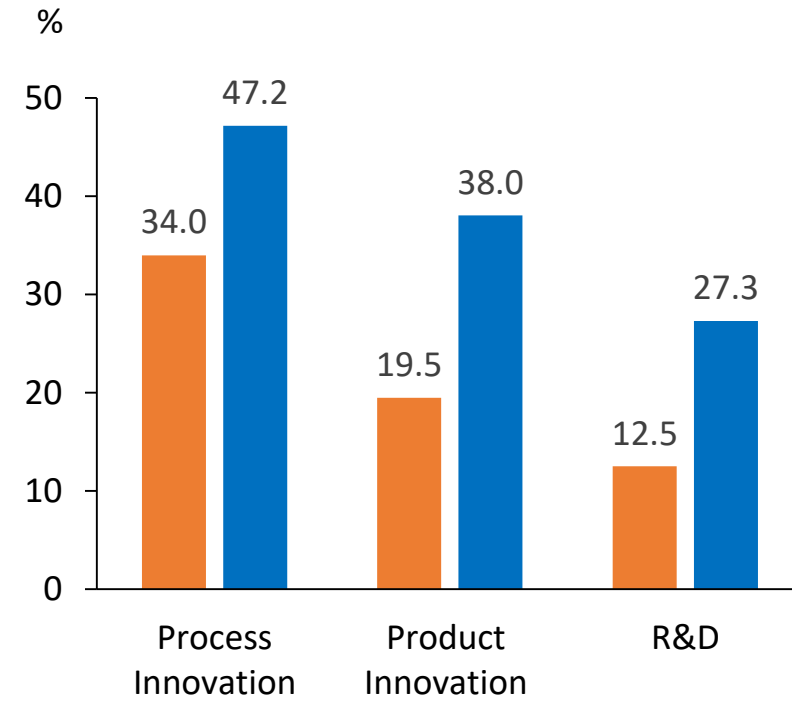
Asian cities benefit from "agglomeration economies"

Big cities pay similar workers more

Urban wage premium
relative to rural areas (%)

Philippines (2015): Small cities 5.8, Big cities 16.4
Indonesia (2015): Small cities * , Big cities 13.7
Pakistan (2014): Small cities 7.1, Big cities 14.2
India (2012): Small cities 15.7, Big cities 33.7

* Small cities' wage premium over rural areas is not statistically different from zero.

Big city firms are more innovative

Firms responding
affirmatively
%

Process Innovation: Small cities 34.0, Big cities 47.2
Product Innovation: Small cities 19.5, Big cities 38.0
R&D: Small cities 12.5, Big cities 27.3
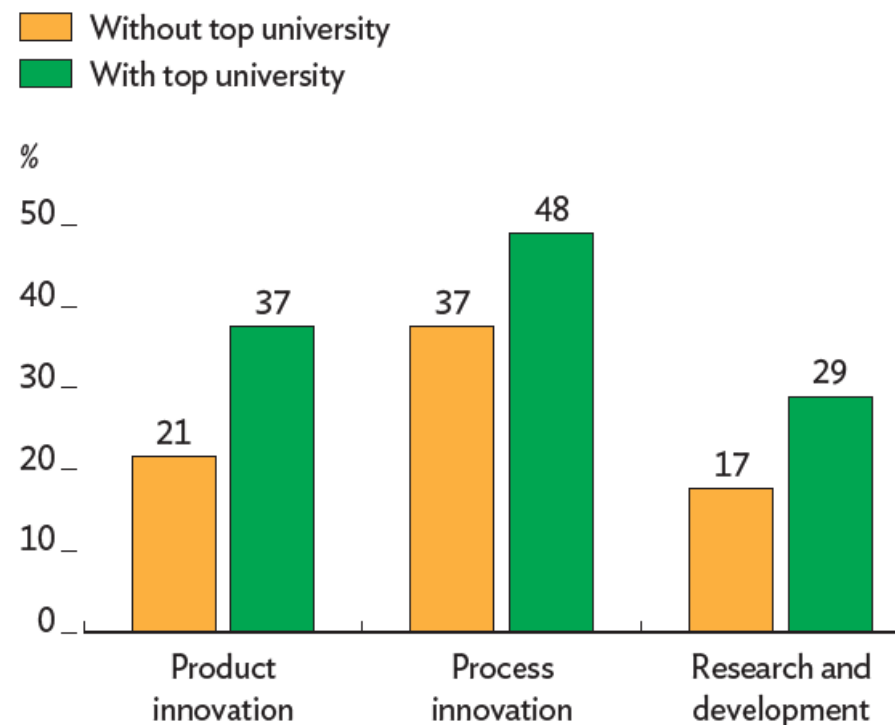
Big cities (>1M)   Small cities

Source: ADB estimates based on labor force surveys of 4 countries (left side chart) and World Bank enterprise surveys of 25 countries (right side chart).

Role of universities

Larger cities have:

- Higher shares of college graduates
  - Greater presence of college graduates benefits less educated workers as well

- Better opportunities for female workers

- Presence of universities
  - High quality universities enable firms to be more dynamic

Firm innovation and universities

Legend:
- Without top university (orange)
- With top university (green)

	Product innovation	Process innovation	Research and development
Without top university	21	37	17
With top university	37	48	29

Source: ADB estimates based on World Bank enterprise surveys, QS World University Rankings, and NTL based natural city data.
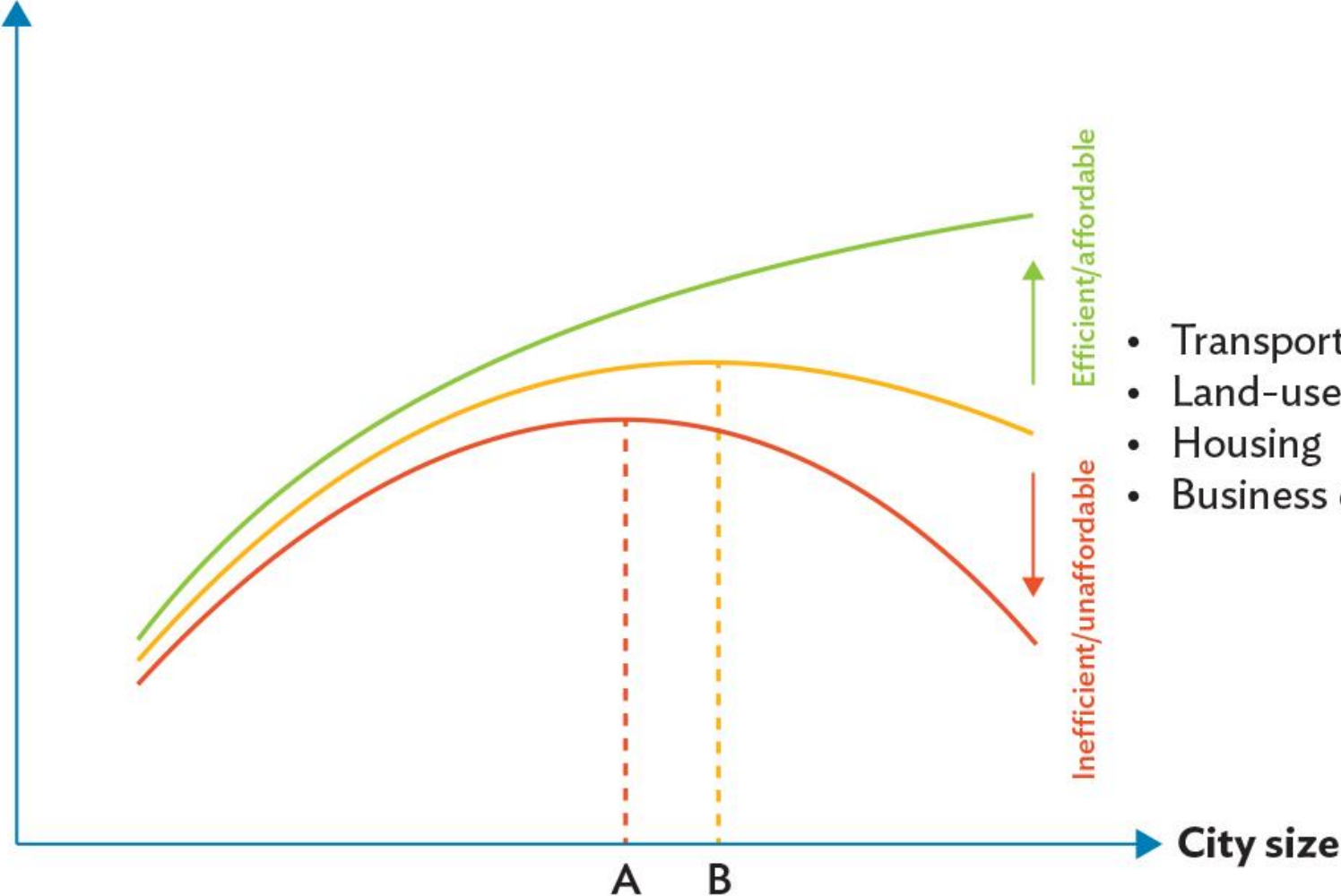
Managing the city as a labor market

But, the benefits of agglomeration do not flow automatically

Urban agglomeration benefits

- Transportation
- Land-use planning
- Housing
- Business environment

Cities thrive when they function well as labor markets

- Key conditions
  - Travel within the city is fast and cheap
  - Firms and households have flexibility to relocate within the city
  - Real estate is relatively affordable

Low mobility scenario

High mobility scenario

Source: Adopted from Bertaud (2018)
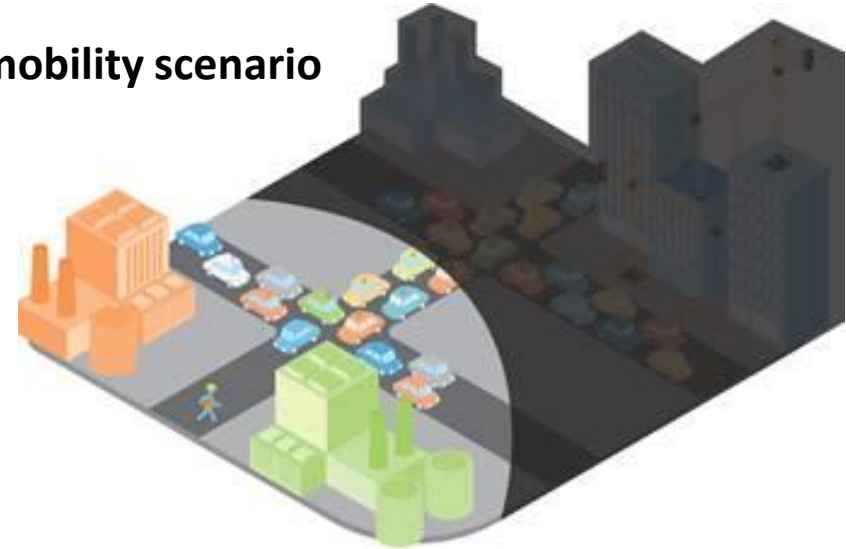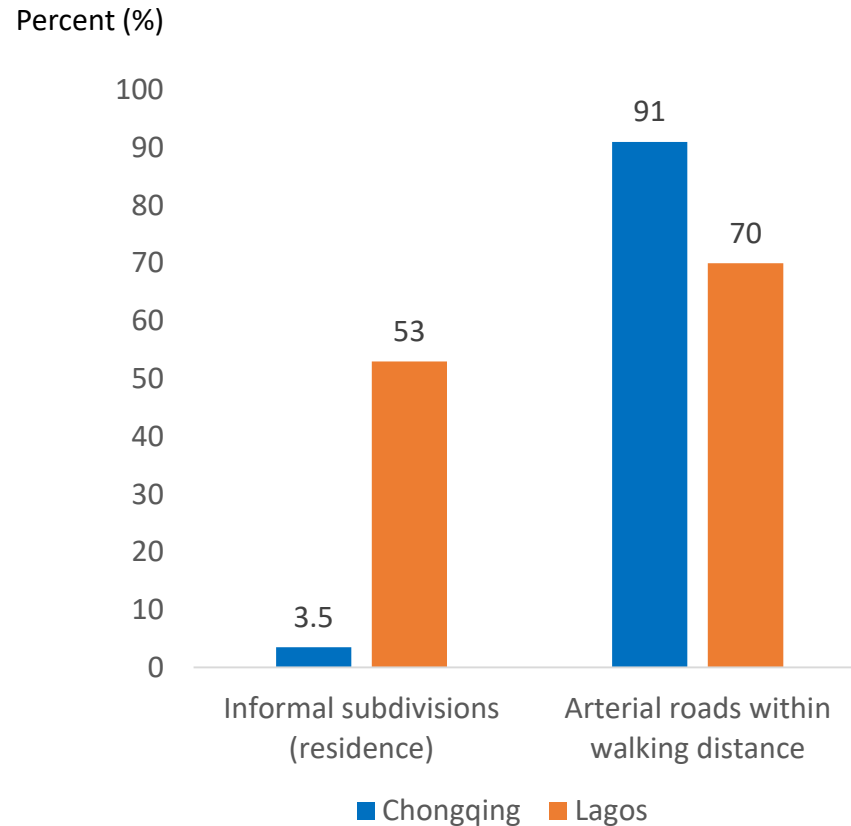
A tale of two cities….

Chongqing, PRC
Population: **13.4M** (2015)

IBM
Foxconn
Cisco Systems
Ford Motor Company

Unemployment rate:
3.9% (2010)

Source: UN (2018) and China Statistical Yearbook (2018)

Share of informal subdivisions in residential areas and share of arterial roads within walking distance (2000-2013)

Percent (%)

Source: ADB estimates based on 2016 Atlas of Urban Expansion

Lagos, Nigeria
Population: **12.2M** (2015)

Seplat Petroleum
Dangote Cement
Nestlé Nigeria
Nigerian Breweries

Unemployment rate:
27.6% (2010)

Source: UN (2018) and Nigeria Data Portal (accessed 27 September 2019).

Congestion is generally worse in larger cities

- We use Google Maps trip information to measure congestion across 278 Asian cities
- Hotspots in each city are identified using nighttime lights and grid population data.
- Random origins and destinations are sampled from the hotspots
- Projected driving durations for each pair of OD are obtained from Google Maps API for peak and off-peak hours of Monday, 3 June 2019.

Average congestion index of natural cities with population greater than 5 million
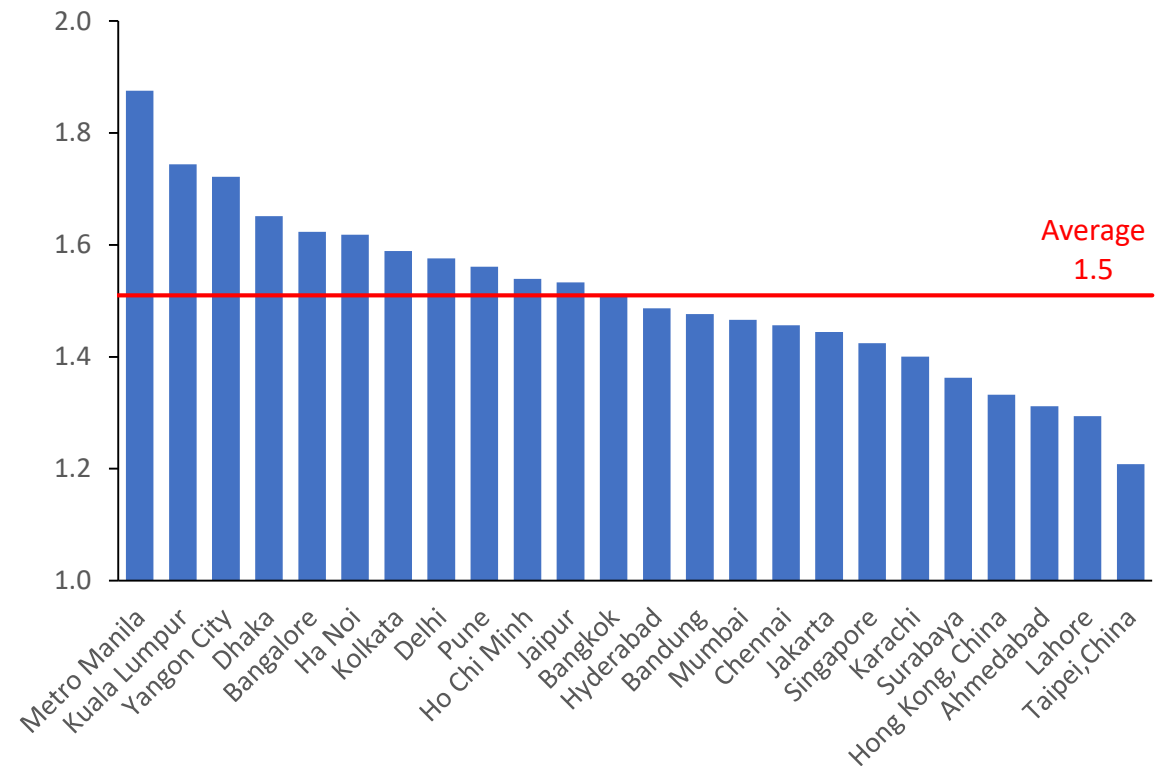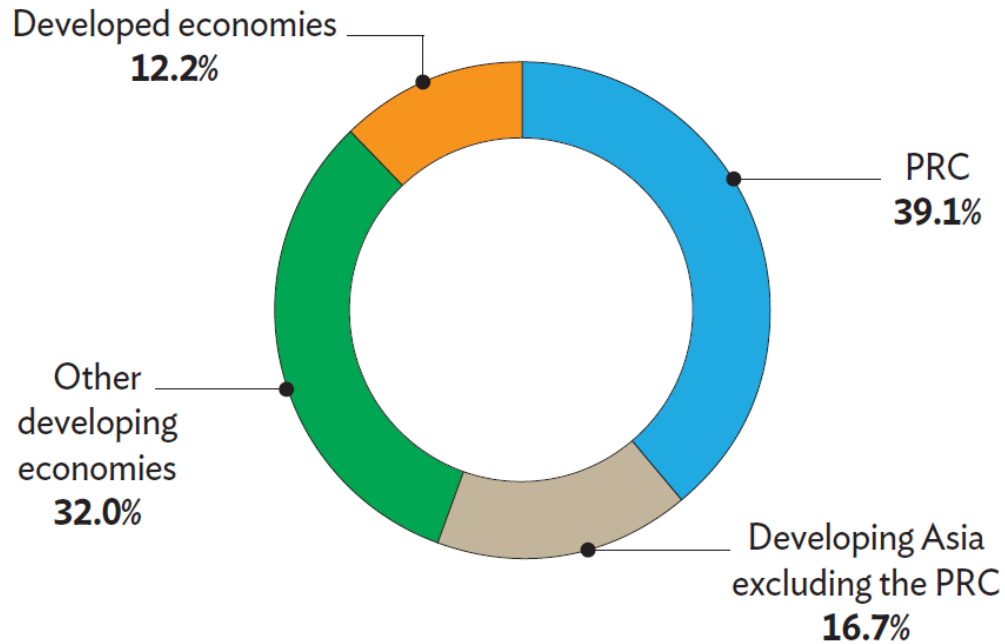

Average 1.5

Note: 1.5 represents the average index of the 24 cities in the chart.
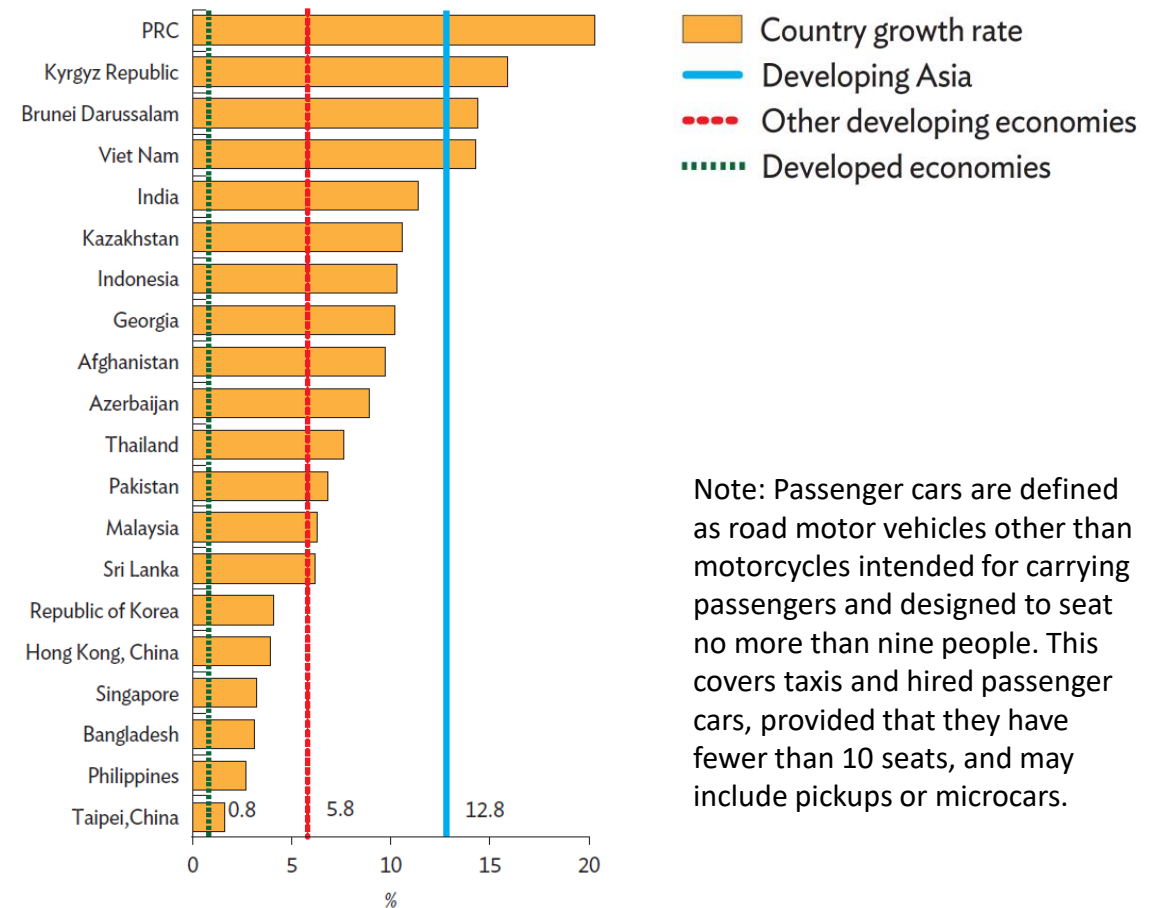
Source: ADB estimates using Google Maps.

Stock of cars has increased dramatically in the region

Share of passenger car increase, 2005-2015

Average annual passenger cars growth rate in developing Asia and other economies, 2005-2015

Developed economies
12.2%

PRC
39.1%

Other developing economies
32.0%

Developing Asia excluding the PRC
16.7%

Legend:
- Country growth rate
- Developing Asia
- Other developing economies
- Developed economies

Countries (top to bottom): PRC, Kyrgyz Republic, Brunei Darussalam, Viet Nam, India, Kazakhstan, Indonesia, Georgia, Afghanistan, Azerbaijan, Thailand, Pakistan, Malaysia, Sri Lanka, Republic of Korea, Hong Kong, China, Singapore, Bangladesh, Philippines, Taipei,China

Reference values: 0.8, 5.8, 12.8
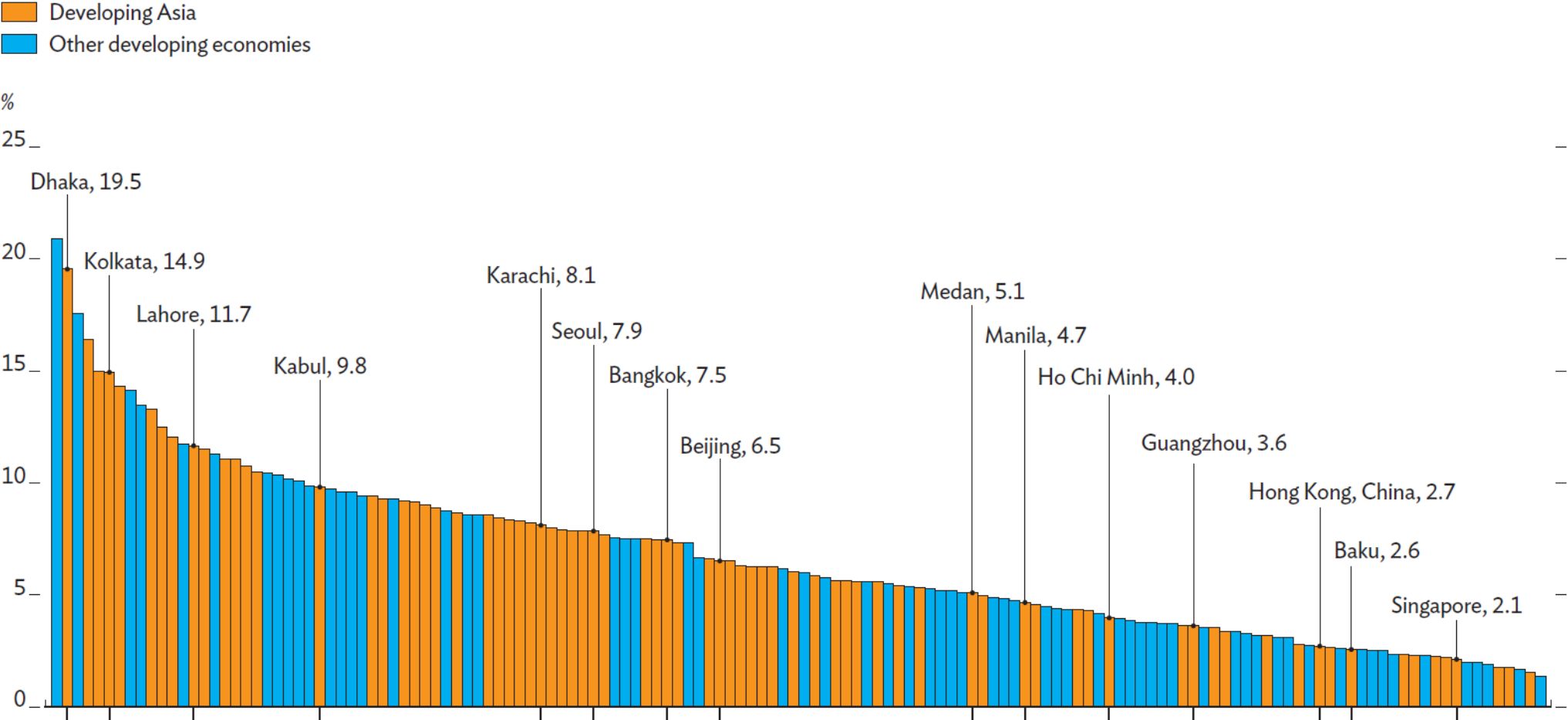
Note: Passenger cars are defined as road motor vehicles other than motorcycles intended for carrying passengers and designed to seat no more than nine people. This covers taxis and hired passenger cars, provided that they have fewer than 10 seats, and may include pickups or microcars.

Source: ADB estimates using data from the International Organization of Motor Vehicle Manufacturers..

Affordability of public transport is an issue in some cities

Share of income spent on urban commuting trips per month in developing economies

Legend:
- Developing Asia
- Other developing economies

Data labels:
- Dhaka, 19.5
- Kolkata, 14.9
- Lahore, 11.7
- Kabul, 9.8
- Karachi, 8.1
- Seoul, 7.9
- Bangkok, 7.5
- Beijing, 6.5
- Medan, 5.1
- Manila, 4.7
- Ho Chi Minh, 4.0
- Guangzhou, 3.6
- Hong Kong, China, 2.7
- Baku, 2.6
- Singapore, 2.1

Source: ADB estimates using data from the Land and Housing Survey in a Global Sample of 200 Cities of the New York University Urban Expansion Program 2006

More fundamentally, must ensure that urban expansion is subject to land use planning
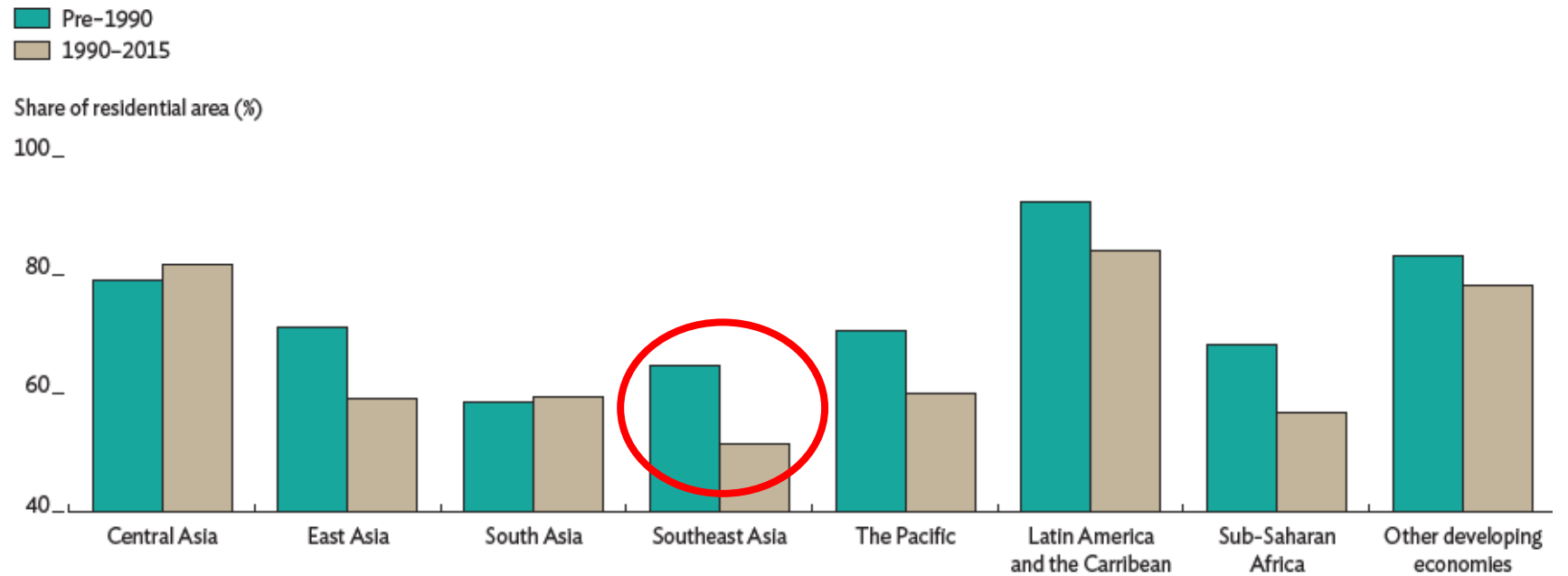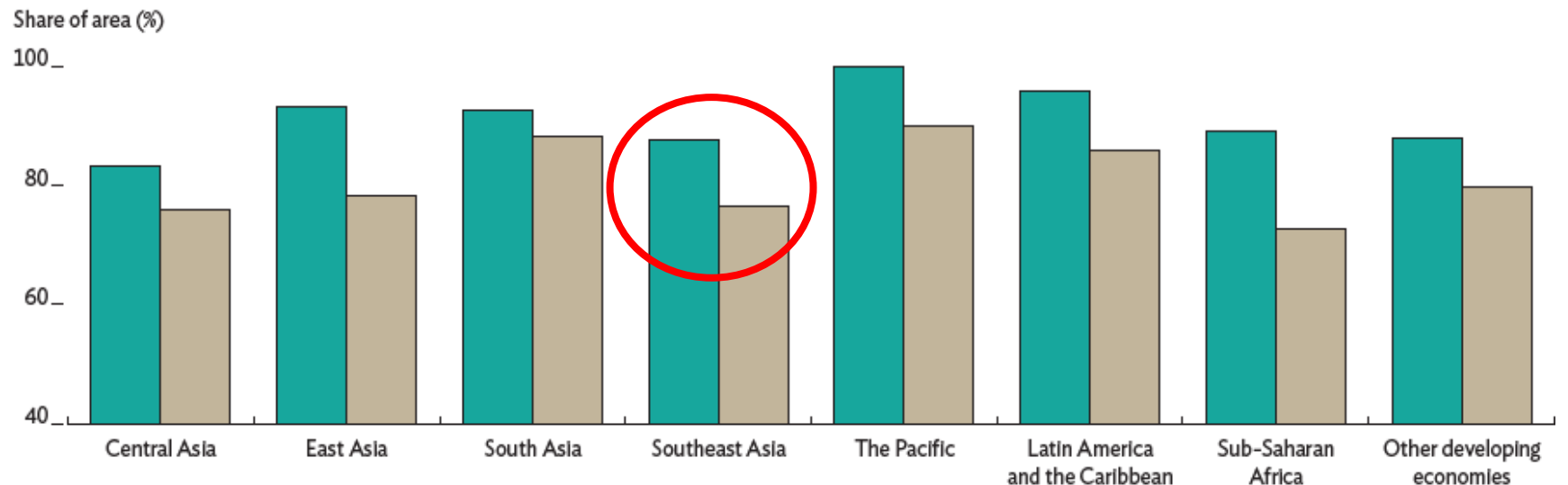
Dhaka, Bangladesh

Mumbai, India

Source: Adapted from Angel et al. (2016).

Good land-use planning is on the decline

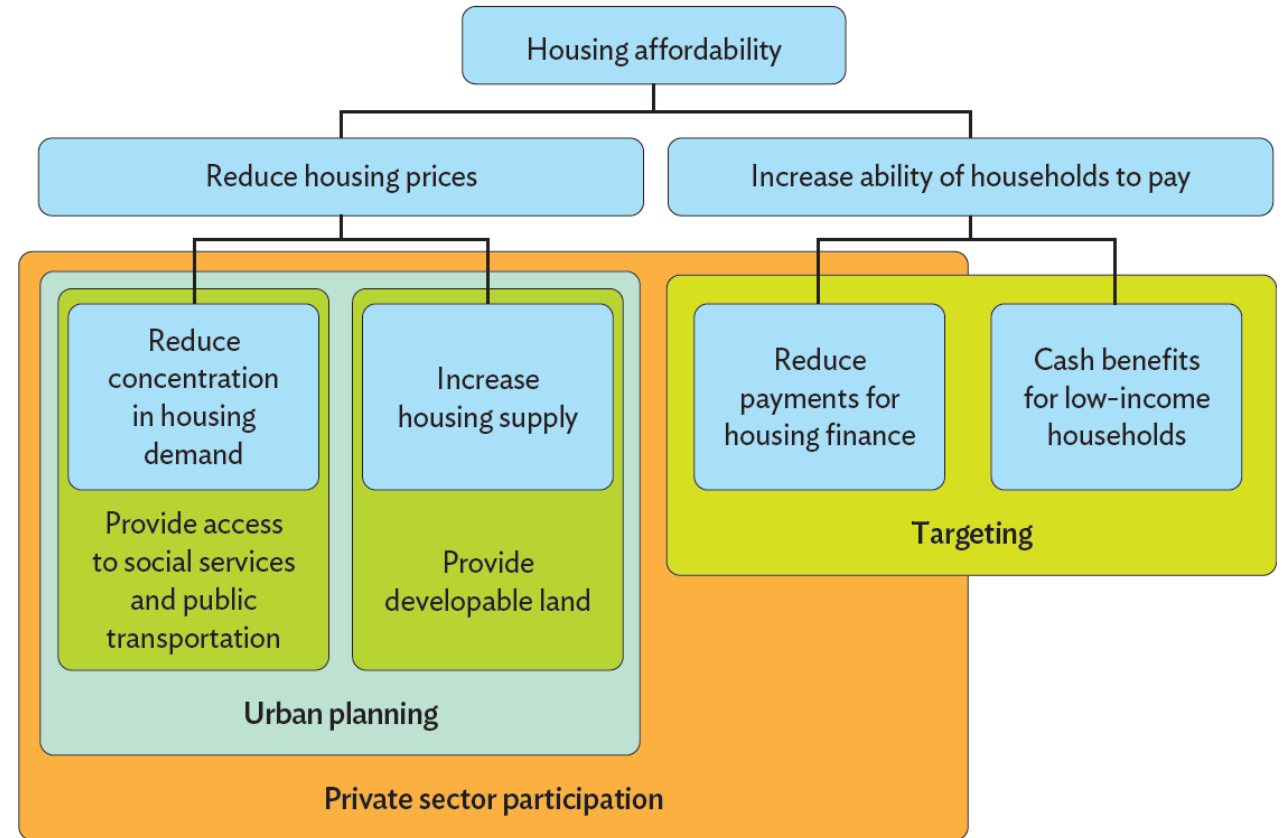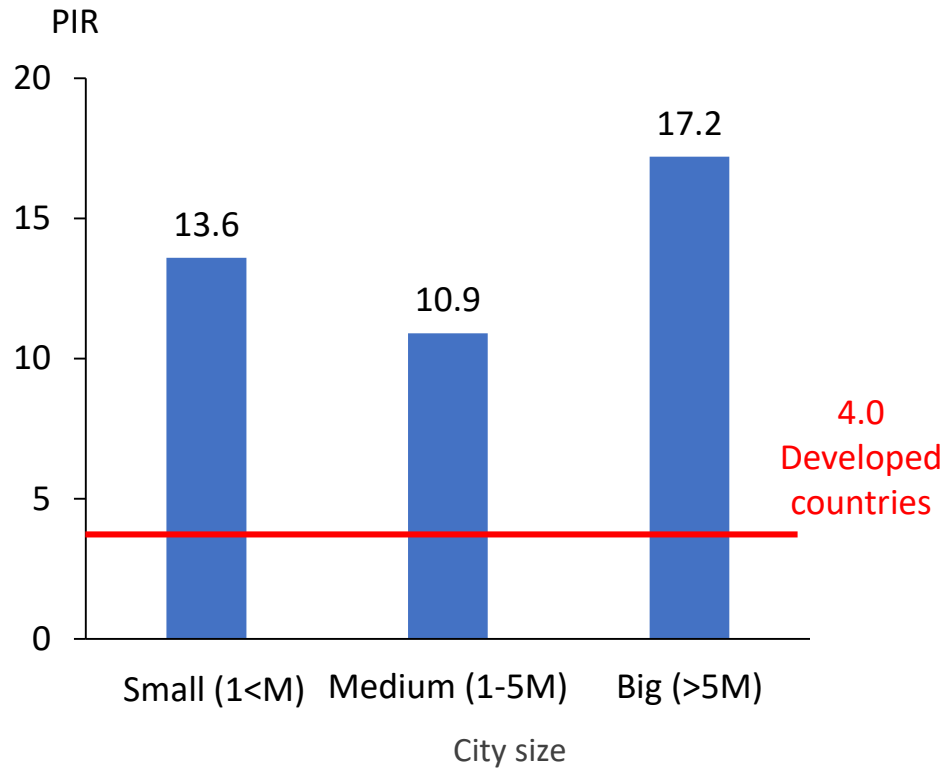**Share of residential area laid out before development**

Share of built-up area within walking distance (625 meters) of an arterial road

Source: ADB estimates using data from Land and Housing Survey of the New York University Urban Expansion Program 2016.

Housing affordability poses a challenge

Housing affordability measured by housing price to income ratio (PIR)

PIR

- Small (1<M): 13.6
- Medium (1-5M): 10.9
- Big (>5M): 17.2

4.0 Developed countries

City size

Housing affordability

Reduce housing prices | Increase ability of households to pay

Urban planning:
- Reduce concentration in housing demand / Provide access to social services and public transportation
- Increase housing supply / Provide developable land

Targeting:
- Reduce payments for housing finance
- Cash benefits for low-income households

Private sector participation

Source: ADB.

Note: The price-to-income ratio (PIR) was computed as the average house price (50 m2) divided by the mean annual household income.
Source: ADB estimates using data from Colliers International; Global Property Guide; household income and expenditure surveys, various countries; Knight Frank; Makaan; National Bureau of Statistics, People's Republic of China; Numbeo; World Bank's PovcalNet; Zameen.

Managing the urban system
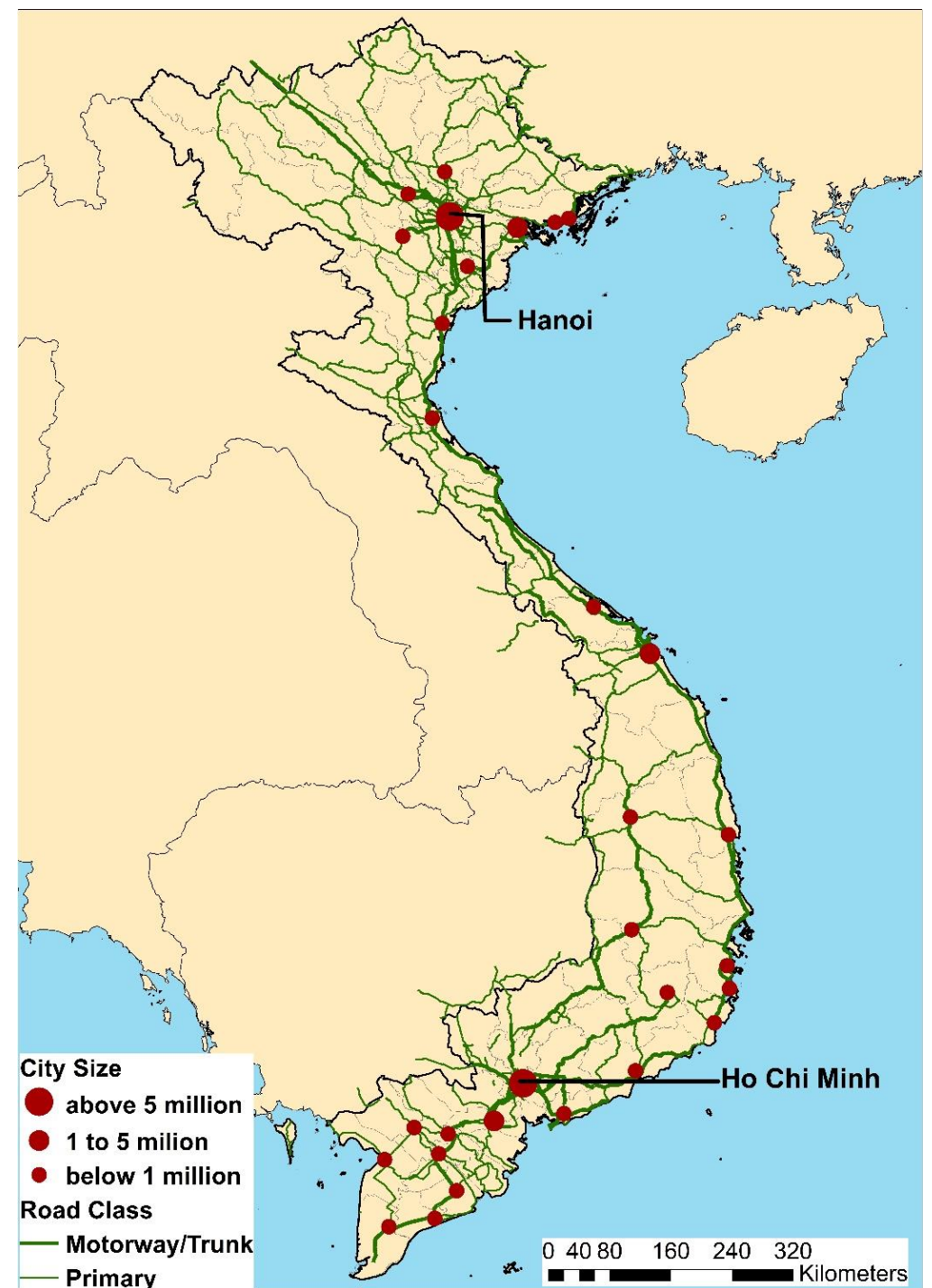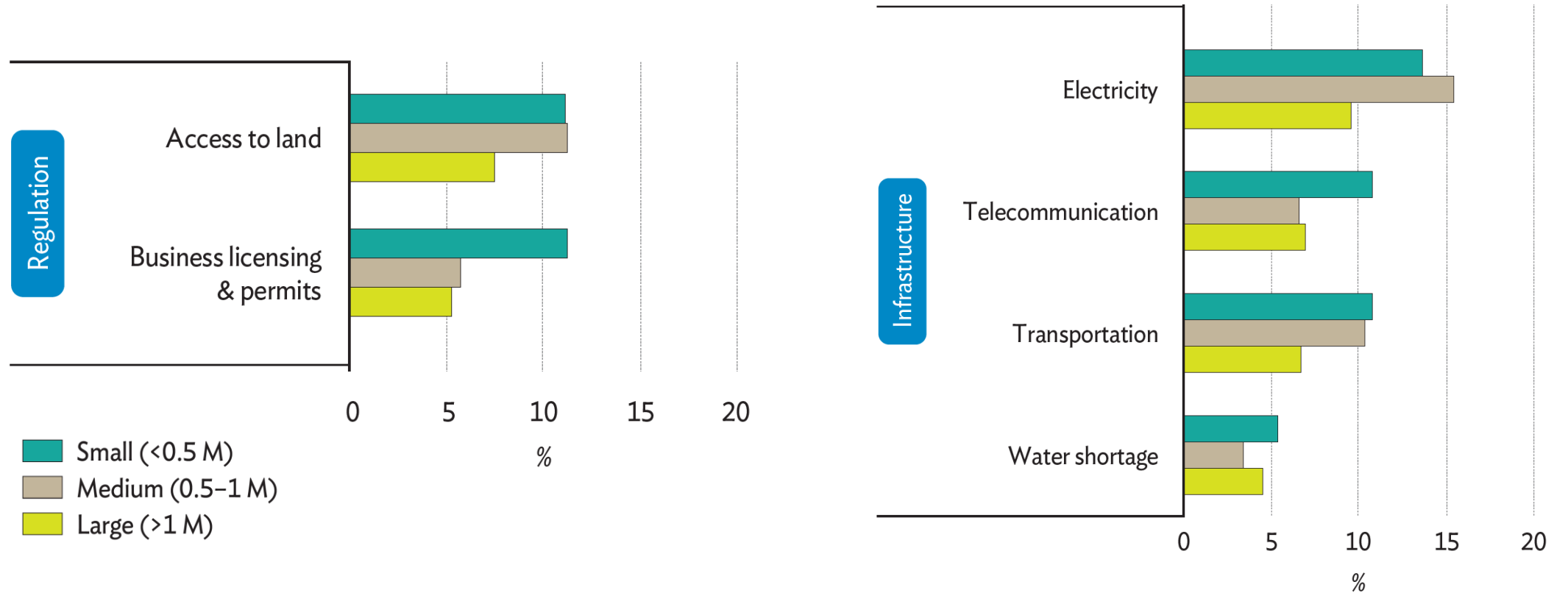
Growth requires vibrancy in different types of cities

- Urban system: Cities connected by flows of goods, services, and people

  - Small cities

  - Medium size cites

  - Large cities

  - Hinterland

Smaller cities face greater business obstacles

Major or severe obstacle to business operation by city size (% firms)

Source: ADB estimates using World Bank Enterprise Survey.

Realizing the promise of cities

Cities

- Multi-modal public transport system
- Affordable housing
- Land-use planning and regulations
- Business environment
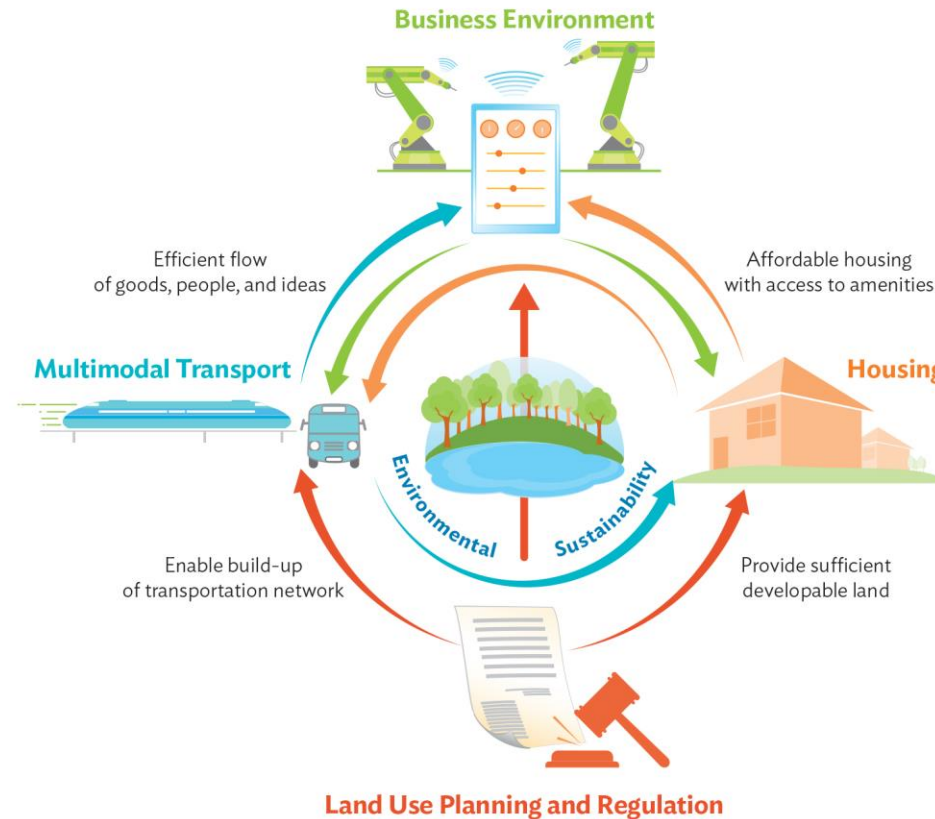
Urban systems

- Inter-city connectivity
- Coordination of spatial and economic planning
- Metropolitan governance

Business Environment

Efficient flow of goods, people, and ideas

Affordable housing with access to amenities

Multimodal Transport

Environmental Sustainability

Housing

Enable build-up of transportation network

Provide sufficient developable land

Land Use Planning and Regulation

Environmental sustainability

Road Safety:
Institutional Capacity and Operations

Road Safety in Asia: WHO (2018)

Rates of road traffic death per 100,000 population: 2013,2016

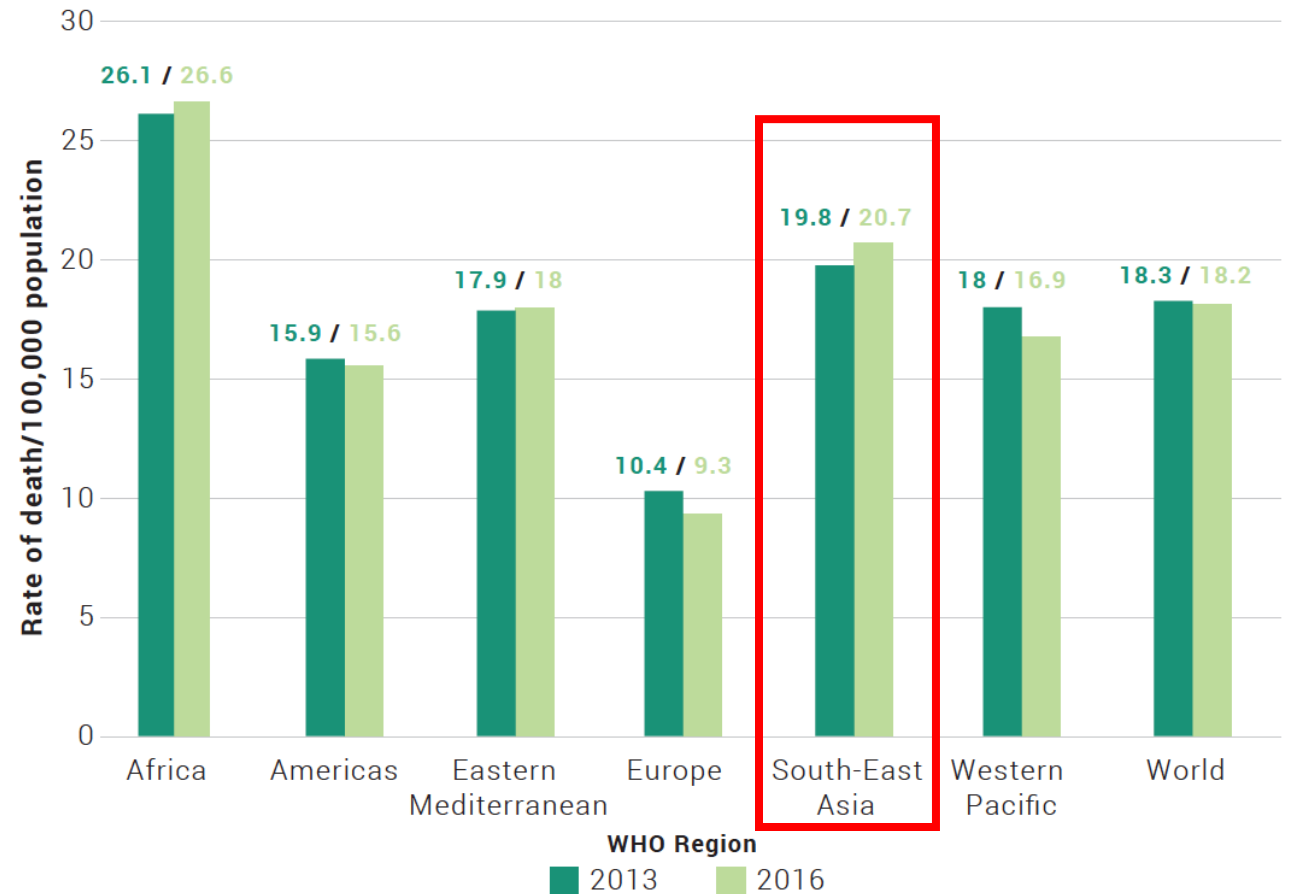|	
Number of countries	Total population (000s)
28	**4 150 386**
Total reported deaths	Total WHO estimation
341 272	**772 158**

Distribution of Deaths by Road User Type

Americas
- 34%
- 23%
- 3%
- 22%
- 18%

Europe
- 48%
- 11%
- 5%
- 27%
- 9%

Eastern Mediterranean
- 39%
- 15%
- 2%
- 34%
- 10%

South-East Asia
- 16%
- 43%
- 2%
- 14%
- 25%

WORLD
- 29%
- 28%
- 3%
- 23%
- 17%

Africa
- 40%
- 9%
- 4%
- 40%
- 7%

Western Pacific
- 22%
- 36%
- 6%
- 22%
- 14%

Legend:
- Driver / passengers of 4 wheeled vehicles
- Motorized 2-3 wheelers
- Cyclists
- Pedestrians
- Others / unspecified

Source: WHO, 2018

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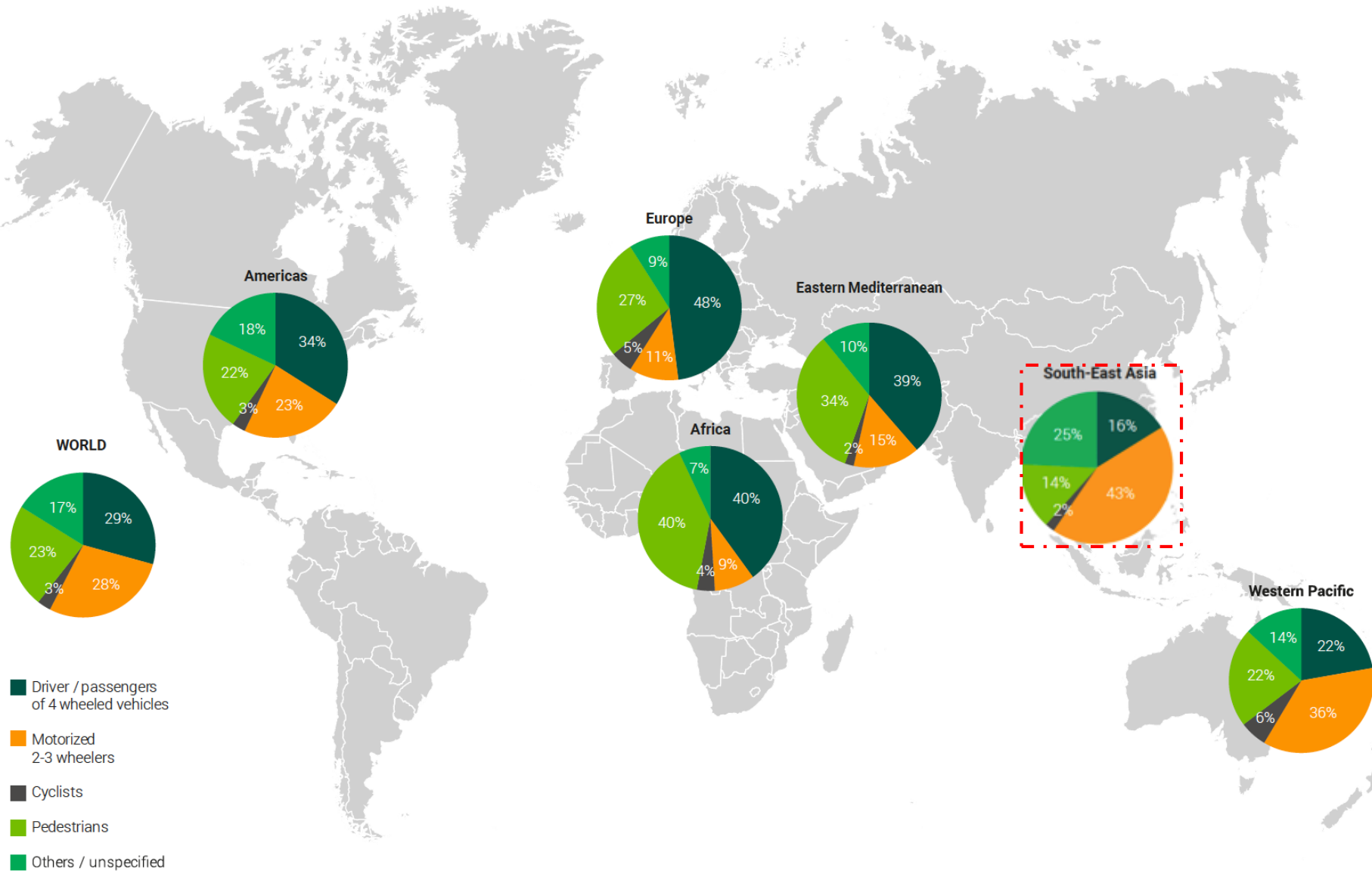
Road Traffic Death by Country Income Category

Proportion of population, road traffic death and vehicles by income of countries

POPULATION

- 9% low-income
- 15% high-income
- 76% middle-income

ROAD TRAFFIC DEATHS

- 13% low-income
- 7% high-income
- 80% middle-income

VEHICLES

- 1% low-income
- 40% high-income
- 59% middle-income

■ high-income ■ middle-income ■ low-income
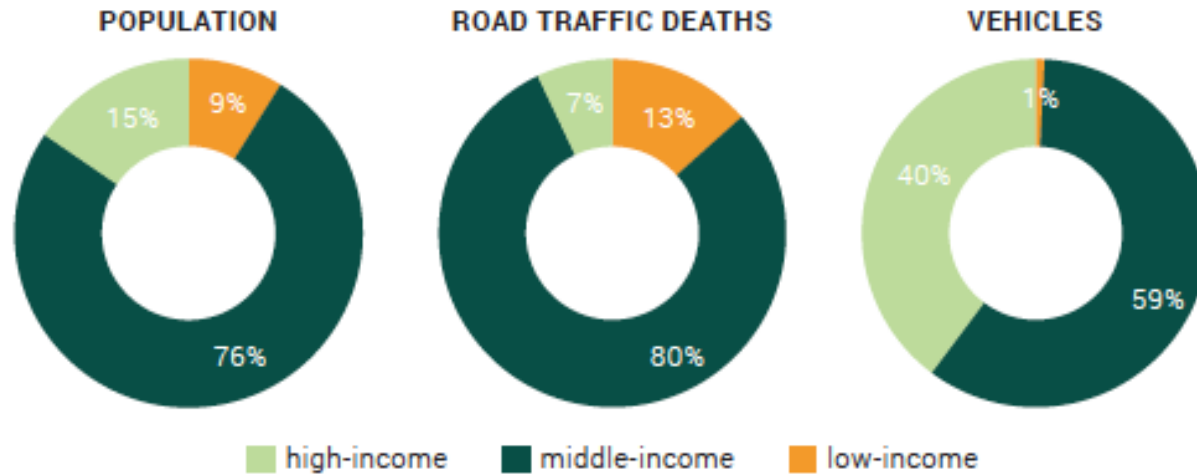
*income levels are based on 2017 World Bank classifications.

No. of countries where a change in the no. of road traffic deaths

	Increased	No Change	Decreased
LOW-INCOME	27	1	0
MIDDLE-INCOME	60	15	23
HIGH-INCOME	17	7	25

■ Increased ■ No Change ■ Decreased
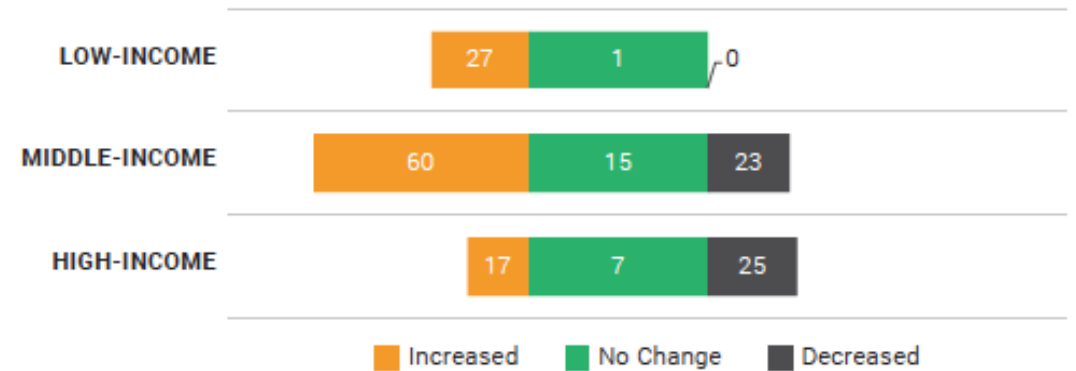
Source: WHO, 2018

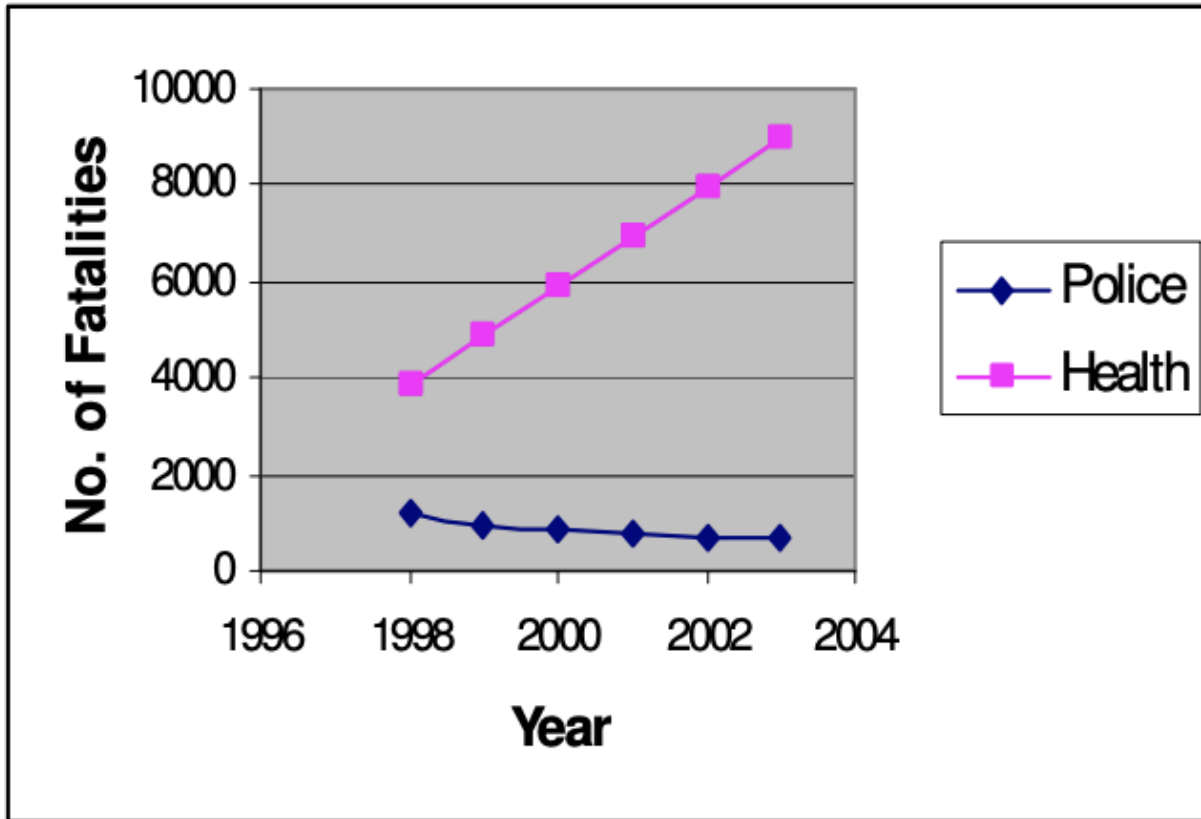# Road Crash Data Challenges in Asian Countries

No. of fatalities on the road as reported by the Police Vs. Health Sector in ASEAN cities

Source: WHO, 2018

COUNTRY	TOTAL POPULATION (000s)	REPORTED FATALITIES	WHO ESTIMATES	DIFFERENCE REPORTED AND WHO	LOWER WHO RANGE ESTIMATES	UPPER WHO RANGE ESTIMATES
AFGHANISTAN	32 527	1 808	4 734	2 926	4 006	5 467
BANGLADESH	160 996	3 296	21 316	18 020	17 349	25 283
BHUTAN	775	59	114	55	98	130
BRUNEI	423	N/A	N/A	N/A	N/A	N/A
CAMBODIA	15 578	1 950	2 635	685	2 150	3 120
CHINA	1 383 925	62 945	261 367	198 422	0	0
INDIA	1 311 051	137 572	207 551	69 979	0	0
IRAN (ISLAMIC REP. OF)	79 109	17 994	24 896	6 902	0	0
INDONESIA	257 564	26 416	38 279	11 863	32 079	44 479
JAPAN	126 573	5 679	5 971	292	0	0
KAZAKHSTAN	17 625	3 181	3 983	802	0	0
KYRGYZSTAN	5 940	1 184	1 220	36	0	0
LAOS	6 802	908	971	63	795	1 147
MALAYSIA	30 331	6 915	7 129	214	6 050	8 209
MALDIVES	364	12	12	0	0	0
MONGOLIA	2 959	579	597	18	538	656
MYANMAR	53 897	3 612	10 809	7 197	8 790	12 829
NEPAL	28 514	1 744	4 713	2 969	3 880	5 546
NORTH KOREA	25 155	N/A	N/A	N/A	N/A	N/A
PAKISTAN	188 925	9 917	25 781	15 864	20 979	30 582
PHILIPPINES	100 699	1 469	10 379	8 910	0	0
REPUBLIC OF KOREA	50 293	5 092	5 931	839	0	0
SINGAPORE	5 604	159	197	38	0	0
SRI LANKA	20 715	2 362	3 691	1 329	3 245	4 137
TAJIKISTAN	8 482	508	1 543	1 035	1 387	1 699
THAILAND	67 959	13 650	24 237	10 587	0	0
TIMOR-LESTE	1 185	96	188	92	158	219
TURKMENISTAN	5 374	883	914	31	844	983
UZBEKISTAN	29 893	2 231	3 240	1 009	0	0
VIET NAM	93 448	9 845	22 419	12 574	0	0

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Source: Global Road Traffic Fatalities, Statistical Overview by Region, FIA, 2017

Road Safety Observatory (RSO) in Asia and Pacific

- A network :
  - ➢ Policy level
  - ➢ Data experts
- A forum to exchange and discuss
  - ➢ Policy issues
  - ➢ Technical and methodological issues
  - ➢ Experiences
  - ➢ Learn from each other
- A common database
- Common surveys, annual reports, joint research
- Kick-off workshop: March 20-21, 2019, in Singapore.
- Over 70 participants from Bangladesh, Cambodia, Indonesia, Japan, Korea, Lao, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam.

Regional Safety Observatory

Objectives:

- To accelerate country-level improvements in data collection, analyses and decision making.

- Stimulating harmonisation between countries for better monitoring.

- Fostering a positive competition between countries to improve crash data systems.

- Offering a common space for data and information sharing.

Expected Outcomes:

- Raising road safety on the political agenda.

- Creating incentives for better road safety performance, emulation, co-operation.

- Help countries to improve data as required by WHO monitoring process.

- Scale up achievements of a few countries to more countries (snow ball effect).

- Provide country with a tool to more systematically collect safety data.

ADB-cofinanced result based loan:
India state road safety incentive program
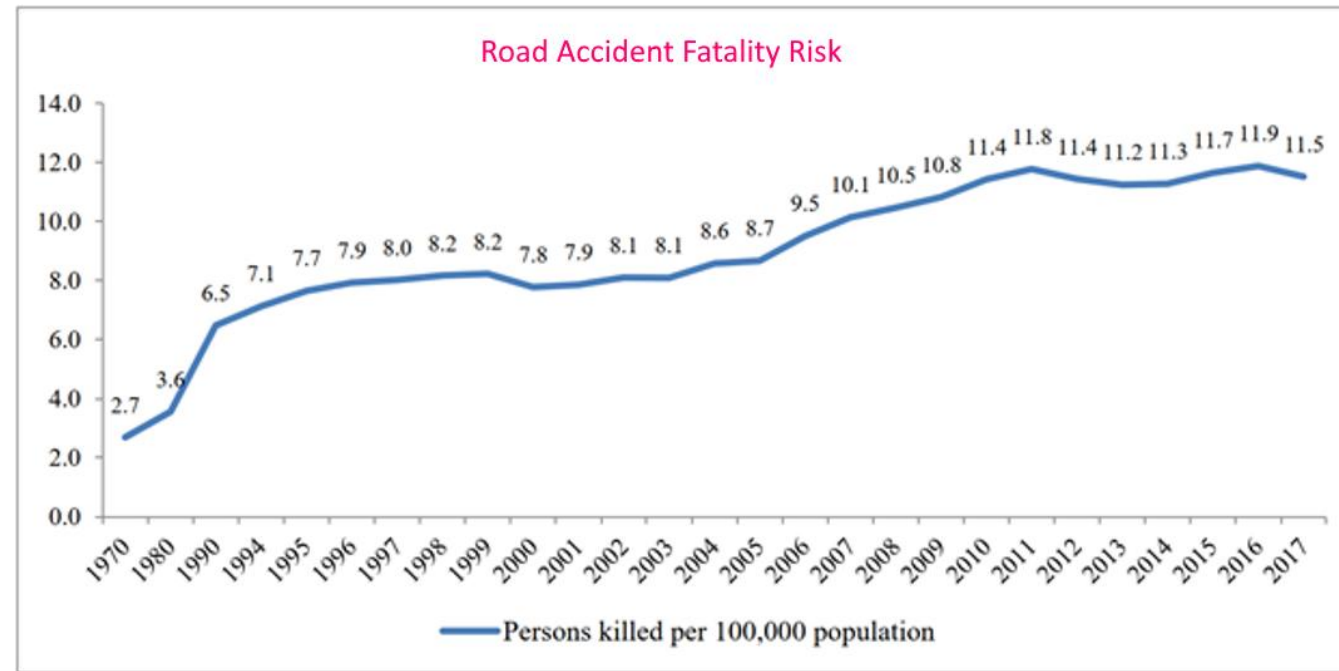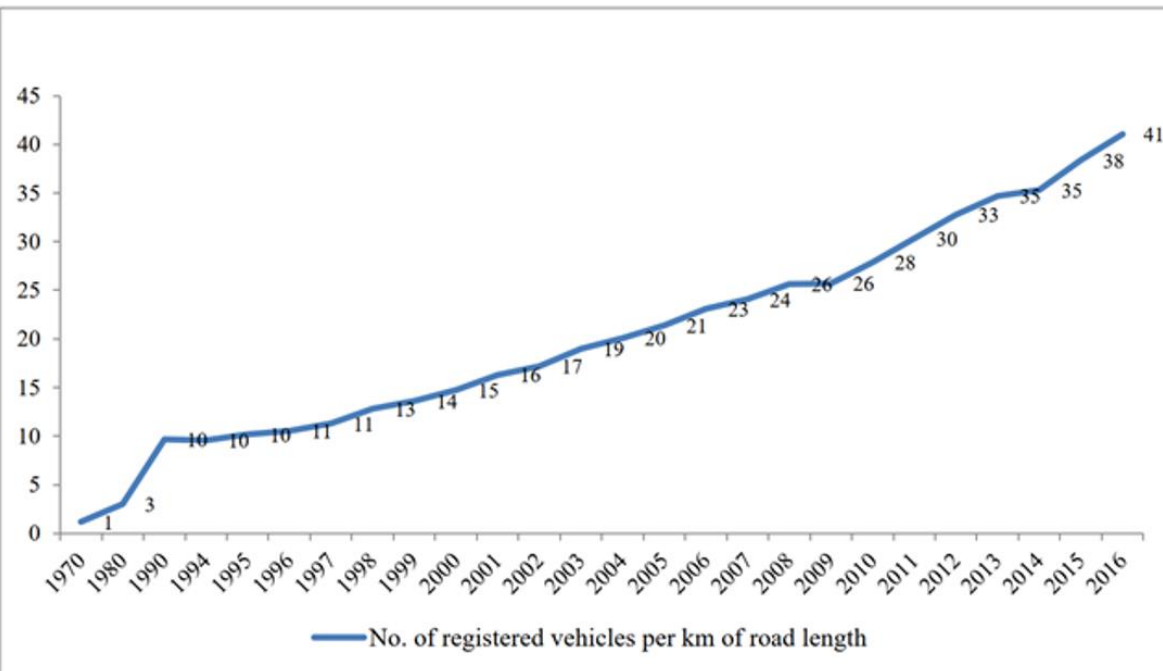
- Registered vehicles in India: 230 million (March 2016)
- Annual growth rate: 9.9% (2006-2016); 10.1% for two-wheelers and cars, jeeps and taxis
- Highest share of two-wheelers (73.5%) followed by cars, jeeps and taxis (13.1%), other vehicles (8.1%), goods vehicle (4.6%) and buses (0.8%)

Road and Accident in India

Road Lengths in India

Category of Road	Length of Roads (km)	% Share of Total
National Highways	114,158	1.94
State Highways	175,036	2.97
District Roads	586,181	9.94
Rural Roads	4,166,916	70.65
Urban Roads	526,483	8.93
Project Roads	328,897	5.58
Total	5,897,671	100.00

Only 63% of the road length is paved and, even on National Highways, about 20% roads are less than two-lane widths, while only about 25% are four-lanes or above.

Source: Ministry of Road Transport and Highways

- Road accidents in 2017: 464,910
  - 147,913 fatalities
  - 470,975 injuries
- National Highways accounted for **36% of deaths** in 2017 while they constitute only about **2% of road length**
- Fatalities on state highways and other roads constitute 26.9% and 37.1%, respectively

Result based loan:
India state road safety incentive program

- **ADB currently co-finances with Indian government** to reduce fatalities from road accidents in eight focus states with five main outputs:

1. Institutional and monitoring system established

2. Accident risk identification systems established

3. Vehicle fitness and accident risk spots rectified

4. Accident response system strengthened

5. Awareness campaigns implemented

- The project will provide monetary incentive to state government based on the road safety indicators accomplished by each state. Here are some examples of project indicators.

Financing Plan. ADB will provide financing of $500 million and approximately $1,500 million will be contributed by the government. The financing plan for the SRSIP is given in the following.

Tentative Financing Plan

Source	Amount ($ million)	Share of Total (%)
Asian Development Bank		
Ordinary Capital Resources	500.0	25.0
Government	1,500.0	75.0
Total	2,000.0	100.0

Sources: Asian Development Bank estimates and initial indications from the Ministry of Road Transport and Highways, Government of India.

Outcome: Fatalities from road accidents in focus states reduced [a]
DLI A. Total road accident fatality reduced by 12%
Output 1: Institutional and monitoring system established
DLI 1. District and state-level road-safety committees, with at least 20% members being women constituted
DLI 2. District and state-level monthly monitoring meetings for road accidents institutionalized
DLI 3: Weekly review of accident data at the state level by the Director General of Police or equivalent rank, instituted
Output 2: Hazard identification systems established
DLI 3: Risk mapping of road network for fatal accidents completed
DLI 4: Accreditation and monitoring system for driving schools established
DLI 5: Automated driving license systems established
DLI 6: Automated vehicle fitness centers established
DLI 7: On-site electronic ticket issuance and data collation system established

Key Messages

- **Developing Asia in urbanizing rapidly, forming city clusters**

- Asian cities benefit from "agglomeration economies" but the benefits do not flow automatically

- **Realizing the promise of cities as engines of growth and job creation requires overcoming challenges in transport, housing, and urban planning, among others**

- Improving road safety outcomes is also critical for eliminating binding constraints for the promise. Asian Development Bank is committed to support safer roads in the region through a variety of channels including innovative programs.

ADB

Thank you!

https://www.adb.org/publications/asian-development-outlook-2019-update