EAST ASIA’S CHANGING URBAN LANDSCAPE
MEASURING A DECADE OF SPATIAL GROWTH
I. INTRODUCTION

II. KEY FINDINGS

III. POLICY RECOMMENDATIONS

IV. MAKING THE DATA USEFUL
Challenges to understanding rapid urbanization in East Asia:

- No spatial data on urbanization at a regional scale – where, how much, how fast

- ‘Urban’ data is tied to municipal boundaries, misses the larger metropolitan area

- No comparable definitions of ‘urban’ land or population
### ‘Comparing apples and oranges’ –

Some examples of differing definitions of ‘urban’

<table>
<thead>
<tr>
<th>Country</th>
<th>‘Urban’ criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Administrative designation, population density (&gt;1500 p/km²), access to urban infrastructure</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Population density (&gt;200 p/km²), level of agricultural employment (&lt;50%), total population (&gt;2000)</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Total population (&gt;4000)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Administrative designation, plus “urban characteristics”</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Administrative designation, total population (&gt;10,000), agricultural employment (&lt;40%), modern toilet facilities</td>
</tr>
<tr>
<td>Philippines</td>
<td>Administrative designation, total population (&gt;2500), population density (&gt;1000 p/km²)</td>
</tr>
</tbody>
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A New Approach to Measuring Urban Expansion

- Needed consistent regional data on urban spatial change to ensure investments and policies are evidence-based.

- Building on a previous study by Angel et al for the World Bank, this study used satellite imagery and population distribution maps to measure urban areas and their populations in a consistent manner.

- Study identified 869 urban areas of 100,000 people or more. “Urban” land and population refers to these urban areas.
Input layers:

- Analysis of satellite imagery (University of Wisconsin-Madison)
  - ‘MODIS’ satellite imagery
  - 250m x 250m grid resolution
  - Used algorithm to identify artificial land cover (built-up areas) in c2000 & c2010

- Gridded population maps (WorldPop)
  - Incorporated census data, built-up footprints, various other sources to disaggregate population to a 100m grid

- Administrative boundaries (mostly ‘GADM’ online database)
East Asia experienced rapid urban expansion between 2000 and 2010, but urban populations grew even faster.

Urbanization is associated with increasing incomes.

Population growth is followed by spatial growth as incomes increase.

Despite the visibility of “megacities,” small and medium-sized urban areas had more urban land and population, as well as more urban expansion.

Densities are high, and are increasing on average.

Urban areas are increasingly spilling over local boundaries.
RAPID URBAN EXPANSION

East Asia saw large amounts of urban expansion, 2.4% per year.

Two-thirds of the total urban land and over 80% of the urban expansion was in China.

Still, less than 1% of the total area in 2010 was urbanized.

MAP 1: URBAN LAND AREA
- Source: Study team, incorporating WorldPop data
RAPID URBAN POPULATION GROWTH

REGIONAL POPULATION EXPANSION 2000-2010

URBAN POPULATION IN 2000: 579,000,000 PEOPLE

URBAN POPULATION IN 2010: 778,000,000 PEOPLE

200M URBAN POPULATION GROWTH

AVERAGE ANNUAL RATE OF URBAN POPULATION GROWTH 2000 - 2010

TOTAL REGIONAL POPULATION (2010)

NON URBAN POPULATION

64% OF THE REGION

URBAN POPULATION

36% OF THE REGION

778M

URBAN POPULATION BREAKDOWN

OTHER REGIONAL POPULATION (301M)

CHINA 477 M
East Asia’s Regional Urban Population

- **869 Urban Areas**
- **36% Live in Urban Areas**

**Where People Live**
- **China’s Urban Areas**
- **Other Urban Areas (269)**
- **Live in Urban Areas (36%)**
- **Live Outside Urban Areas (64%)**

Only 36 percent of East Asia’s population lives in urban areas suggesting more decades of urban growth to come.

If East Asia’s new urban population from 2000 to 2010 were a country unto itself, it would be the world’s 6th Largest.
Lower-middle-income countries had the fastest urban population growth... … whereas upper-middle-income countries had faster urban spatial expansion.

Rapid population growth is followed by rapid spatial growth as incomes increase.
• China is home to the majority of the region’s largest and fastest-growing urban areas.

• Of those with more than 1 million people, those expanding the fastest were in China, with 12 doubling in area during the decade.

• Outside China, Johor Bahru (Malaysia) and Phnom Penh (Cambodia) grew fastest.

• Ho Chi Minh City and Hanoi (Vietnam) grew more in absolute land area than any other urban area outside China.
• Urban densities in East Asia are 1.5x the world average (Angel et al, 2010), 50x the USA MSA average.

• Despite the perception of sprawl, urban population densities in most countries have increased on average (from 5,400 to 5,800 people per sq. km between 2000 and 2010).

• Densities are higher in larger urban areas, and in low/upper-middle income countries.

• Outside China, 92% of urban areas in the region became denser. More than 60% of China’s urban areas declined in density, including Shanghai, Tianjin, Chongqing, and others.

• Hong Kong SAR, China, remained the densest urban area in the region (32,000 people per square kilometer in 2010).
INCREASING METROPOLITAN FRAGMENTATION

Metropolitan fragmentation has emerged as a significant challenge in the East Asia region.
The Manila urban area in the Philippines includes 85 municipalities and cities in seven provinces.
MAKING THE DATA USEFUL
DATA RELEASE

- Data set is being released publicly as GIS files and Excel spreadsheets

- Developed an online mapping and data viewing tool (PUMA – Platform for Urban Management and Analysis) with all the maps from the study, also being launched today
DATA VISUALIZATION CHALLENGE

Seeking creative data visualizations that help bring the data to life

Example of an interactive data visualization that illustrated a World Bank data set on global remittance flows
(Credit: Roxana Torre)
CROWDSOURCING RESEARCH PROPOSALS

• Opening up the data to the broader research community in East Asia and beyond, to:
  o Further analyze our data
  o Combine our data with other types of data
  o Drill down to individual country/city level
  o Further explore drivers of urban growth

• Best proposals will be invited to present completed research at a World Bank event
For more on this study, refer to the full report: *East Asia’s Changing Urban Landscape: Measuring a Decade of Spatial Growth* available at [www.worldbank.org/eap/MeasuringUrbanExpansion](http://www.worldbank.org/eap/MeasuringUrbanExpansion)

View the maps using an online web tool or download the data as GIS files or spreadsheets at [puma.worldbank.org](http://puma.worldbank.org).

THANK YOU

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