Compact Urban Design: Perspective from Cities in Developing Countries

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Outline of Presentation
• Different Patterns of Global Urbanization
• Spatial Dynamic (Urban Area and Density)
• Perspective from Rapidly Growing Cities in Developing Countries
  □ Higher Densities
  □ Contiguous Development
  □ Mixed Land Use
  □ Mass Transit Linkages
  □ Contained Urban Development
• Conclusions
Unsustainable Growth
- 95 percent of population growth in the developing world
- Projected new urban built up area in developing countries alone is 400,000 km² (2000 – 2030)
- This equals the total urban built up area of the ‘entire world’ as of the year 2001 – **we are building a ‘whole new world!’**
- **4 Earths (Ecological Footprint)** required if developing country cities urbanize following the models of Dev developed country cities

Million-Plus Municipalities

Source: AECOM
Sprawling Auto Dependent Urbanization in US

Compact, Walled City (Fribourg), in Europe

Source: Wulf Daseking
Rapidly Growing High Density Asian Cities

Regional Characteristics of Urbanization Process

<table>
<thead>
<tr>
<th>Countries</th>
<th>Urban Development Pattern</th>
<th>Challenge</th>
<th>Density Level</th>
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</thead>
<tbody>
<tr>
<td>US and Australia</td>
<td>Auto Dependent Urban Sprawl with Motorization and Cheap Oil.</td>
<td>Energy Policy, Local and Global Externality (GHG) requiring the shift towards smart growth,</td>
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<td>Europe</td>
<td>Walled Cities Developed Gradually Over a Long Period, initially without cars</td>
<td>Regional Economic and Spatial Disparity/ Financial Gap</td>
<td>2</td>
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<tr>
<td>Japan</td>
<td>Relatively Rapid Urban Development in limited space, after the Second World War, with motorization</td>
<td>Vulnerability to Natural Disaster/Nuclear Energy Safety Shrinking Cities as Aging Society – Fiscal Cost Increase, Requiring Compactness</td>
<td>2</td>
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<tr>
<td>Developing Countries</td>
<td>Unprecedented Scale and Speed of Urbanization in limited space and in an era of motorization.</td>
<td>Emergency of Middle Income Class Rapid Motorization. Presence of Informal Sector Lack of Institutional and Regulatory Framework and Financing for Sustainable Urban Planning and Investment</td>
<td>4</td>
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</tbody>
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# Spatial Dynamics

<table>
<thead>
<tr>
<th>Variables</th>
<th>General Tends in Dev. Countries</th>
<th>City Area</th>
<th>Average Density</th>
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<tbody>
<tr>
<td>Population</td>
<td>🔺</td>
<td>🔺</td>
<td>🔺</td>
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<tr>
<td>Household Income</td>
<td>🔺</td>
<td>🔺</td>
<td>🔺</td>
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<td>Transport Cost</td>
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<tr>
<td>Agricultural Rents on the Urban Periphery</td>
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<td>Share of Buildable Land</td>
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<td>🔻</td>
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<tr>
<td>Income Inequality</td>
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Overall, Cities in Developing Countries are expected to increase urban areas and decrease their average density.

Source: Prepared by Hiroaki Suzuki based on Bruckner and Sholmo Angel

## High But Declining Density in Developing Countries-Historical Evidence

![Average Built-Up Area Densities in Three World Regions](image)

Source: Shlomo Angel et All
Rapid Urban Expansion in Developing Countries-Projection 200-2050

Key Characteristics of Compact City and Their Implication for Rapidly Growing Cities in Developing Countries

- Higher Densities
- Contiguous Development
- Mixed Land Use
- Mass Transit Linkages
- Contained Urban Development
Higher Densities (i)

- Actual Land Use Pattern is more important than Average Density
- High Densities, but very low Floor Area Ratio (FAR) or uniformly regulated FAR (no variation).
- This leads to the dearth of strategically located high density nodes. Urban land use is not characterized by the strategic location of high density nodes connected by rapid public transit.

Higher Densities (iii)

- Mumbai City (FAR 1.33 compared to other global cities 5 to 15 in CBD) highest property value in the world and the lowest floor consumption per person, uncontrollable sprawl
- Same Restriction is found in many cities in China. FAR in major cities in China are lower than in other global urban centers.

Non-Contiguous Development (i)
Major challenge in Cities in Developing Countries

Source: World Bank Altaf and Shah
Closed Factory Site in CBD Penang, Malaysia, Suzuki
Non-Contiguos Development (ii)
Various Factors Preventing Contiguous Development

- Unintended consequence of various regulations
  - minimum plot size
  - agricultural land protection
  - India’s Urban land ceiling act to avoid concentration of land ownership

- Weak Fiscal Basis
  - economically unnecessary rural-urban conversion for land sale by municipalities (e.g., Vietnam and China)
  - lack of infrastructure investment

Non-Contiguous Development (iii)
Unrealistic Minimum Plot Size Regulation Forces Poor to Live in Urban Fringe

Source: Alain Bertaud. Note: m² = square meter.
Non-Contiguous Development (iv)
Fragmented Urban Development in Chengdu, China due to Regulation Protecting Basic Agricultural Land

Source: World Bank Altaf and Shah

Non-Contiguous Development (v)
Urban Land Ceiling Act Has Frozen till recently, the Use of the Closed Industrial Sites in Cities in India.

Amedabad, Many of Vacant Land in Easter Side is Closed Textile Mill Site. Land Ceiling Act Did Not Allow Bulk Land Sale

Non-Contiguous Development (vii)
Lack of Strong Tax Basis induces Ho Chi Minh City to Convert Agriculture Land to Urban Land for Revenue Generation

Source: Urban Age Website

Non-Contiguous Development (viii)
Low Density of Bangkok is Coming From Lack of Trunk Road Capacity

Source: Shlomo Anger et All
Source: Alain Bertaud
Non-Contiguous Development (ix)

City Expands Along the Highway (Ribbon Development)

Non-Contiguous Development (x)

Farmers' housing Closed to Mianyang City Center, China
Mixed Land Use

Land Use of Cities in Developing Countries are mixed

• But as consequence of Lack of Planning and Enforcement.

• Mixed Land Use Concept Developed in OECD may be related to the stage of economic development (shift from manufacturing based economy to service based economy)

• In-fill through brown filed development or industrial land conversion provide good opportunities for mixed land use in cities in emerging economies.

Conversion of Industrial Areas As Great Opportunities For Mixed Land Use

![Figure 5: Industrial Land Areas as Percentage of Built-up Area in Cities in Transition Economies Compared to Cities with a Market Tradition](source: Bertaud and Fthenakis)
Mass Transit Linkages (i)
Transport Land-Use Integration as Most Critical Element for Sustainable Urban Development

• Public Transport as City Form Shaper.
• City form determines, cities economic efficiency, environment sustainability and social equity
• Transport as mean to achieve cities’ vision and goal but not end objective.
• Not only mobility but also functionality

Mass Transit Linkages (ii)
Transport Land-Use Integration Framework of WB Ongoing Integrated Spatial Development Study

Source: World Bank ISD Study Team
Mass Transit Integration(iii)
How to Finance Massive Public Transport Investments?
Explore Possible Land Value Capture Financing

Informality is Challenge
Providing Land with Infrastructure Access is Key

Source: World Bank

Source: Robert Cervero
Contained Urban Development

- Given very rapid and sizeable urban population growth in cities in developing countries. Contained urban development is associated with risk making land price inflated and housing unaffordable.
- If the containment areas can accommodate next twenty years’ land demand like Portland, the risk could be mitigated.
- But, Lack of Institutional Capacity for Planning and Enforcement is constraint in Developing Countries.

Conclusions

- Quality of Density Matters
- Regulations and Fiscal Framework should be set right.
- Addressing Non-Contiguous Development rather than Containing Development is important.
- Transport- Land Use Integration is the most critical element for Sustainable Urban Development.
- Financing Matters: Mobilize Resources from Land Value Capture to Finance Transit Investment Cost
- Addressing Informality is challenge.
Thanks