Urbanization in “Chindia”

India Struggles with the Next 500 Million

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As per the Asian Experience with Compact Growth, the structure of the paper and presentation is as follows:

1. Intro to Urbanization
2. Development Patterns
3. Housing
4. Essential Services

Urbanization:

- 1950: India is 15% urbanized
  - Delhi is 1.5 million
- 1991: India liberalizes its quasi-socialist economy
- 2007: India is maybe 30% urbanized
  - Delhi is 14 million
- U.S. and Europe are around 70%, and it is not clear why India will not reach that figure
  - “Keep them on the land” has not worked
- Estimates:
  - 140 million additional city residents by 2020
  - 700 million more by 2050
Compact?

Middle class now estimated at 250 million
- Auto ownership increasing rapidly
  * 963 new registrations per day in Delhi
- Desire for more living space increasing
- Indian extended family living structure is still very common, but
  * Those extended families are looking for larger units with more per capita space
  * Small but growing percentage of young move out and get their own housing

Compact?

Density Varies Widely

Compact?

Some of the Highest Densities are in Slums
### Compact?

#### Average Population Density

<table>
<thead>
<tr>
<th>City</th>
<th>Density</th>
<th>Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>5,500 / sq. mi.</td>
<td>8.6 / acre</td>
</tr>
<tr>
<td>Delhi</td>
<td>24,000 / sq. mi.</td>
<td>38 / acre</td>
</tr>
<tr>
<td>New York</td>
<td>26,500 / sq. mi.</td>
<td>41 / acre</td>
</tr>
<tr>
<td>Mumbai</td>
<td>57,000 / sq. mi.</td>
<td>89 / acre</td>
</tr>
</tbody>
</table>

#### Compact?

#### Low Edge Population Density

<table>
<thead>
<tr>
<th>City</th>
<th>Density</th>
<th>Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>1,500 / sq. mi.</td>
<td>2.5 / acre</td>
</tr>
<tr>
<td>Delhi</td>
<td>10,000 / sq. mi.</td>
<td>15 / acre</td>
</tr>
</tbody>
</table>

#### Compact?

#### Highest Population Density

<table>
<thead>
<tr>
<th>City</th>
<th>Density</th>
<th>Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>17,000 / sq. mi.</td>
<td>27 / acre</td>
</tr>
<tr>
<td>Delhi</td>
<td>66,000 / mile</td>
<td>103 / acre</td>
</tr>
<tr>
<td>New York</td>
<td>70,000 / sq. mi.</td>
<td>109 / acre</td>
</tr>
<tr>
<td>Mumbai</td>
<td>111,000 / sq. mi.</td>
<td>173 / acre</td>
</tr>
</tbody>
</table>
And then there is Dharavi

1,150,000

people in

less than

1 square mile

1,800 / acre

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Central Areas

- Minimum redevelopment densities of about 200 du / acre
- Redevelopment very slow due to dense populations and title problems

Edges

- Controlled (Legal) expansion at high densities served by rail lines and freeways
- But also low density conversion of illegal lands to "farmhouses" for the wealthy

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30 to 50% live in slums

- In Mumbai, 54% live on 13-20% of the land
- Usually land with contested title or government land

1950 thru 1970s policy – relocate slums to new housing at the city edge
- Causes 75-80% job losses

1980-1995 policy – minimize relocations and build new housing on site
- Keep current densities but provide better housing
- Funds always very inadequate
Compact? slum upgrading

1995: Mumbai ADR/TDR program
- Landowners must re-house all current residents on site in new highrise housing at the owner’s expense
- City gives owner bonus density of 1 to 1.33 sq. ft. of buildable area for each sq. ft. of highrise slum replacement and increases FAR by about 80%
- Owner can use bonus density for residential or commercial development
- Owner must ensure site has at least 200 dwelling units of housing, but can transfer anything left over off-site – “to the North”

Result:
- About the same pace of building
- But at private expense
- With higher densities both on and off-site
Compact?

- Well, they're certainly more dense than most U.S. cities
  - Somewhat more dense at the edge
  - Consistently higher on average across the city
  - Much, much higher in the most dense areas
- They are also less auto dependent
- But they are not compact
  - Larger Indian cities combine both density with sprawl at the edges

Legal Framework

- A Top-Down Regulatory Structure
  - Inherited from pre-1947 Britain
  - Careers go up – Mandates come down
- 1992: 74th Constitutional Amendment
  - Calls for decentralization/devolution of powers
  - “State List” and “Local List” of powers
  - Urban planning is on the “Local List”
- Poor Implementation of 74th Amendment
  - Reluctance of state and central officials to give up power
  - Shortage of trained and competent local staff

Legal Framework

A Different Kind of “Separation of Powers”

- Planning norms and policies are often made at the federal level

- Master Plans are made at either state or local level, but need state or federal approval

- Enforcement of land and building regulations is a local responsibility
Legal Framework

Indian National Government
Planning
Development

Delhi State Government
Other municipal services

Delhi Municipal Government
Building Code Enforcement

Result: Poor Enforcement of Zoning & Building Regulations

And the result was riots

Legal Framework
The Receiving End In The First Hour, Then They Retali...
**Legal Framework**

2005: India announces JN-NURM
- $27B initiative to fund urban infrastructure and "basic services for the urban poor" in the 63 largest cities
- Cities file City Development Plans and Detailed Project Reports of how they will use the money
- City governments have to implement six reforms
  - State governments have to implement seven reforms
    - Including implementation of 74th Amendment -- devolving urban planning powers to cities

**Housing**

Post-Independence
- Quasi-socialist model -- 1991
  - Housing policy focuses on government workers
- Liberalization -- 1991-2005
  - Private market builds large volume of housing for middle- and upper-class
- JN-NURM -- 2005-2012
  - Subsidized (90%) housing for Economically Weaker Sections
- Long-term
  - Both private sector and public sector efforts needed

**Essential Services**

Are Essential Services Available
- Generally -- "No"
- Land use patterns more dense and public transit oriented than U.S. cities
- But those advantages are undercut by poor infrastructure, poor municipal finance, and poor enforcement
Essential Services?

Water
- Estimated 50% of water that enters the system is not paid for
- Most cities have only 2 hours of water per day
- "24/7" water plans are opposed by advocates for poor and current employees
- Again, poor buy water through middlemen at higher-than-metered prices

Sanitation
- Delhi has 2851 MLD treatment capacity
- 681 MLD (23%) shortfall
  - 3 billion liters per year of untreated waste enters the river
- 55% of city connected to sewer system
  - Most of remainder is in slums
  - 62,000 slum clusters located in drains leading to the Yamuna
- "The river is dead – it has just not yet been cremated"

Electricity
- Estimated 50% of electricity that enters the system is not paid for
  - Many illegal connections
  - Higher rates for legal connectors
  - Raises incentive to avoid legal connections
  - Many illegal connections are by middlemen who re-sell electricity to the poor at higher cost than they would pay if connected directly
Essential Services?

Transportation

- An enviable mode split
- Estimated 60% of trips are by bus, train, or auto rickshaw
- Price controls on fuel insulate public and remove further incentives

Essential Services?

Solid Waste

- Mostly old-style dumps, but moving towards sanitary landfills
- Much lower waste generation per capita
- 8 different types of workers recycle almost all usable content
- What’s left is generally “dust”

Conclusion

India’s Cities are Generally:

- Dense – compared to U.S. cities
- A mixed picture of very compact pockets within sprawling-but-dense regional areas
- Not poised to provide or enable housing or essential services for the large volume of new city residents over the next 20-50 years
- Not able to enforce compliance with plans or regulations designed to encourage densification and manage sprawl
THE END